

CHAPTER 1

INTRODUCTION

1.1. Background

Public interest in furniture products to meet household needs influences the development of the furniture industry. According to the Ministry of Industry (2021), there are approximately 1.114 companies in the furniture sector spread throughout Indonesia, ranging from small companies to large-scale companies. Opportunities for the development of furniture industry need supports form the provision of good production factors. For this reason, furniture industry has the potential to provide domestic natural resources to be used as raw materials for making furniture. Apart from that, this industry must also be supported by a production system and workforce to meet people's needs for furniture products.

One of the companies operating in the furniture sector is PT Furnindo Inovasi Teknologi that produces several variations of sofas and complements. The company owned by Mrs. Latifa Fitriyani is located on Jl. Laksda Adisucipto No. 199, Caturtunggal, Sleman, Yogyakarta, with a total of 19 production workers, which are consist of: a worker for chopping and splitting the wood, two workers for frame assembling, a worker for making the underframe, three workers for pillow making that also help to clean the floor, four workers for clamp and foam installation, four workers for cover & finishing, three workers for sewing department, and a worker for cutting the fabric. The building area owned by the company is 372 m² with a total of two floors. The first floor is used for the production area of clamp and sling installation, pillow making, cover and finishing, and sewing. Meanwhile the second floor is currently used for the chopping and splitting wood, making the underframe, and assembling the frame. In the cover & finishing there are some processes included such as gluing, cutting the excess foam, and assembling the sofa cover. The remaining foam resulting from the cover & finishing section will be turned into smaller pieces to be used as a pillow filler.

Apart from the production areas, there is also a storage area for raw materials, auxiliary material, finished products, production administration work area, and storage for documents. This company also has a showroom and warehouse located at Jl. Sorogenen I, Yogyakarta. This warehouse section also includes the packing and shipping departments. However, this research will be focused on production building.

PT Furnindo has two types of production process strategies, i.e., MTO (Make-to-Order) and MTS (Make-to-Stock). The MTO strategy is used when a customer order is received, meanwhile the MTS strategy is used to anticipate the customer demand where they produce the products and store them in their showroom with other brands from another company. Moreover, PT Furnindo processes two types of orders consisting of regular products and custom products for MTO strategy, but only regular products for MTS strategy. Regular are products that have been designed by the company and customers can choose the design through the catalog, while custom products are products that are designed according to the desires of the customers. One unit sofa currently is able to be produced within one month.

1.2. Problem Exploration

Observations were carried out directly at PT Furnindo Inovasi Teknologi to understand the business processes and production systems implemented at the company. The production system processes starts when the raw materials arrive at the parking area, stored in their storage area: foams in the foam storage (at the top/ceiling), woods in the cutting department. In the cutting department, the wood is measured and cut to the desired size. The woods are then transferred to the cutting frame assembling process where the woods are assembled into the sofa frames. In this process, they also cut the excess wood that resulting scrap. After that, the frame is brought to the cover and finishing department, where in this process the foam is glued to the frame. In this process, they also cut the excess foam and resulting scrap. The foam scrap then bought to the pillow department and being shredded using foam shredding machine. The tiny pieces of foam are mixed with cotton type filling. In other side, the sewing department is measuring the fabric and cut it to the size of sofa cover and pillow cover, then sew and transferred them to the cover and finishing department, and pillow department. After those departments receive the cover, they install the cover and do the finishing process. The finished product is then placed in the finished product area, where in this area, the quality checking process is conducted.

Apart from that, interviews with stakeholders were also conducted to find out the role of each stakeholder and validate their requests. Some of the stakeholders interviewed were the owner, head of production, production administrator, **workers in each process**, and the driver. Based on the explanation from the owner, in many

cases, the owner receives complaints that the production processes are often unable to complete all orders on time. Therefore, the owner wants a solution to reduce lateness in production, so that the order fulfillment can be carried out on time. However, the owner does not have any intention to move the production process to a new location. Meanwhile, the head of production also complained about the increasing number of orders, but production could not meet demand, and space for the production area was limited, so he wants additional capacity to increase the production, as well as a wider new workplace location for them.

Furthermore, production workers also have complaints regarding the large number of orders, while the number of workers is not proportional to the number of orders that must be completed, so it is hoped that there will be an improvement in production system, so that workers can complete the order effectively and efficiently. Apart from that, the production administrator is responsible for ordering and recording materials and orders every week. These tasks are performed by using spreadsheets with a system he designed. The production administrator admits that there is no such a complex problem that must be solved from his work. Then, the driver that is responsible for transporting the finished goods to the showroom, that is not owned by the company, but by the showroom (sister brand), only if the product is produced and as long as they are available. There are no complicated problems regarding transportation or delivery, it can still be handled well. Based on these statements, this research focuses on the stakeholders who are experiencing problems that need to be solved.

It is known that the average demand from customers in the last four periods is 120 per month, and in one day a maximum of nine products can be produced for all categories. Table 1.1 shows the category of products in PT FIT.

Table 1.1. Product Categories in PT FIT

Category	Product	Category	Product
Sofa	Shizu	Sofa	Bench
	Chio		Luxury
	Kanaba		Crystal
	Sasmaya		Custom
	Nagari	Complement	Bean Bag
	Hamada		Bantal Peluk
	Aiko		Floor Sheet
	Satya		Stool
	Kobe		Dudukan

Table 1.1. Continuation

Category	Product	Category	Product
Sofa	Mozza	Complement	Puff
	Hibiki		Cover Bean Bag
	Fuka		Kantong Remot
	Naomi		Kaki Kayu

In July 2023, there were demands from customers for 89 units of sofa. However, by the end of July, the number of orders that could be fulfilled was only 77 units. Unfulfilled demand must then be produced in August 2023. This caused orders for production to pile up in that month and must be completed immediately, considering that they also received new orders in August. This company's production system prioritizes based on order time, so that every month there will be a debt production that must be resolved. Before 2023, one regular sofa that customer ordered was completed within three to four days after the company received the order, but since July 2023 a unit has needed a month to complete.

Based on the head of production statement, the production floor area of 300 m² in the first floor is used by 5 departments with worktable of 2.7 m², and other storage makes it difficult for workers to move around. On top of that, the production process area, production administration area, document archive, machines, raw materials and auxiliary materials, unfinished products, and finished products are all located in one room. It can be seen in Figure 1.1 that the width of the remaining aisle is around 50 cm from 89 cm after being occupied by several frames. The pile of frames in the aisle is caused by the foam installation process that is not completed yet, so the frames experienced a waiting time. Placing frames like that certainly slows down flow production, where when there are two or more materials or products that will flow through this route, then one of those products must go first while the other product must wait for it to be finished. Also, Figure 1.2 that shows the working area in the cover and finishing department, where they use seven tables and in one aisle can only be use by a worker due to the narrow aisle between the tables.



Figure 1.1. Aisle Width between Sewing Department and Cover & Finishing Department

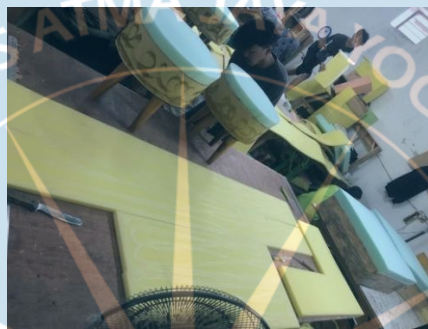


Figure 1.2. Working Area in the Cover & Finishing Dept. with Narrow Aisle between Tables

Apart from that, there are some materials that are not placed in one proper area, and some of them are piled with other materials. One example is the foam storage which should be stored at the top in a maximum of five stacks, but now they are placed in another section. The empty area in the foam storage at the top is then filled by pillows. Apart from that, the lack of inventory for document placement causes archival documents to be mixed on the same shelf with other auxiliary materials.



Figure 1.3. Foam Storage

From Figure 1.3 can be seen that there are still some spaces that can be used to store the foams, while in Figure 1.4 shows some foams that are placed at the finished product section. However, instead of using the destined spaces, the foams are stored at the finished product section. This situation results in waste where workers need more time and distance to pick up the foam in the finished product area. The time used affects other processes, causing lead time to increase. Besides, there are some finished products that have not been delivered to the customer right after the quality control process is finished. This caused the finished products to be covered by dust, especially because the area is at the entrance section which is near to the road where the vehicles passed by all the time. Due to this situation, the workers need more activities and time to clean up the sofa before being sent to the customer.



Figure 1.4. Foam that being Stored at Finished Product Section

Figure 1.5 shows the pillow making area and it can be seen that at the top of the area, there is a foam storage being filled with just a few foams and the remaining space is used to store the pillow.



Figure 1.5. Pillows are Stored in Foam Storage

Another situation at the company is shown in Figure 1.6, where the auxiliary materials and the archive documents are stored on the same shelves. The production administrative staff stated that it is hard to look for the required documents due to the lack of filing. This also results in a waste of time looking for the document.



Figure 1.6. Shelves for Auxiliary Materials and Archive Documents

Based on the problems mentioned, there are several wastes identified related to inventory, transportation, and waiting. Inventory waste occurs when areas are not utilized properly, as explained in the finished product area and material storage area. Moreover, transportation waste occurs when you must move products that have defects from the finished product area to the cover and finishing department. Lastly, waiting waste happens when products have to wait for each other to pass through the aisle.

1.3. Problem Statement

The problem faced by PT Furnindo Inovasi Teknologi is the inability of the workers to finish the customer order on time that affect products delivered to the customer not in the specified time.

1.4. Research Objective

Based on the problem statement, the purpose of this research is to propose a solution that can be applied in PT Furnindo Inovasi Teknologi to reduce lateness in production process minimum 10% in Mei 2024. This value is determined based

on discussions by considering previous research that have a significant improvement in more than 10%.

1.5. Research Limitation'

The limitations of this research are:

- a. depending on the circumstances, the solution provided might differ for other objects,
- b. this research was limited on the production areas,
- c. the total area of production was fixed.
- d. data collection process was conducted in February until March 2024.

