CHAPTER I
INTRODUCTION

This chapter contains the introduction of the research which consists of background, problem formulation, objective, research scope, and outline of the report.

1.1 Background

Onion is an horticulture commodity which is classified into vegetable spices. There are three types of onion that is commonly used and produced in Indonesia, namely red onion (A.Cepa var. *Aggregatum*), garlic (*Allium sativum* L.), and onion (*Allium* cepa L.) (Rukmana,1994). Garlic is one of the most useful and popular onions in Indonesia. Garlic has become a daily necessary for Indonesian. However, existing supply of garlic in Indonesia is still largely imported. According to minister of agriculture, Andi Amran Sulaiman, more than 95% of Indonesia's garlic supply comes from China, India, and Mesir. It happens because national garlic agriculture experienced a drastic decrease from 28,000 hectares in 1998 and now becoming 2,000 hectares (Julianto, 2017). Even though Indonesia imports garlic, it still produces amount of garlics. One of provinces in Indonesia that produces garlic is West Sumatra. Graph of Garlic Production in West Sumatra in period 2011-2016 (ton) is presented in **Figure 1.1**. Meanwhile, total garlic horticulture households in West Sumatra are 110 units, planting area is 83.313 m^2, and average planting area managed per household is 757 m^2 (BPS West Sumatra, 2013).

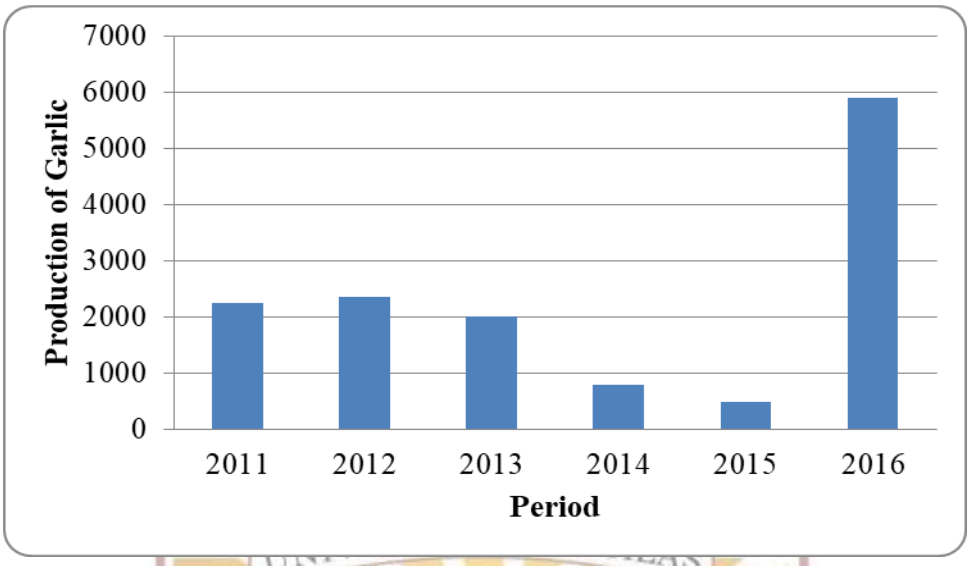

Figure 1.1 Graph of Garlic Production in West Sumatra in Period 2011 - 2016 (Ton)
(BPS and Directorate General of Holticulture, 2017)

Garlic has many advantages for our life. Garlic can be used for the basic ingredient of cooking, pickle industries, hotels, wedding halls, and also for some medical purposes. The usage of garlic that is most popular in Indonesia especially in West Sumatra is to cook spices for cuisine in West Sumatra restaurants.

Data from Badan Pusat Statistik (BPS) Padang shows that the restaurants in West Sumatra always increase every year (BPS, 2017). Graph of restaurants in West Sumatra in 2014-2016 are presented in **Figure 1.2**.

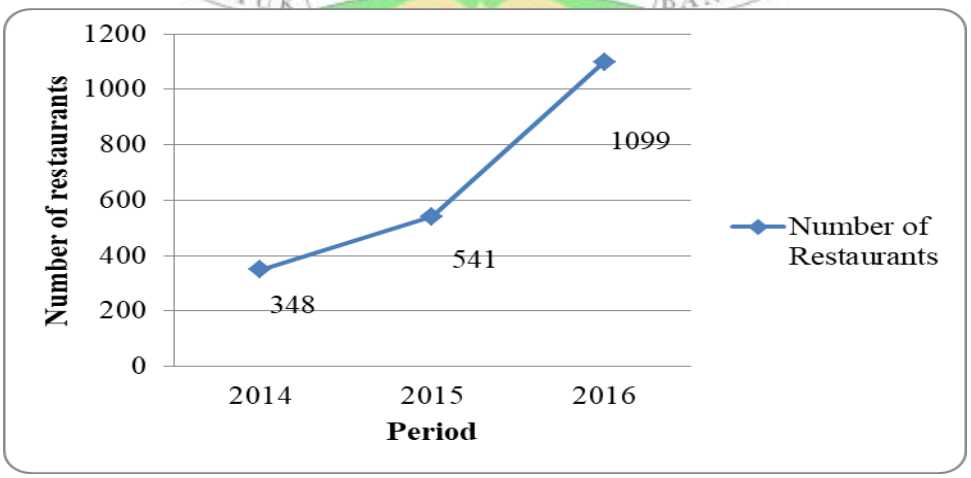

Figure 1.2 Graph of Number of Restaurants in West Sumatra 2014-2016
(BPS, 2017)

Garlics needed by restaurants in West Sumatra are usually peeled garlics because of not enough time to peel the large number of garlics for cooking spices. This situation gives the opportunity for household industries to provide a lot of peeled garlics. One of household industries which produces peeled garlics in West Sumatra especially in Padang is Usaha Kelas Menengah (UKM) Ulak Karang. UKM Ulak Karang was established by Mr. Burhan Salim and Mrs. Rosmaini since 1982. It is located in Kelapa Gading Street VI Number 34, near AKBP Khatib Sulaiman, Padang. UKM Ulak Karang is an household industry which provides many kind of foodstuff commodities such as garlics, onions, chilis, and the others. The garlics provided are divided into two kind, peeled garlics and unpeeled garlics. The owner of UKM Ulak Karang, Mrs. Rosmaini stated that many restaurants in Padang have become regular customers of peeled garlics in UKM Ulak Karang, such as Lamun Ombak, Salero Bundo, Kubang, Martabak Malabar, Sari Bundo, and the others.

Initial observation was conducted on October 5th 2017, October 7th 2017, October 22nd 2017, January 19th 2018, and January 21st 2018 . UKM Ulak Karang has 15 workers totally but only 2 workers work in garlic peeling workstation. One worker peels garlic manually (**Figure 1.3**) while another one does it by garlic peeling machine (**Figure 1.4**). There are one work shift. They work for eight hours every day, it is from 8.00 am until 4.30 pm with 30 minutes break for rest and zuhur pray on 12.30 pm.

Figure 1.3 Worker Peels Garlic by Manual

Figure 1.4 Worker Peels Garlic by Garlic Peeling Machine

Garlic peeling machine is consisted of compressor and tools made by UKM Ulak Karang owner. Compressor has name Air Compressor VivaAir 3 HP 110L MT-31P with specification MT-31P type, 110 L capacity, 464 L Dis, 3 HP Motor, 8 Kg/ cm^2 pressure, 112 Kg weight and 770 RPM. However, based on interview with the workers, current production output of UKM Ulak Karang are 100 Kg per day by machine and 25-30 Kg per day by manual. Even, the worker who peels garlic manually sometimes has to work overtime. Man and machine process chart is conducted in order to know the process of garlic peeling. The summary of man and machine process chart is presented in **Table 1.1.** Man and machine process chart completely is presented in **Appendix A**.

Table 1.1 Man and Machine Process Chart for 8 Hours Working in A Day

Indikator	Worker 1 (by Manual)		Worker 2 (by Machine)		Machine	
	Time (minute)	%	Time (minute)	%	Time (minute)	%
Effective Work Time	438.61	91%	367.15	76%	71.03	15%
Idle Time	0.00	0%	71.46	15%	408.97	85%
Allowance	41.39	9%	41.39	9%	0.00	0%
Total Time	**480.00**	**100%**	**480.00**	**100%**	**480.00**	**100%**

Based on man and machine process chart, it is known that effective work time of machine is only 15% and idle time of machine is 85%. While worker 2 spends 76% of his effective work time for setting up, 15% for idle time, and 9% for allowance. Minimizing the set up time can speed up the completion of the process so that production target can be achieved. It can also increase volume of peeled garlics per day and income for UKM Ulak Karang.

1.2 Problem Formulation

Based on the background, problem formulation in this research is it is important to improve work method of peeling garlics worker in UKM Ulak Karang in order to increase productivity of garlic peeling process.

1.3 Objective

Objective of this research is to design an improvement of work method for peeling garlic worker at UKM Ulak Karang.

1.4 Research Scope

Research scope in this research are :

1. Work method improvement is only for worker who peels garlic by machine.
2. Machine is assumed to work normally.
3. Worker works in normal condition.

1.5 Outline of Report

This final project is divided into several chapters which are arranged systematically in order to facilitate the reading and understanding. As for the outline of the report are:

CHAPTER I INTRODUCTION

This chapter consists of background, problem formulation, objective, research scope, and outline of report.

CHAPTER II LITERATURE REVIEW

This chapter explains about the theories related to problem of this research. The theories can be got from the books, journals, previous studies, articles and statistic data.

CHAPTER III METHODOLOGY

This chapters explains the steps to solve the problem of the final project research. The steps are shown through the flowchart.

CHAPTER IV DATA COLLECTION AND ANALYSIS

This chapter contains data collection and analysis based on research that has been conducted.

CHAPTER V DISCUSSION

This chapter contains discussion of implementation of SMED concept, the set up time after improvement, and production output after improvement.

CHAPTER VI CONCLUSION

This chapter consists of summary and recommendation of this research.