TABDZIR (WASTE) REDUCTION USING LEAN MANUFACTURING APPROACH IN FADHILA AQIQAH TASIKMALAYA PRODUCTION PROCESS

MEMINIMASI TABDZIR (WASTE) DENGAN PENDEKATAN LEAN MANUFACTURING PADA PROSES PRODUKSI FADHILA AQIQAH TASIKMALAYA

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Abstract

Delay delivery on Fadhila Aqiqah distribution process occurred frequently. The problem was there're waste in their production process. In islam, it called *tabdzir*. *Tabdzir* can minimized so the production process being more efficient. The purpose of this research is to find out how to minimize waste by analyzing the lean manufacturing approach. The research method used is a qualitative approach, namely lean manufacturing with tools in the form of value stream mapping and fishbone diagrams. Value Stream Mapping (VSM) to describe the flow of the production process from raw materials to finished products. VSM is depicted with symbols representing activities, then grouped into value added and non value added. *Tabdzir* or waste is identified by finding the root of the problem through a fishbone diagram. The implication of this research is that the company is able to know how to minimize the occurrence of waste in the production process.

Keywords: lean manufacturing; *tabdzir*; waste; production

Abstrak

Fadhila Aqiqah Tasikmalaya dalam pendistribusian produknya kepada konsumen, sering terjadi keterlambatan. Hal ini terjadi akibat adanya pemborosan atau waste dalam proses produksi. Dalam islam, hal ini termasuk kategori tabdzir. Seharusnya, tabdzir bisa diminimasi sehingga proses produksi bisa lebih efisien. Tujuan penelitian ini guna mengetahui bagaimana meminimasi waste dengan analisis pendekatan lean manufacturing. Adapun metode penelitian yang digunakan adalah pendekatan kualitatif yakni lean manufacturing dengan alat berupa value stream mapping dan diagram fishbone. Value Stream Mapping (VSM) untuk menggambarkan aliran proses produksi dari bahan mentah menjadi produk jadi.VSM

digambarkan dengan simbol-simbol yang mewakali aktvitas, kemudian dikelompokkan dalam value added dan non value added. Tabdzir atau waste diidentifikasi dengan mencari akar masalah melalui fishbone diagram. Implikasi dari penelitian ini adalah agar perusahaan mampu mengetahui cara meminimasi terjadinya waste pada proses produksi .

Kata kunci: *lean manufacturing; tabdzir; waste; produksi*

A. INTRODUCTION

On company production process, there're frequently getting some problems in waste. It could becomes serious problem when company didn't notice and observe closely. Islam teaches that the source power on earth managed and utilized with good and true so people man can becomes always being a grateful creature upon His gift.

The use of lean manufacturing can be a means for companies to carry out a more efficient production process and is expected to be able to reduce the obstacles that occur. Lean manufacturing is a concept originally developed by the Toyota car company, hereinafter referred to as Just-in-Time Manufacturing. The concept of lean manufacturing (Ristyowati et al., 2017) has a goal so that companies and organizations can run more effectively, efficiently and have competitiveness. In addition, the implementation of lean manufacturing is intended to reduce waiting time or lead time and increase company productivity through increasing output as a result of the production process, in the form of goods and services by reducing or even eliminating waste that arises in company operations.

The expected output from the use of lean manufacturing is to reduce and minimize unnecessary waste or waste during the production process. Where in the view of Islam, waste is called Israf. Al-Raghib al-Ashfahani in his book *al-Mufradat fi Gharib Al-Qur'an* defines the word *israf* (wasteful) with exaggeration. The word mubazzir is interpreted by wasting wealth (Walenna et al., 2018). Meanwhile, in the view of Heizer and Render, waste in a company is categorized into seven wastes, namely overproduction, waiting, transporting, processing, inventory, motion, and production defects (Heizer & Render, 2015).

Fadhila Aqiqah Tasikmalaya is a company owned by Mr. Ridwan Rahmatillah and Mr. Agus Muslim whose address is at Jl. Peta No. 99 B, Tawang, Tasikmalaya. A company that runs in the field of fast-food aqiqah services sells aqiqah services and ready-to-eat food for aqiqah needs in the form of packages containing a variety of

dishes and different quantities according to price. In running her business, Fadhila Aqiqah Tasikmalaya applies the made-by-order concept as a type of production. Where a product will be done if there is a request from the consumer to the office administration. When the distribution of products to consumers varies in length depending on the diversity of cuisines and the quantity of products demanded, because the more quantity and variety of dishes demanded, the longer the production process.

Fadhila Aqiqah Tasikmalaya in the distribution of its products to consumers often occurs delays. Based on the interview that the author conducted with Mr. Agus as the owner, the main factor in this delay was the length of the production process. Initial observations that the researchers made on January 3, 2022 showed that there was some waste or waste that occurred in the production process of Fadhila Aqiqah. The waste is the existence of several activities that take a long time at a work station, the use of inefficient production methods, and the existence of rework on products that have defects or product defects that make production time longer.

All the waste that occurs can be a threat to Fadhila Aqiqah Tasikmalaya if this problem is not resolved immediately, because the length of the production process results in reduced competitiveness of the company with its competitors and can reduce consumer trust or confidence in the company. Besides Fadhila Aqiqah running her business as a company, this business can also be referred to as a family aqiqah worship facility and this must be carried out with full trust and great responsibility because it can be likened to Muslim brothers who work together. For all the elements in Fadhila Aqiqah, of course, a spirit of trustworthiness and full responsibility must be instilled so that in carrying out its production, it always adheres to maximum results and can avoid waste or waste that occurs. All the waste that occurs results in reduced efficiency of a company. The leaner the production process, the more efficient the company is. Therefore it is necessary to identify problems to overcome the length of the production process due to the large amount of waste that occurs by using a lean manufacturing approach.

Because efficiency is the main goal in this approach, making company's productivity must be identified in depth so that the company's capabilities can be seen whether the company is efficient enough or not. The more efficient a company is, the less likely waste will appear, conversely, if a company is not efficient enough, the

possibility of waste occurring is high. Departing from these problems, we interested and wants to make it into a paper and conduct research.

B. THEORITICAL FRAMEWORK

1. Lean Manufacturing

Liker and Meier suggest that Lean is:

> "Lean is reducing the time between a customer order and the delivery of goods by eliminating waste that does not add value. The result is a lean process that delivers high quality to customers at low cost, on time, and makes it possible to get paid without hoarding large amounts of inventory" (Liker & Meier, 2007).

Lean is a continuous effort to eliminate waste and increase value added products (goods and/or services) in order to provide value to customers (customer value). The goal of lean is to increase customer value in a sustainable manner through continuous improvement in relation to the value-to-waste ratio (Wijayanto et al., 2015). Lean manufacturing is a method used in a company to minimize waste in a company that can minimize lead time. Tools or tools that can be used to minimize waste in the lean manufacturing approach are value stream mapping (VSM) (Moengin & Ayunda, 2021) According to Liker, value stream mapping (VSM) is a technique to clearly show the flow of raw materials and current information needed to get a product or service into the hands of consumers in diagrammatic form (Wijayanto et al., 2015). Liker also explained that value stream mapping is a tool that visually presents the flow of material and information and prevents people from getting lost in each process (Liker & Meier, 2007). Value stream mapping is a tool used in the application of lean manufacturing which aims to map all product activities so that waste is found which results in low productivity in a company (Moengin & Ayunda, 2021).

Lean manufacturing can be used to eliminate waste and improve production processes using the 5S, VMS, and other lean manufacturing methods. The application of these methods can provide benefits for companies and customers. One of the most important aspects is the reduction of waste which can save costs. Even so, lean manufacturing requires solid teamwork between workers because effective communication will be able to create an efficient process (Nurwulan, 2021).

A fishbone diagram or cause-and-effect diagram, also known as an Ishikawa diagram, is a tool to identify quality issues and inspection points of a company, this

diagram is also a systematic technique used to spot possible quality problems. (Heizer & Render, 2015) Fishbone diagrams are used to see factors that have an influence on quality and have an impact on the problems we study, besides that fishbone diagrams can also see more detailed factors that influence and have an impact on the main factors which can be depicted by the shape of arrows that resemble fishbones in the fishbone diagram.

2. Production Concept

Sofyan Assauri argues that production is all activities in creating and increasing the utility of an item or service, for activities where production factors are needed in economics in the form of land, labor and skills (organization, managerial and skills) (Assauri, 2011) Meanwhile, according to Kahf, production in the Islamic perspective is a human effort to improve not only the physical condition of the material, but also morality, as a means to achieve the goal of life as outlined in Islam, namely the happiness of the world and the hereafter (Mahfuz, 2020) clearly determine the prosperity of a nation and the standard of human life, the Qur'an has laid a very strong foundation for the production system. The Holy Qur'an uses the concept of production in a broad sense and emphasizes the benefits of the goods produced (Zainal et al., 2018).

Factors of production can be divided into four groups, namely, land, labor, labor, capital, and expertise. The factors of production are known as inputs and the amount of production is termed as output (Rozalinda, 2019) In the view of Islam, factors of production are important things that have been provided by Allah Swt. Production factors must be used in every production process effectively and efficiently. (Hanapia et al., 2019).

3. Waste

Fujio Cho from Toyota defines waste as anything in excess, beyond the minimum requirements for equipment, materials, components, place, and work time that are absolutely necessary for the value-added process of a product in a company. In simple terms, anything that does not add value is waste. (Edward Utama et al., 2019) In essence, in the production process, a company must encounter waste. Taichi Ohno in who is known as the designer of Just in Time in Toyota's production system

distinguishes seven types of waste or waste (Heizer & Render, 2015) Waste or waste generally consists of seven types, namely overproduction, waiting, motion, transportation, unnecessary processes, inventory, and defetcs (Novitasari & Iftadi, 2020).

Islamic law allows its people to enjoy worldly goodness as long as it does not cross the limits of reasonableness. Like not doing *tabdzir* and israf. *Tabdzir* means squandering wealth without any benefit for the action. In addition, a Muslim is also required to avoid tabzir and israf behavior. In consuming, a Muslim is also required to maintain a balance in the management of his wealth between consumption. So that the consumption activities carried out are not only worldly oriented but also ukhrawi (Rohim & Priyatno, 2021).When someone buys something more than his needs then at that time he can be categorized as doing *tabdzir*. Islam also prohibits a Muslim from spending his wealth and enjoying this worldly life extravagantly. This prohibition is quite reasonable. *Tabdzir* can cause cash to shrink quickly (Masrur, 2017).

C. METHOD

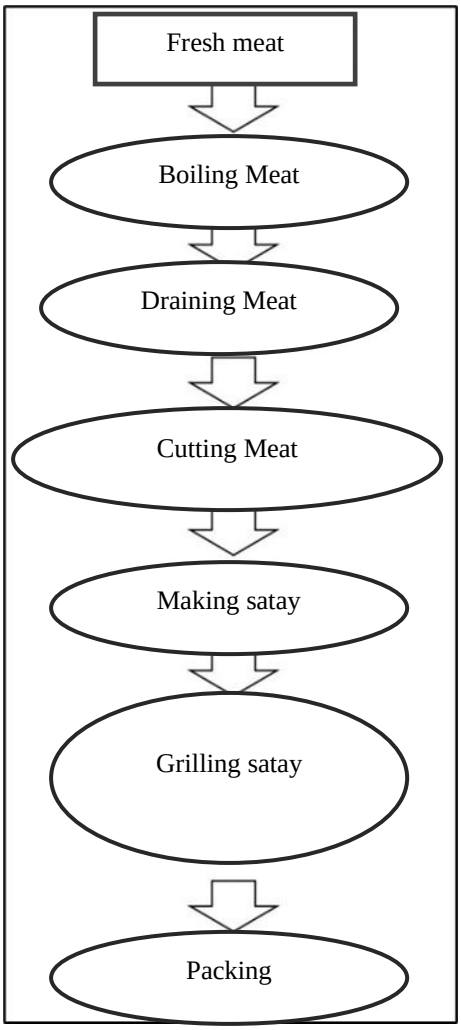
This research uses qualitative research by using descriptive analysis design. This design research is research to find the facts with the correct interpretation (Nurdin & Hartati, 2019). The research method includes methods of selecting and collecting data, measuring and operationally defining variables, and methods of data analysis. The data used in this study were obtained from primary and secondary data. Primary data was obtained through direct observation in the field, interviews, and discussions with production division employees at Fadila Aqiqah Tasikmalaya. Meanwhile, secondary data was obtained from documents and company records related to the production process and related research sources to support this research. The first stage that is carried out after the data search process is the preparation of Value Stream Mapping (VSM). Value Stream Mapping is useful for viewing the flow of physical processes and material information in the production process (Yansen & Bendatu, 2013).

D. RESULTS AND DISCUSSION

Based on the research results, the production process flow that takes the longest time in the whole process is the satay production process. In the first process, the lamb

that had been slaughtered the previous day was removed from the refrigerator where the meat was stored. Then the fresh lamb meat is boiled in a pan with the intention to reduce the smell for 20 minutes. After that the meat is drained for 10 minutes. After it's cool enough, the meat is cut into small sizes to make satay for 60 minutes. After being cut, the meat is jabbed for 90 minutes. After being jabbed, the meat is then grilled or satay for 90 minutes. After that, the meat that has become satay is wrapped/packed in plastic for 90 minutes. All these processes, the authors summarize in the form of flowcharts as follows:

Picture 1. Satay Production Process as One of Fadhila Aqiqah Product



Source: Processed by author, 2022

1. Value Stream Mapping (VSM)

Sales of Fadhila Aqiqah Tasikmalaya for boxed rice products are considered to be the most sought after by consumers. Mr. Agus as the owner of Fadhila Aqiqah

revealed that sales of rice box products with type F lamb are the most popular products with 50 boxes of contents. In the explanation there are also 4 satay in each box, which means that during the production process there are 200 satays that must be burned/processed.

Based on the results of interviews with the owner, the process of making satay is the longest process. Therefore, the author makes the production process flow for making satay into the form of value stream mapping because this process has more potential for waste to occur. With the data that has been obtained, there are several steps or stages of working on the satay production process at Fadhila Aqiqah which can be concluded in the following table:

Table 1. List of Satay Production Process

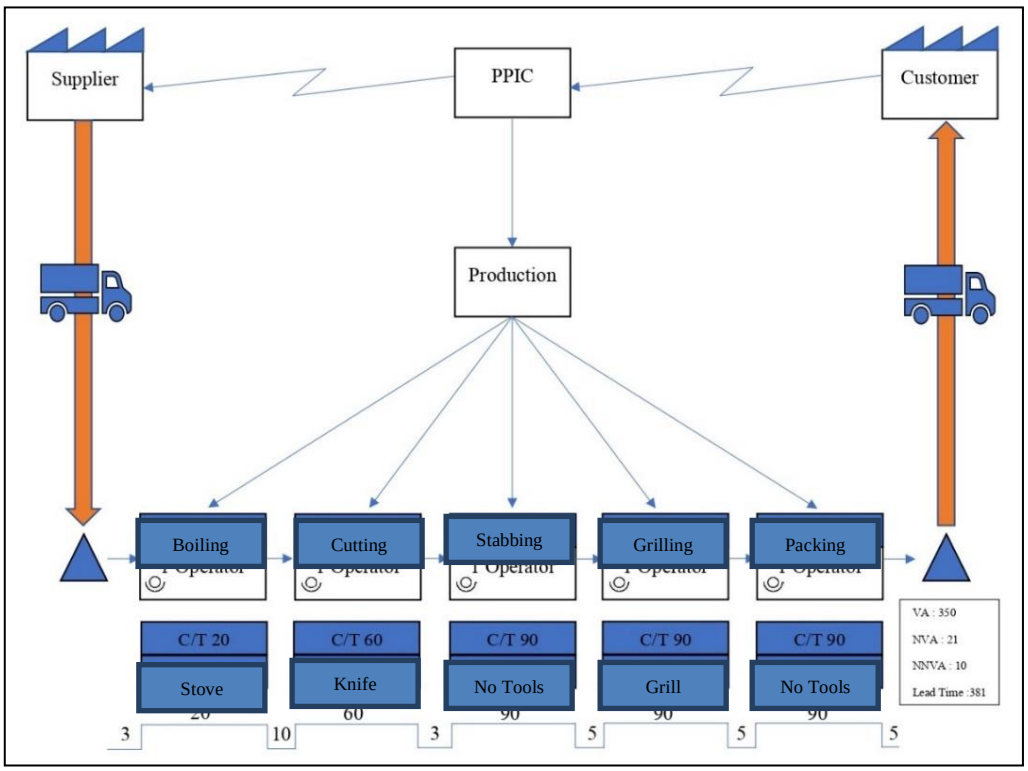
No.	Activity	Time (Minute)	Category
1.	Meat issued from refrigerator	3	NVA
2.	boiling meat	20	VA
3.	Meat drained	10	NNVA
4.	Cutting meat for sate	60	VA
5.	Meat moved for stabbed	3	NVA
6.	stabbing satay meat	90	VA
7.	Meat moved for burnt / skewered	5	NVA
8.	Meat grilled / satay	90	VA
9.	Meat moved for packed	5	NVA
10.	Meat packing / finishing	90	VA
11.	Product moved to car transport	5	NVA

Source: Processed by author, 2022

The table shows the processing time data for Fadhila Aqiqah's satay production process or the Cycle Time data needed to complete the satay production process. The table divides Fadhila Aqiqah's satay production activities into 3 categories, these categories are Value Added (VA) or activities that add value, Non Value Added (NVA) or activities that do not add value, and Necessary Non Value Added (NNVA) or activities that necessary but not adding value. The data obtained from the table will then be processed using value stream mapping (VSM) to find out activities/ work that have added value or those that do not have added value so that it can be used to identify waste or waste that occurs.

The data that is processed into the value stream mapping will then identify the waste that occurs in each production process, which then the data will be used as the basis for solving the waste problem that occurs in the satay production process Fadhila Aqiqah Tasikmalaya.

Picture 2. Value Stream Mapping (VSM) of Satay Production



Source: Processed by author, 2022

The value stream mapping table above also provides an illustration of the time for moving goods which is considered quite long, while the distance between work stations is quite close. This will cause a form of waste motion because one employee is not enough to transfer goods from one work station to another. The addition of employees in transferring goods or placing appropriate employees, for example the transfer of male employees to transport goods in process from one work station to another, will be able to minimize the occurrence of waste motion so that this activity can be more efficient.

In the stabbing process, it appears that there is a very long time, this causes a waiting activity at the next work station. The problem is known because the number of employees who work on the process is considered less. Based on the results of the author's observations in the field, it shows that there is a shortage of employees in the process which results in the length of work. With the addition of 2 employees in the process, it is expected to be able to reduce waiting time at the next work station. Due to the various forms of ordering and in large quantities, the addition of manpower will be a

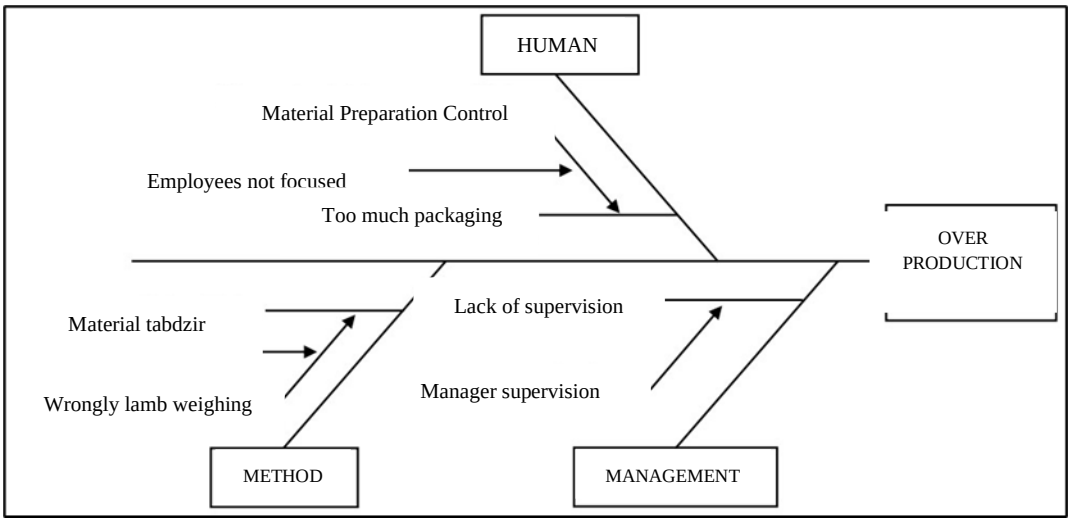
good alternative to reduce waste waiting. So that it can be a solution to the shortage of teams or human resources that are part of the input to the production process or company operations.

The last process that takes a long time is the packing or finishing process. This is due to the absence of the use of certain technologies to make it easier to wrap the satay which is considered to slow down the packing process, because in the process of wrapping the satay the company uses wax to glue the plastic that will wrap the satay, while this actually slows down the flow of the production process. So the time needed in the packaging process is considered to be quite long. By using other technologies such as the use of plastic clips or ziplock and the use of a sealer machine, it will be more efficient in processing time and will make it easier for employees to do it. In addition, product hygiene will be better maintained.

2. Fishbone Diagram

After distributing the questionnaires to several employees, the data obtained will then be summed up for each existing waste or *tabdzir* category, and the data results will be obtained which show waste in the overproduction, waiting, and defect sections. Furthermore, the data will be analyzed using a fishbone diagram which will then look for the root causes of the occurrence of the waste and solve problems for each *tabdzir* or waste that occurs.

Picture 3. Fishbone Diagram Regarding *Tabdzir* of Overproduction



Source: Processed by author, 2022

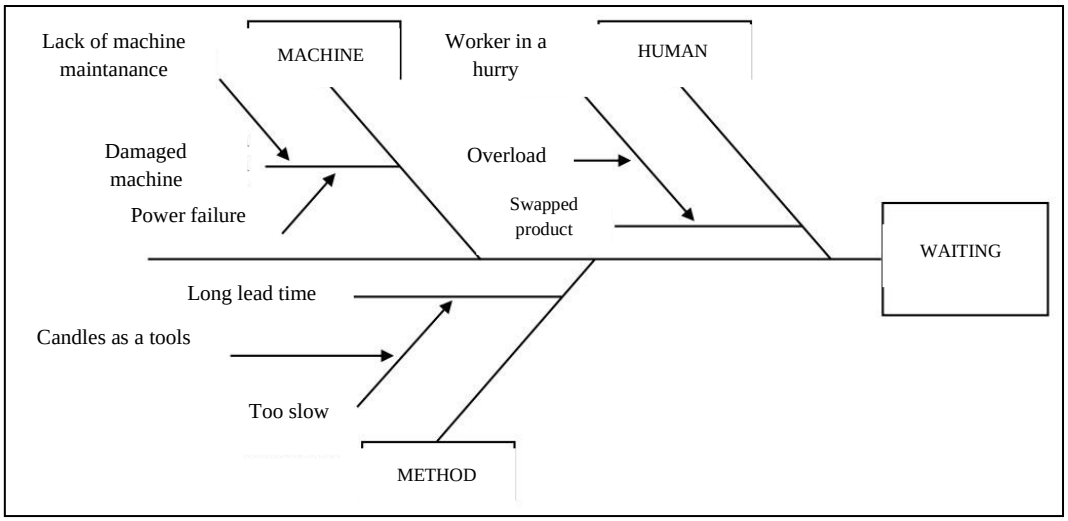
Based on the fishbone diagram above, there are several root causes for overproduction. The first cause arises from the human factor, the root cause of this waste is that there are employees who are not careful in calculating the number of orders, this problem causes a miscalculation so that the number of boxes or existing orders experiences excess or overproduction. Errors in the human factor can be avoided or minimized with visual management which always checks the workmanship is running properly or before the product is ready to be shipped. Based on the results of the interviews, it showed that there were deficiencies in terms of supervision from the office for goods or products that wanted to be distributed to consumers which caused this problem to arise. Visual management can be a tool or also as a guide or planning or planning that is done before the activity takes place. Even though there is supervision which is part of the management function, namely planning, organizing, actuating, controlling. Namely, is the last point as the basis for supervision and evaluation related to the company's operational activities. When all these functions are performed, efficiency should be achieved so that overproduction can be minimized.

The second cause comes from the method factor, the use of calculating methods without using tools causes inaccurate predictions on the weight of sheep, so that more meat is distributed to the kitchen and causes overproduction. Although the actual meat is the buyer's property and it is not the company's property, so the company has the mandate to complete the production process through the process of cooking all existing meat. Things like this include overproduction, but the waste is not considered bad waste. The use of measuring tools or scales for animals will make it easier to solve problems like this, at least to minimize the occurrence of longer work.

The third factor is management. The cause of overproduction on management factors comes from the lack of managers who supervise directly in the field so that supervision of the production process does not run smoothly. Based on the results of the questionnaire to employees, it was found that the employees admitted that there was supervision in the field, but this was considered less than optimal, because the managers who came were not always in the field to supervise. This is because the jobdesc manager who is supposed to oversee the production process is diverted to help a work station that lacks employees. So the right placement of employees or the addition of employees in the production process which is considered long will be able to reduce

waste like this and it is hoped that the jobdesc manager will oversee the production process to be more effective.

Picture 4. Fishbone Diagram Regarding *Tabdzir* of Waiting/ Lead Time



Source: Processed by author, 2022

Based on the fishbone diagram, it describes the problems that arise from 3 factors. The first factor is derived from the human factor. The root of the problem that arises from this factor is that there are many orders that cause employees to rush in completing them. So the lack of accuracy due to human error. However, this actually raises a problem that causes some products to be mixed up so that repairs must be carried out which takes a long time, which makes this waste waiting happen. Giving notes or notes on the workspace wall will be able to remind employees of the accuracy of the work activities that are being carried out and with the correct amount, and the usefulness of notes also makes employees feel not panicked by the time deadline notes listed on the notes or notes. The existence of a deadline can be a reminder of the work to be done. So that in the end the work will be more efficient and minimize the occurrence of waste waiting.

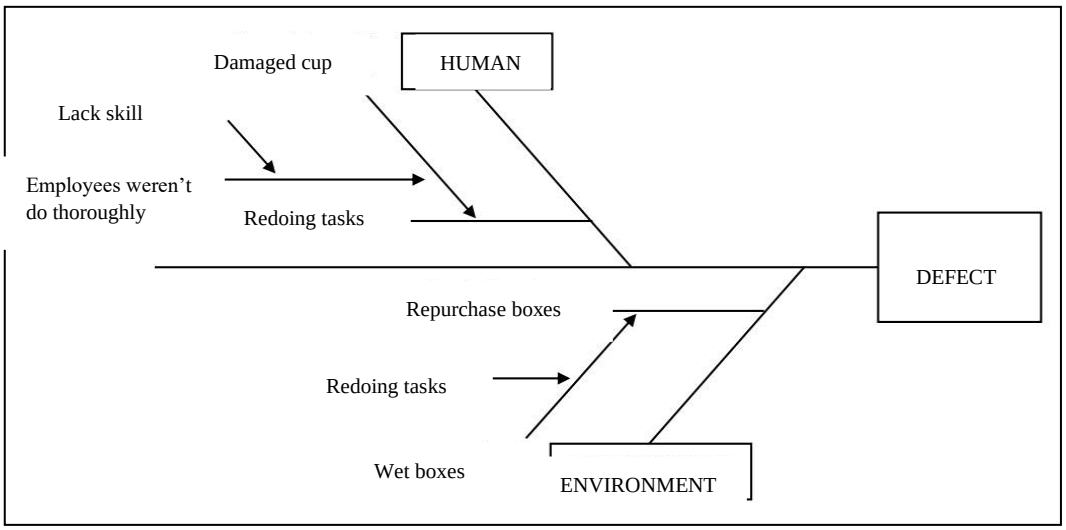
The second factor that causes waste waiting is the engine factor. The root of the problem from this engine factor arises from two things, namely machines that are rarely serviced and a power outage that causes the machine to experience disturbances. This cup sealer machine experienced problems during work due to frequent use and rarely serviced tools. Repairs to the machine with a scale of once a month will be able to minimize the occurrence of damage when working on the product. This is an important

point because maintenance is part of production efficiency. Machine maintenance can affect the way it works and the age of the machine or equipment used in the production process. Not only in the form of waste in the form of waiting, but the long-term effect is that it can affect cash flow or costs that must be incurred by the company due to replacing new machines.

Meanwhile, the problems that arise during a power outage that makes the machine unusable can be solved in other ways. The use of plastic to replace cup sealers that cannot be used is not a bad thing, because this is a simple and easy alternative to apply when urgent matters like this occur. The use of plastic will also cut the processing time shorter if you have to wait for the electric current to turn back on.

The last factor that causes waste waiting is the method factor. The root of this problem is the use of wax to glue the satay plastic wrap together. The use of wax to glue the satay plastic wrap can cause the plastic to break easily, so employees in doing this work will be very careful to maintain product quality which makes the process longer and causes waiting at the next work station. In addition, another solution is to use plastic clips which are quite efficient, because the motion needed is not too much and the time tends to be short and their use is more practical because of the many alternative sizes and materials of these plastic clips. Even in terms of costs, the prices tend to be affordable even hygiene and product safety will be guaranteed.

Picture 5. Fishbone Diagram Regarding Waste Defect



Source: Processed by author, 2022

From the type of waste that occurs in the production process, it can be seen that the type of waste Defect is the type of waste that most often occurs in the production process (Kurniawan & Hariastuti, 2020). Based on the fishbone diagram above, waste defects appear caused by 2 factors. The first factor is the human factor. The root of the problem of this factor is that there are employees who are inexperienced in operating the cup sealer machine which results in employees being less thorough and the curry cup is damaged, so it must be reworked.

Provision of work operational standards or SOPs for new employees will be an alternative in overcoming the occurrence of product defects. Human errors that occur in employees usually come from lack of experience and giving unclear instructions. Therefore, sticking SOPs or machine working instructions on the work wall will be able to make it easier for employees to complete the product properly and will also reduce the occurrence of defects in the product.

The second factor that causes defects is environmental factors. Wet warehouse conditions accompanied by a leaky roof caused the box or cardboard to become wet and damaged, so the company had to re-purchase the box. Repairs to the warehouse or providing a base on a cardboard box will be an alternative in solving this problem. Provision of a base with a pile of wood can keep the quality of the box dry and good and can reduce the occurrence of wet damage caused by puddles of rain.

In minimizing waste, the company can be said to carry out the principle of Islamic economy, namely minimizing *tabdzir*, like the Saf'Fana Furniture Store has implemented it Islamic principles (avoiding *tabdzir*) by making improvements to defective products so that it can be reused, while while waiting for the raw material to be used to produce other goods. However, this company is included in ishraf with the occurrence of overproduction resulting in accumulation of goods (Afrianty & Verani, 2021). It is found out that for food industry, the readiness of the integrated system is still not as strong as the automotive industry with high implementation of prompt and effective handling of their customer complaint/feedback as well as practicing high assurance of continuously improved qualities (Salleh et al., 2021). Significant gains are obtained in Portuguese food and beverage companies and, more importantly, it instills a continuous improvement culture and increases production flexibility while reducing lead times.(Manzouri et al., 2015).

Based on this understanding, Allah Swt. says in Surah Al-Nahl (16): 10-12) Allah commands human beings to work hard to utilize all resources as optimally as possible to meet their needs. The Qur'an has also provided various alternatives to humans as to make changes for the better by exploring and using unlimited natural resources in the world through managing their capital, abilities, and tendencies in the production process.

E. CONCLUSION

Based on the results of the research and the results of the analysis regarding the analysis of the lean manufacturing approach to minimize *tabdzir* or waste in the production process of Fadhila Aqiqah Tasikmalaya. It can be concluded that the results displayed on the value stream mapping show that there is a long processing time on several production lines or work stations, namely in the stabbing and packing processes. All waste in the process creates a waiting waste which results in waiting activities at the next work station. The use of the right technology and the addition of employees will be able to reduce the occurrence of waste waiting and increase the efficiency of the production process. The results of the value stream mapping also show that there is a long time for each transfer of goods, while the distance between work stations is not far. This gives rise to a waste motion. This can be minimized by placing appropriate employees such as the placement of male employees to move goods from one work station to another.

The results of the analysis using fishbone diagrams show that there are 3 wastes or *tabdzir* based on data taken through interviews with owners and questionnaires to employees. Waste that appears based on this analysis is the presence of waste overproduction, waiting, and defects. The problem of overproduction can be minimized by providing visual management, using animal weight measurement tools, and increasing the number of employees. Meanwhile, the problem of waste waiting can be anticipated by giving notes, repairing machines, and using other methods in the packaging process. Problems with waste defects can be minimized by providing SOPs and repairs to the warehouse or providing wooden mats to the warehouse.

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