CHAPTER 1
INTRODUCTION

1.1 Background

PT. X was established in 2015 and is located in Kemudo, Prambanan District, Klaten Regency, Central Java. The company has three branches, each producing different products. For example, the branch that located in Bantul focuses on processing traditional products from the local community in Bantul, which are then distributed to various provinces or even other countries. PT. X specializes in producing paper bags and gift boxes commonly used as shopping bags in supermarkets.

The company operates under the supervision of XYZ GROUP, which focuses on renewed and sustainable innovation with extensive experience in the publishing and packaging industries. XYZ GROUP acts as a consultant and vendor for several major global brands, especially the three main clients of PT. X. The XYZ GROUP serves as a third-party supervisor for the entire process, including the delivery of raw materials, the production process, and the shipment of finished products from PT. X.

These three clients have partnered with PT. X, which produce several types of products, with the product classification determined by the dimensions of the items to be made. The following Table 1.1 shows the product classification based on the dimensions agreed upon by Client T.

Table 1.1 Product classification (client T)

Num.	Classification	Dimension (cm)	Flat Width (cm)
1	Treat Bag	12.7x15.24x7.62	22.52
2	Petite Cub Bag	12.7x15.88x7.62	23.5
3	Petite Vogue Bag	15.88x7.62x12.7	20.32
4	JR Tote	13.34x8.26x21.27	29.5

Table 1.1 Product classification (client T) continuation

Num.	Classification	Dimension (cm)	Flat Width (cm)
5	Cub Bag	19.68x12.06x24.77	**35.5**
6	Large Cub Bag	25.4x12.7x32.38	**45**
7	Vogue Bag	40.64x15.24x30.48	**42.5**
8	Large Vogue Bag	32.38x25.4x12.7	**38.1**
9	Square Bag	38.1x15.24x38.1	**53.5**
10	Large Square Bag	38.1x38.1xx15.24	**53.5**
11	Wine Bag	12.7x10.16x33.02	**43.2**
12	XL Vogue Bag	40.64x15.24x48.9	**42.5**
13	Jumbo Bag	42.55x60.33x22.23	**62.5**
14	Collosal	43.18x30.48x60.96	**91.4**

Client T has a total of 14 types of paper bag products managed by PT. X. These products are classified based on the shape requested by the client, which has been agreed upon by XYZ Group for production at PT. X. The following Table 1.2 shows the product classification based on the dimensions agreed upon by Client H.

Table 1.2 Product classification (client H)

Num.	Classification	Dimension (cm)	Flat Width (cm)
1	Small	15.24x20.02x8.89	26
2	Favor Shack	13.34x26.37x8.59	32
3	Medium	19.69x24.77x12.07	34
4	Large	25.40x33.02x12.70	42.7

Client H has a total of 4 types of paper bag products managed by PT. X. These products are classified based on the shape requested by the client, which has been agreed upon by XYZ Group for production at PT. X. The following Table 1.3 shows the product classification based on the dimensions agreed upon by Client AG.

Table 1.3 Product classification (client AG)

Num.	Classification	Dimension (cm)	Flat Width (cm)
1	Small	15.24x8.89x20	26.5
2	Lunch Shack	13.34x8.57x26.35	32.5
3	Medium	19.69x12.07x24.77	34
4	Large	24.40x12.70x33.02	42
5	Jumbo	38.10x15.24x38.10	48

At PT. X, the production system is Make-To-Order (MTO) where the production process will begin if the company receives a specific order from the customer. In this system, the products produced cannot be stored as stock, the finished products will be sent to the client according to the specified schedule. The client must also send specific materials or according to the desired product standards to the company in the form of paper rolls which will later be processed by the company into paper bags.

Client AG has proposed a new product that classified as “Large” paper bag. The product has just been approved for production by the superiors, namely the Plant Manager and the PPIC. This new product does not yet have a production plan, meaning there is no assembly line design or a calculation of the number of employees needed to manufacture this paper bag. This product has a different process in its assembly line, making the assembly line not the same as that of similar products. One of the processes involves a new technique, namely the panda gluing process, which requires a high level of precision and can be time-consuming for those who are not yet accustomed to it. In this process, only a brush is provided as the tool to apply glue onto the surface of the paper bag, without the assistance of any other equipment. Another new process is the installation of the panda element on the paper bag, which is assisted by a tool called a jig. This jig functions to secure the panda element pieces in place, ensuring they do not shift from the intended position, while also reducing the potential for product damage (minimizing defective products). Several new work elements have raised concerns across departments regarding the production target of the new paper bag product, particularly within the PPIC department. The PPIC department expresses concern that these work elements may create bottlenecks during the production process, potentially disrupting assembly line productivity and ultimately leading to failure in achieving the production target.

At the production department, there are several stakeholders who are responsible into making the production plan. The stakeholders who are responsible include Production Planning and Inventory Control (PPIC) and (Process Engineering) PE. PPIC is responsible for making the overall production design of raw materials into several product parts that will later be assembled on the assembly line. The production planning of a finished product (production target) that is ready to use will be distributed in the Daily Work Instruction (DWI) format to each production section to start production. While PE is responsible for supervising the field section

of the production system, observing each employee who carries out the process, recording deficiencies in production planning, correcting these deficiencies and proposing improvements to the PPIC to increase production efficiency and effectiveness.

The next stakeholders are the assembly line leaders who are responsible for reporting daily production results in the Daily Summary of Production Results (RHHP) format to the Production Planning and Inventory Control (PPIC) and (Process Engineering) PE which will later be processed and summarized whether the planning implemented can meet daily targets effectively and efficiently or not. In addition, the Assembly line leader also has the right to submit opinions on the selection of employees on the assembly line they lead. The selection of employees by the Assembly line leader is usually biased or only based on the experience of several employees. Submission of employee replacement is usually done by the Assembly line leader if the employees cannot meet the production target per shift.

1.2 Problem Exploration

At the production department, there are several stakeholders who are responsible. The stakeholders who are responsible include PPIC and PE (Process Engineering).. The production planning of a finished product that is ready to use will be distributed in the IKH (*Instruksi Kerja Harian* or Daily Work Instruction) format to each production section to start production. While PE is responsible for supervising the field section of the production system, observing each employee who carries out the process, recording deficiencies in production planning, correcting these deficiencies and proposing improvements to PPIC to increase production efficiency and effectiveness.

The next stakeholders are the Assembly line leader who is responsible for reporting daily production results in the RHHP format to the PPIC and PE which will later be processed and summarized whether the planning implemented can meet daily targets effectively and efficiently or not. In addition, the Assembly line leader also has the right to submit opinions on the selection of employees on the assembly line he leads. The selection of employees by the Assembly line leader is usually biased or only based on the experience of several employees. Submission of employee replacement is usually done by the Assembly line leader if the employees cannot meet the production target per shift.

Interviews with each stakeholder were conducted to find out what obstacles were experienced in the making of Paper bag Panda. All stakeholders had the same complaint, namely the problem of an inefficient assembly line, which was suspected of being the cause of the production target not being achieved. The following is a summary of the results of the author's interviews with stakeholders.

Table 1.4 Interview summary

Stakeholders	Problem	Needs
PPIC Leader	Panda paper bag production target cannot be met	Production targets must be met at least 90%
Production Engineering Staff	There is no system in place to select employees based on their skills	Selection system that can be applied for the next similar problems
Assembly Line Leader	The overly biased selection of employees resulted in a uneven assembly line	Brand new method for selecting assembly workers
Assembly Workers	Cannot perform the tasks assigned (do not match skills)	New schedule for production trial
HR Leader	It's difficult to force employees to work outside of their assigned schedules.	New Standard Operating Procedure (SOP)
Quality Control Leader	Too many defects quantity for this product	Minimizing manufacturing defects on the assembly line

Based on Table 1.4 the PPIC and PE parties are interrelated and work together with each other by providing continuous feedback so that the production process runs optimally. The PPIC Department has expressed concern regarding one of AG products, namely the panda paper bag, which has failed to meet its production target. According to the department, production scheduling has been carefully planned to ensure that at least 90% of the target output can be achieved. However, actual shop-floor performance indicates that the production target remains unattainable despite these scheduling efforts. PE department is a representative from the PPIC party to observe and analyse each existing employee such as skill rating, task time, downtime, idle time, machine delay, and so on to then be processed and reported to the PPIC party to be used as a reference for the next planning. The Production Engineering (PE) Department has expressed concern that the PPIC Department does not adequately consider employee competencies

when selecting and assigning workers to production processes. According to the PE Department, the absence of skill-based employee assignment may contribute to the inability to achieve the desired production targets. Assembly line leader having the responsibility to select employees every day. Figure 1.1 shows the illustration of paper bag panda.



Figure 1.1 Illustration of paper bag panda

Employee selection is based on the employee's own experience, meaning that if a product has a complicated process or has many targets, the assembly line leader will choose experienced employees with the aim of minimizing the number of defective products and accelerating production so that production targets per shift or per day can be met. This consideration will be given to PPIC and PE for consideration in selecting employees. The complaint faced by the Assembly line leader is the absence of a key performance benchmark or skill rating benchmark for each process so that it is common to find that the A-Z assembly line does not meet production targets. Assembly workers on the assembly line are the stakeholders who are most responsible for meeting production targets per shift. The problem faced by employees on the assembly line is the absence of standard time or time limits for a process so that the process is carried out without a process SOP in the form of a benchmark for the process time itself. Human Resource (HR) responsible for scheduling all employees who work. Work with PPIC to select the right employees for the production process every day. The HR department has expressed concerns that Assembly line leaders arbitrarily reassign and remove employees from the scheduled assembly line, causing HR to exert additional effort to readjust the schedules of employees who are suddenly removed or reassigned by the Assembly line leaders. Quality Control (QC) department reported numerous

defects in the Panda paper bag products. The high number of defective items has been one of the factors contributing to the failure to meet the production target for these products. Based on the interview conducted with all stakeholders involved, it was concluded that the main problem with the production of this product is the production targets cannot be met during the production.

Based on the trial run that has been conducted with a trial run interval of 1 shift, it was found that the assembly line used during the trial produced products that were far from the production target per shift of Panda paper bags. The production target per shift that has been determined by the PPIC is 2100 units per shift which is obtained from the reduction of the monthly schedule from the Panda paper bag production schedule. This could be caused by several factors, namely the assembly line that was arranged for the trial run only considered line efficiency and did not consider other aspects.

Production targets are one of the main indicators used to evaluate the performance of the production process. Under initial conditions, the company set a production target of 2100 units per shift. This target was determined based on production planning calculations aimed at meeting output requirements within a specific period. However, based on actual data obtained from the field, the production target could not be consistently achieved across all production shifts.

The observation results indicate that the actual output per shift was below the established target. This condition occurred across all shifts, including the morning, afternoon, and night shifts. The failure to achieve the production target per shift indicates a discrepancy between the planned target and the actual capability of the production system. The following Table 1.5 shows the actual results for each shift.

Table 1.5 Actual production result dated December 14, 2025

Period	Production Target	Actual Result
SHIFT 1	2100	1470
SHIFT 2	2100	1428
SHIFT 3	2100	1197

Based on the observation results, it was found that each shift was unable to meet the predetermined production target. The inability of each shift to achieve the

production target needs to be further investigated to identify the root causes underlying this issue.

Divergence of interests exists between two primary stakeholders, namely the PPIC (Production Planning and Inventory Control) department and the assembly line employees. As the first stakeholder, PPIC is responsible for ensuring that the production process operates effectively, efficiently, and in accordance with the company's quality standards. The assembly line is expected to be staffed by employees who fully meet the required product assembly competency standards. The PPIC department expects to obtain appropriately qualified employees for assignment to each assembly process of the Panda paper bag product. Employee rescheduling may be carried out if required to achieve production targets. On the other hand, the assembly line employees, as the second stakeholder, have different interests. A decrease in working hours may consequently result in reduced income and increased uncertainty regarding job continuity. This divergence of interests creates the potential for conflict PPIC focuses on improving the quality and productivity of the assembly line, whereas assembly leader prioritizes job security and income stability. The conflict between the PPIC department and employees stems from concerns regarding work assignment opportunities. Employee compensation depends on the number of assigned shifts, leading to concerns that fewer assignments may follow implementation of the proposed improvement. Employees anticipate replacement by colleagues with higher skill levels and stronger results. Task allocation based on employee skill compatibility across assembly line processes offers potential benefits for the PPIC department and the company through higher productivity and sustained product quality. However, employees receiving fewer assignments under the proposed system may perceive wage inequity due to reduced income compared with previous assignment levels. If not properly managed, this situation may affect work motivation, industrial relations, and the overall performance of the company. Identifying solutions that balance the need to enhance production standards with the protection of employee rights and job security.

1.3 Problem Statement

The problem that will be resolved by PT X is the production target that cannot be met for the Panda paper bag product from the client AG which resulted in a rescheduling of all other AG products produced in that month.

1.4 Project Objective

The objective of this project is to improve assembly line productivity and achieve the production target of at least 90%.

1.5 Project Limitation

The following are the limitations of the problems experienced by the author to solve existing problems.

a. Each employee assessed within only one period of observation due to time constraints and production scheduling limitations,
b. The data obtained were derived from selected employees by PPIC departments