CHAPTER I INTRODUCTION

I.1 Background

In the production process was very possible the existence of nonvalue added activities (nonvalue added) or often referred to waste. Waste is an activity that do not provide added value in a process that converts input into output along the value stream (Gaspersz & Fontana, 2011). Waste impacts on the inefficient use of resources, long processing times until production results have an impact on the incremental cost burden for the company. The addition of a large cost burden will reduce the profitability of the company so that in a competitive market competitiveness becomes low.

Waste can reduce by the application of continuous improvement. Continuous improvement is one way that can be done by applying the lean principle in the product manufacturing process (Gaspersz & Fontana, 2011). According to Gaspersz & Fontana (2011) lean is an ongoing effort with the goal of eliminating waste and increasing the added value of products or services to deliver value to customers. Taking into account lean manufacturing perspective, Gaspersz discloses 7 wastes Overproduction, Inventory, Waiting, Motion, Transportation, Rework, and Over processing (Gaspersz & Fontana, 2011).

PT. Pikiran Rakyat is one of the manufacturers that produce newspapers as a medium for communications. This company became the market leader and largest in Bandung as printing on media printing. Based on research conducted in the Year 2015 in Bandung Raya, stated that the Total Awareness of the company also reached 100% which consists of Top of Mind 52%, Spontaneity 23.8%, and Recommendation 23.8%. Besides Bandung Raya, PT. Pikiran Rakyat also spread to other provinces with total distribution can be seen in Table 1.1.

Table I. 1 Distribution of PT. Pikiran Rakyat

City of Distribution	Total of Distribution
D.K.I. Jakarta	6000
Banten	3200
Jawa Barat	175200
Jawa Tengah	450
Jawa Timur	250
Yogyakarta	350
Total	185450

Source: Pikiran Rakyat Company Profile Book 2015

Production of this printing is done by machine Computer to Plate and Universal Goss 50 machine. Computer to Plate or CTP machine to produce plate production as the input for stamp to be printed on paper in newspaper printing. Whereas, the printing machine Goss Universal is used for the printing process of newspapers with capacity of 50,000 copies per hour.

The production process begins with plate making as print layouts for newspapers, also from warehouses that store paper roll and ink paper. Then proceed with plate installation on the printing machine, roll paper, and also ink. After the set-up process has been completed then the print process begins directly without regard to the amount of order. The printed paper then flows in the conveyor which automatically enters the strapping machine as well as counting, in one strapping there are 125 copies of the newspaper. From the strapping machine then a pack of newspaper is flowing using the conveyor to the circulation section and then each strap is calculated using the card numbered as the calculation of customer demand and directly input into the truck to be distributed. Here is a production process flow for the printing process of newspaper described in Figure 1.1 as follows

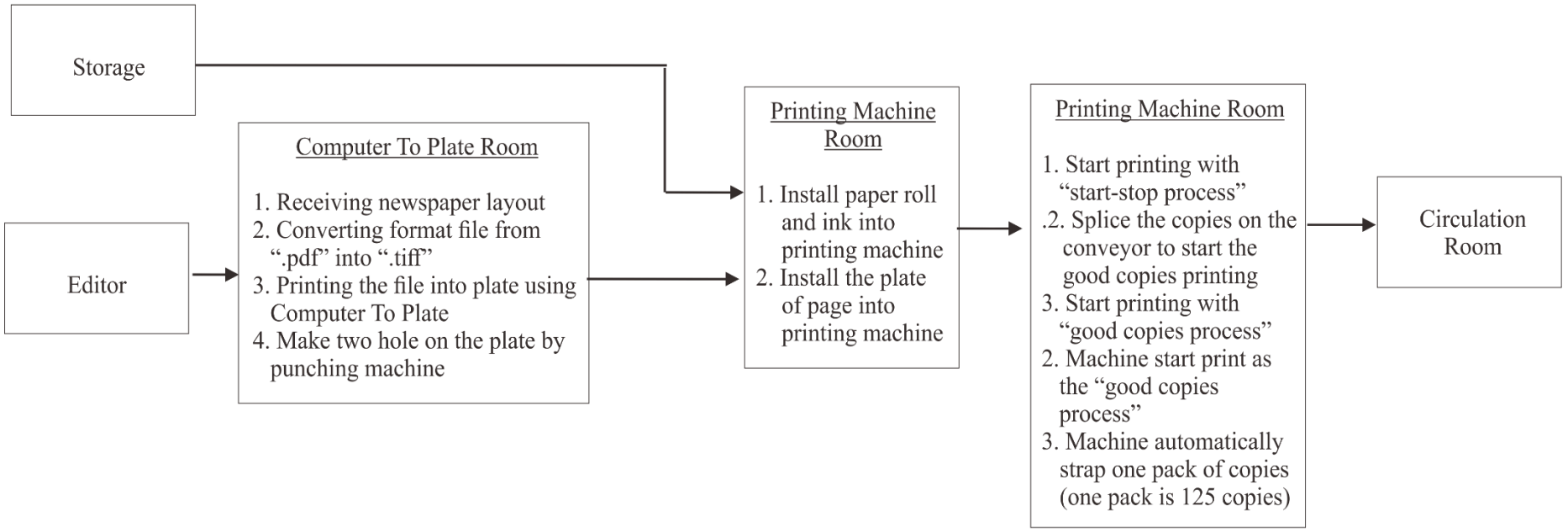

Figure I. 1 Printing Process Flow in Production Floor

The object of research that will be studied in this research is the production process of newspaper printing in the printing machine room in production division at PT. Pikiran Rakyat. The normal hour range used for this production process is done every day from 19.30 WIB to 22.30 WIB. The production process of newspaper printing with a process through Computer to Plate (CTP) to produce a plate as a newspaper stamp that will be produced. This process was done in the circulation room and not include to the newspaper printing process. The material that will be printed on newspaper, previously had editing process on the editorial division. Newspaper production process consists of 7 pieces which carried out in the production section after the newspaper plate is made on the CTP section. The plates used as newspaper prints have two types of brands from Kodak and Fujifilm. The material that is ready to be printed on the plate is then converted into a ".tiff" format on all material files. Plate to be printed, inserted into CTP machine. This machine will shoot a laser that can penetrate the plate so that the material will be printed on the plate surface.

Newspapers are produced by stamping plates that have been printed before, *aspex* paper, and 4 kinds of ink colors are cyan, magenta, yellow, and black. By using Goss Universal 50, the process begins with a start-stop stage, after the ink was shown on the paper then proceeds to the good copies production process. Start-stop process is like a trial printing before real production process. While the production process begins, the operator does not know about quantity of demand in that day. Then machine will start printing with click “start button”, continuously printing from start-stop process into good copies process, so there is not a break activity between the process. The result of the newspaper production process is 1 package of copies which each containing 125 copies. During the production process, Table I.2 shows the timeline of production process in newspaper printing.

Table I. 2 Timeline of Production Process

Activities	Time Span																																
	16.00	16.15	16.30	16.45	17.00	17.15	17.30	17.45	18.00	18.15	18.30	18.45	19.00	19.15	19.30	19.45	20.00	20.15	20.30	20.45	21.00	21.15	21.30	21.45	22.00	22.15	22.30	22.45	23.00	23.15	23.30	23.45
Plate Process																																
Start to be processed in the CTP for color layout																																
Start to be processed in the CTP																																
Punching Process																																
Running time																																
Good Copies Process																																
Trial print running																																
Running good copies																																
Downtime machine																																
Counting Process																																
get the amount of order copies																																
Count the pack matching with quantity on demand that will deliver																																

In the production process of newspaper printing in PT. Pikiran Rakyat, there are some activities as value added and nonvalue added or waste activities. Therefore, the company must be able to evaluate the activities contained in the production process system to reduce waste that occurred, especially the company until now Production Division of PT. Pikiran Rakyat that does not yet have a clear production plan to determine how many requests to print that allow for differences amount between demand and total print production. The difference shows the excess print result by the production, thus impacting the accumulation production to the production cost. Figure I.2 shows the difference between demand data and total gross printed in 2016. The data was shown from October, November, December.

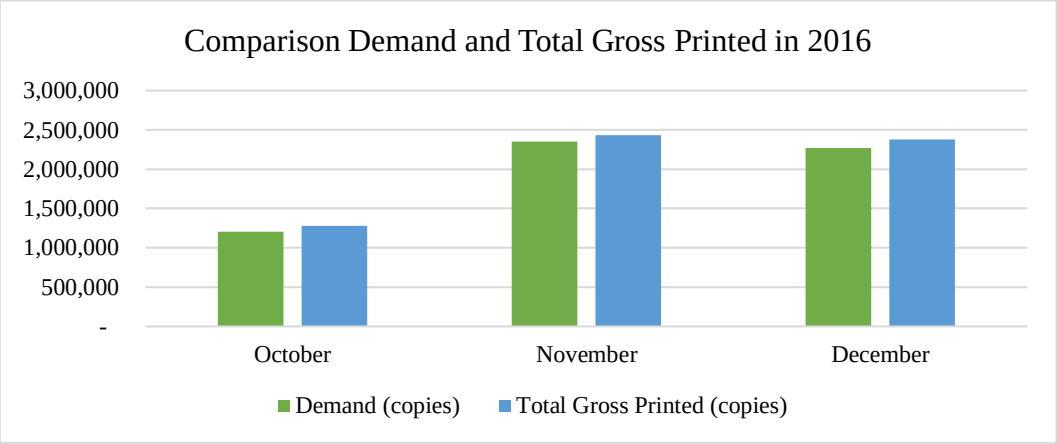

Figure I. 2 Difference Demand and Total Gross Printed in 2016

From the graph above, there is a difference between the number of products produced and the number of customer requests. The amount of production data called the total gross printed exceeds the amount of demand data, because the production division does not know the total quantity to be printed to meet the demand. The total gross printed and demand ratio over the three months is the result of the accumulation of daily production. There is a difference in the number of production, the difference in October as much as 7187 copies, November as much as 14121 copies, and December as much as 13534 copies. This amount indicates a waste of overproduction from the difference between total demand and gross print amount. In another reference says that overproduction is waste occurring in the form of finished goods and work in process (WIP) that is not required or ordered by the customer because of low quality or "just in case" thinking if one needs it (Moden, 2012). The overproduction data of the total

number of prints can be seen in Table I.3. Overproduction is caused by no fixed list of requests to determine the quantity to begin printing production.

Table I. 3 Demand Data and Total Gross Printed in 2016

No	Date	Demand	Gross Printed	
			Product Deliver (copies)	Overproduction (copies)
1	17-Oct-16	85780	85780	496
2	18-Oct-16	84570	84570	470
3	19-Oct-16	85650	85650	420
4	20-Oct-16	85439	85439	420
5	21-Oct-16	76870	76870	427
6	22-Oct-16	74630	74630	460
7	23-Oct-16	74587	74587	724
8	24-Oct-16	81380	81380	485
9	25-Oct-16	78900	78900	484
10	26-Oct-16	76834	76834	420
11	27-Oct-16	83180	83180	427
12	28-Oct-16	75055	75055	460
13	29-Oct-16	80255	80255	491
14	30-Oct-16	82130	82130	496
15	31-Oct-16	80480	80480	507
16	1-Nov-16	82305	82305	470
17	2-Nov-16	82955	82955	484
18	3-Nov-16	84570	84570	427
19	4-Nov-16	82480	82480	510
20	5-Nov-16	84605	84605	484
21	6-Nov-16	80755	80755	735
22	7-Nov-16	81430	81430	496
23	8-Nov-16	85855	85855	470
24	9-Nov-16	74230	74230	427
25	10-Nov-16	80255	80255	484
26	11-Nov-16	81780	81780	470
27	12-Nov-16	79855	79855	477
28	13-Nov-16	80730	80730	474
29	14-Nov-16	80305	80305	474

Source : Daily report from PT. Pikiran Rakyat Production Division in 2016

Table I. 4 Demand Data and Total Gross Printed in 2016 (continued)

No	Date	Demand	Gross Printed	
			Product Deliver (copies)	Overproduction (copies)
30	15-Nov-16	74705	74705	470
31	16-Nov-16	80730	80730	484
32	17-Nov-16	80530	80530	448
33	18-Nov-16	83030	83030	440
34	19-Nov-16	82480	82480	484
35	20-Nov-16	80655	80655	724
36	21-Nov-16	76880	76880	507
37	22-Nov-16	79305	79305	470
38	23-Nov-16	81730	81730	427
39	24-Nov-16	81755	81755	392
40	26-Nov-16	80780	80780	491
41	27-Nov-16	81855	81855	474
42	28-Nov-16	83540	83540	474
43	29-Nov-16	83305	83305	477
44	30-Nov-16	79655	79655	477
45	1-Dec-16	80505	80505	399
46	2-Dec-16	73430	73430	460
47	3-Dec-16	81005	81005	484
48	4-Dec-16	82355	82355	735
49	5-Dec-16	80905	80905	399
50	6-Dec-16	78830	78830	485
51	7-Dec-16	79280	79280	470
52	8-Dec-16	76305	76305	413
53	9-Dec-16	78055	78055	427
54	10-Dec-16	80455	80455	460
55	11-Dec-16	77755	77755	484
56	13-Dec-16	81580	81580	474
57	14-Dec-16	80855	80855	463
58	15-Dec-16	74980	74980	413
59	16-Dec-16	78455	78455	413
60	17-Dec-16	80105	80105	470
61	18-Dec-16	81130	81130	484
62	19-Dec-16	80755	80755	724
63	20-Dec-16	79860	79860	496

Source : Daily report from PT. Pikiran Rakyat Production Division in 2016

Table I. 5 Demand Data and Total Gross Printed in 2016 (continued)

No	Date	Demand	Gross Printed	
			Product Deliver (copies)	Overproduction (copies)
64	21-Dec-16	77055	77055	484
65	22-Dec-16	79805	79805	434
66	23-Dec-16	76905	76905	399
67	24-Dec-16	76805	76805	484
68	26-Dec-16	77605	77605	474
69	27-Dec-16	73405	73405	470
70	28-Dec-16	73655	73655	406
71	29-Dec-16	74405	74405	420
72	30-Dec-16	73400	73400	460
73	31-Dec-16	82450	82450	350
Total		5830875	5830875	34842

Source : Daily report from PT. Pikiran Rakyat Production Division in 2016

From the existence of this overproduction cause losses of the company due to excessive costs for products that are not required by customers or delivery to customers, so that the cost of production for the excess print does not provide income to the company. To know the impact of this overproduction, the amount of overproduction is converted to cost of goods sold product so that it can be known how much the company costs out due to the excess of this production. Conversion of the price of production loss is equal to the cost of goods sold multiplied by the amount of overproduction that is not resold.

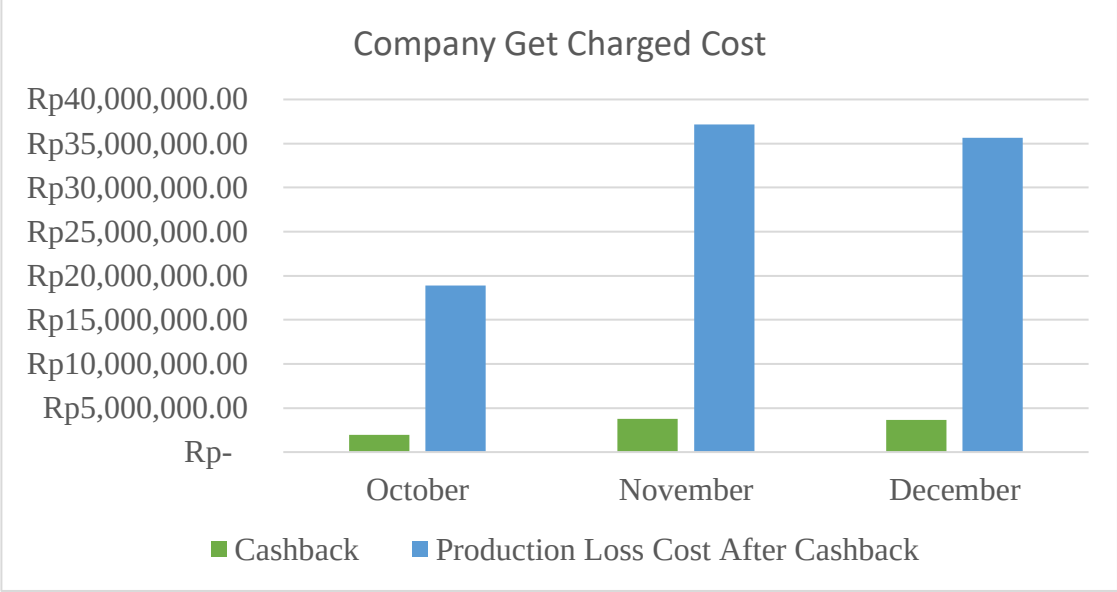

Figure I. 3 Charged Cost for Company

Source : Daily report from PT. Pikiran Rakyat Production Division in 2016

Overproduction that occurs in the production process resulted from some factors, the ignorance of operator through the production plan that will be used as the reference of the production amount and caused the arrival time of demand exceeding the production schedule so that the number of prints that can be delivered to the customer is smaller than the predicted number of production. Table I.5 shows the data of copies order arrival time to the circulation.

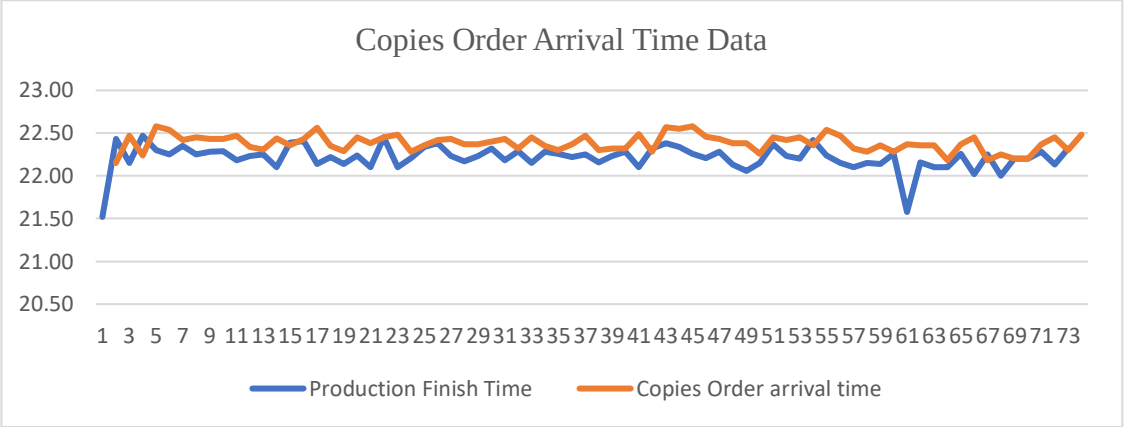

Figure I. 4 Copies Order Arrival Time Data

Source : Daily report from PT. Pikiran Rakyat Production Division in 2016

The delay of arrival time for order copies to the production and the circulation is caused by the uncontrollable outside factor. Amount of order copies was come late due to waiting for a fixed order from agents and hotels. Although the order copies were order with electronic communication via phone and social media. This is an outside factor that needs to be anticipated so that production can still keep running without waiting for arrival data amount of order copies and knowing how many newspapers will be produced on that day. So, the focus of this study on how to improve the production plan by estimating the demand as a reference to determine the amount of production in PT. Pikiran Rakyat.

Overproduction is waste generated by the production of products with unneeded, unwanted quantities of customers, in the time that customers do not need (Hirano, 2009). In another reference said that overproduction is a waste that occurs in the form of finished goods and work in process (WIP) that is not required or ordered by the

customer due to low quality or thought "just in case "if anyone needs it (Moden, 2012). The issue of waste over production is needed to be evaluated and made improvements using Lean Manufacturing Principle.

In this case the overproduction of waste occurs due to the production division has no daily production planning, especially for the amount of demand which is the reference number to determine the quantity that should be produced in newspaper printing and does not have the calculation of forecast as production planning. The waste overproduction resulted in a high production lead time which will be shown using value stream mapping (VSM) and activity mapping process (PAM) as the current situation. Value stream mapping is a tool used to eliminate waste that occurs during the production process. APICS Dictionary (2005) defines VSM as a process for creating, producing, and delivering products to markets (Hidayat, Yayat & Kemala Sari, Debbie, 2014). While process activity mapping is a process flow map that describes the sequence of an operation process, examination, transportation, waiting, and storage that occurs in a production process procedure (Ario, Pratya, & Iqbal, 2013). The current production process will describe the problem that \ occurring at the company will be illustrated using value stream mapping and process activity mapping current state. To illustrate the problems that are in the company tools fishbone diagram and 5 whys.

I.2 Problem Formulation

Based on the background that has been described, then the formulation of the problem to be studied in this study, as follows.

1. What is the factors as the cause of waste overproduction on newspaper production of PT. Pikiran Rakyat?
2. What is the improvement to reduce the factors as the cause of waste overproduction on the production of newspaper PT. Pikiran Rakyat?

I.3 Research Objectives

The objective of this research based on the formulation of the problem that has been described that is,

1. Determine the factors as the cause of waste overproduction on the newspaper production in PT. Pikiran Rakyat.

2. Determine the improvement to reduce the factors as the cause of waste overproduction on the production of newspaper PT. Pikiran Rakyat.

I.4 Problem Limitation

Research conducted at PT. Pikiran Rakyat has limitations of the problem so that research is more focused with the objective of research. The limits of the problem of this research as follows.

1. The production report recap data used only in the period of October to December 2016 PT. Pikiran Rakyat.
2. This research just focusing to the cost of goods sold for newspaper in PT. Pikiran Rakyat.
3. This research just focusing to production process for *koran lampiran* as a part of newspaper in PT. Pikiran Rakyat.

I.5 Research Benefit

From this research, then the benefits will be obtained as follows.

1. PT. Pikiran Rakyat can reduce the overproduction waste in the newspaper production process.
2. Reduce the production loss during production process of newspaper PT. Pikiran Rakyat.

I.6 Systematic Research

Researchers make the writing systematics used in this study as follows:

CHAPTER I **Introduction**

In this introduction chapter, we describe the background of problems caused by the act of causing waste overproduction by minimizing it by using Lean Manufacturing method. This chapter also contains the purpose of this research, as well as the benefits derived from this research. In detail the content of this chapter includes background issues, problem formulation,

research objectives, problem limits, research benefits, and systematic report writing.

CHAPTER II Literature Review

This chapter is discussed about the theory relating to the problems that occur in the company. The theory is also supported by the theory of improvement efforts using Lean Manufacturing method using some tools. This theory is based on the literature study that is research related to the problems studied in books or journals, the method used in research. This theory will be used as the basis of research in the identification of problems and data processing, to take conclusions from the results of research.

CHAPTER III Research Methodology

This chapter contains detailed research steps using the lean manufacturing method. In this chapter will also describe the data needed during the study at the took place. These data will be processed in the next chapter to achieve the objectives based on the problem formulation.

CHAPTER IV Data Collecting and Processing

In this chapter will discuss about the collection of supporting data on research and data process that will be displayed to answer the formulation of the problem in chapter I.

CHAPTER V Analysis

This chapter will describe the analysis of the results of the data process from the previous chapter. In this chapter will also be made an analysis of the condition before the repair and condition after the repair. Besides

this chapter will also discuss how the effects of the improvement will occur.

CHAPTER VI Conclusion and Suggestion

This chapter will be described the conclusion of the research and its result as the suggestion for future research.