A STUDY ON PRODUCTION PRODUCTIVITY IMPROVEMENT IN FOOD PROCESSING INDUSTRIES

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BACHELOR OF INDUSTRIAL TECHNOLOGY MANAGEMENT WITH HONORS

UNIVERSITY MALAYSIA PAHANG

A STUDY ON PRODUCTION PRODUCTIVITY IMPROVEMENT IN FOOD PROCESSING INDUSTRIES

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CENTER OF GRADUATE STUDIES

We certify that the thesis entitled "A Study On Production Productivity Improvement In Food Processing Industries" is written by Siti Nor Binti Ya. We have examined the final copy of this thesis and in our opinion, it is fully adequate in terms of scope and quality for the award of the Bachelor of Industrial Technology Management with Honors.

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SUPERVISOR'S DECLARATION

I hereby declare that I have read this study and in my opinion this study is sufficient in terms of scope and quality for the award of the Bachelor of Industrial Technology Management with Honours.

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STUDENT'S DECLARATION

I declare that this study entitled "A Study of Production Productivity Improvement in Food Processing Industries" is this result of my own research except as cited in the reference. The study has not been accepted for any degree and is not concurrently submitted for award of other degree.

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DEDICATION

Special dedication to my family especially to my sibling on their support and encouragement:

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Suriana Binti Ya

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Thanks you for your support during my degree study**.**

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ABSTRACT

Small and Medium Enterprises (SMEs) have always played a key role in the economies of all major industrial societies in both of productivity and employment level. At the same time, most of the new manufacturing concepts and technologies have been implemented in a large scale of the improvement. However, SMEs especially in the small company in food processing industries have not attention for the improvement of such new manufacturing concepts and technologies with the objectives to improve productivity. This study focuses on productivity improvement effort for processing industry in one of SMEs Company with food frozen process. An attempt has been made in this paper to present some of the implementing based on brainstorming concept of productivity improvement in food processing industries. This research has taken place in Kota Bharu, Kelantan located in industry area. The objective of the research are to identify reason for low productivity level of production in food processing industries and to propose methods to increase productivity level of production in food processing industries. Attempt to explain the effective of propose strategies improvement with the simple guidelines. In addition, this study uses interview and observation as a method for the collect data. From the observation method, the researcher find some of solution for kind of problem in this company. Lastly, the analysis results of this method use the brainstorming methods for the last step with approval or accepted this solution from discussion with manager and expert person.

Keyword: production, productivity improvement and food process.

ABSTRAK

Industri Kecil dan Sederhana (IKS) memainkan peranan penting dalam ekonomi untuk semua masyarakat perindustrian terutamanya di dalam produktiviti dan tahap pekerjaan. Pada masa yang sama, kebanyakan konsep industri perbuatan dan teknologi baru telah dilaksanakan dalam skala yang besar dalam pembaikan. Walau bagaimanapun , IKS terutamanya dalam syarikat kecil dalam industri pemprosesan makanan tidak mempunyai perhatian yang lebih dalam memperbaiki konsep pembuatan baru seperti teknologi dan dengan objektif dari kajian ini ialah bagi meningkatkan produktiviti. Kajian ini memberi tumpuan kepada usaha untuk peningkatan produktiviti bagi industri pemprosesan di salah satu daripada syarikat IKS dalam perbuatan makanan sejuk beku. Satu percubaan telah dibuat dalam kertas kerja ini, membentangkan beberapa pelaksanaan berdasarkan sumbangan idea dan konsep dalam peningkatan produktiviti dalam industri pemprosesan makanan. Kajian ini telah berlaku di Kota Bharu, Kelantan yang terletak di kawasan perindustrian. Objektif kajian ini adalah untuk mengenal pasti sebab untuk tahap produktiviti yang rendah pengeluaranya dalam industri pemprosesan makanan dan mencadangkan kaedah- kaedah untuk meningkatkan tahap produktiviti pengeluaran dalam industri pemprosesan makanan. Dalam kajian ini menerangkan cadangan yang lebih effektif dalam peningkatan strategi dengan garis panduan yang mudah. Di samping itu, kajian ini dibuat berdasarkan temubual dan pemerhatian sebagai satu kaedah untuk mengumpul data. Dari kaedah pemerhatian yang telah dibuat, penyelidik menemui beberapa penyelesaian untuk menyelesaikan masalah didalam syarikat ini. Akhir sekali, keputusan analisis kaedah ini, menggunakan kaedah sumbangan idea untuk langkah terakhir dengan persetujuan atau penerimaan dalam penyelesaian ini daripada perbincangan dengan pengurus dan orang yang lebih berpengalaman.

Kata kunci: Pengeluaran, peningkatan produktiviti dan proses makanan

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CCM	Companies commission of Malaysia
CRM	Customer relationship management
GMP	Good manufacturing practices
HACCP	Hazard analysis critical control points
IMP	Industrial master plan
NAP	National agricultural policy
OSHA	Occupational safety and health administration
PDCA	Plan, do, check, action
SME	Small medium enterprise
SMIDEC	Small and medium development corporation
SPC	Statistical process control
SWC	Standardized work combination
SWD	Standardized work diagram
TQM	Total quality management
VSM	Value stream mapping

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The study investigates the factor of low productivity in food processing industries and how to improve the productivity. This study focus on one of company under Small Medium Enterprise (SME). The researcher chooses one company produce frozen food like donut, curry puff, fried bread, sausages bread. This company established from 2009. In this company have six fulltime employees in processing food.

Productivity refers to the amount of work that is accomplished in a unit of time using the factor of production. Businesses are interested in being productive and can sometimes increase productivity by making relative simple changes such as reduce cost and increase their quality. What the impact of the low productivity in demand? The manager must be known to how can solve the issues in production lines. An employee is the asset to the company. Sometimes, workforce that is being asked to productivity improvement may reasonably ask about the share (Gunasekaran, 2000).

Productivity enhancement as a process to achieves higher levels of output while consuming same or lesser amounts of input resources. Also that, the researcher believes that if the same output level is reached in shorter time period, it indicates improved productivity. Productivity is also defined as the ratio of what is produced to what is required to produce it. Productivity measures the relationship between outputs such as goods and services produced, and input that includes that labour, capital, material and other resources (Helvoigt, 2006).

Besides that, how manager or supervisor can manage that issues. The factor of productivity is important in quality product. Sometimes the basic approach in productivity comes from management team. The other thing is how come to apply technology and reduce staff.

Productivity is an overall measure of the ability to produce a good or service. More specifically, productivity is the measure of how specified resources are managed to accomplish timely objectives as stated in terms of quantity and quality. Productivity may also be defined as an index that measures output (goods and services) relative to the input (labor, materials, energy, etc., used to produce the output) (Franklin, 2001). Productivity is created in the real process, productivity gains are distributed in the income distribution process and these two processes constitute the production process. The production process and its sub-processes, the real process and income distribution process occur simultaneously, and only the production process is identifiable and measurable by the traditional accounting practices. The real process and income distribution process can be identified and measured by extra calculation, and this is why they need to be analysed separately in order to understand the logic of production performance (Tabije, 2007).

Small and medium enterprises (SMEs) play an important role in modern economies because of their flexibility and ability to innovate. In nearly every country, SMEs play a significant role in providing employment opportunities and supporting large scale manufacturing firms. However, there are not many studies reported in the literature that deal with productivity problems in SMEs. Considering the importance of SMEs, the experiences of a small company engaged in continuous improvement and a related conceptual model are discussed here to highlight how productivity can be improved with limited resources (Gunasekaran, 2000).

Besides that, there are two major ways to increase productivity is increase the numerator (output) or decrease the denominator (input). Of course, a similar effect would be seen if both input and output increased, but output increased faster than input, or if input and output decreased, but input decreased faster than output.

Apart from that, organizations have many options for use of this formula, labor productivity, machine productivity, capital productivity, energy productivity, and so on. A productivity ratio may be computed for a single operation, a department, a facility, an organization, or even an entire country.

For productivity to improve, improvement must be seen as a continuous process. Many organizations have found that Edward C. Deming's process management cycle is useful. Deming's cycle is frequently represented as PDCA, meaning: plan, develop a course of action based on information collected; do, implement that plan; check, measure and analyse the relative success of that plan, and act, adjust the plan accordingly.

1.2 PROBLEM BACKGROUND

According to Small and Medium Industries Development Enterprise Corporation (SMIDEC) Article 2004, Small and Medium Enterprises (SMEs) play a significant role in the development of the Malaysian economy. However, their contribution to the national economy is still relatively small. Due to this, the government has made the development of SMEs a high priority area with a string of development agendas. Despite this, SMEs are still facing heaps of challenges and obstacles that deter them from further expanding their businesses. Factors involved include low access in borrowing and small capital investment, low access of needed infrastructure, low level of expert abilities and raw materials, low productivity, low expertise in management and technical knowledge (SMIDEC, 2004).

In company or organization, productivity is one important part in production level. Productivity improvement schemes require discipline and co-operation from all concerned, permanent improvements will be maintained only with Top Management involvement and support. Management cannot be allowed to sit on the fence they must commit, performance levels are too low, and there is a comfort level that must be broken (Franklin, 2001).

Another important issue for any productivity improvement is people management. Therefore, innovation and productivity increase become the natural

products of the process. Empowerment of the employees must be considered with the introduction of all improvement techniques.

Also that, not all the small medium company get a new technology, likes advanced machine to produces the product. They are use manually and not enough capacity of machine, sometimes, they can't to fulfil customer requirement. The research discuss about the high productivity in certain time. For example, demand can increase in time to time, so how the organizations manage it.

Productivity improvement has assumed various forms to achieve its full potential from both social and organizational points of view. At the macro level it has helped to establish national policies on wage and inflation control. At the micro level it has been used and continues to be used, as a measure of the performance of organizational systems. Productivity improvement in an enterprise is a function and a result of management efficiency, and is synonymous with good management. A sound productivity improvement strategy calls for a systems approach to productivity improvement which recognizes the interrelationship between the elements of the system and its environment. Thus, productivity strategy is the pattern of decisions and plans for achieving long-term productivity improvement goals (Henning, 2000).

In this study, have many barrier or problem in to improve the productivity. Also that, this company just small company or new in the business. The ever changing business environment requires firms to adapt quickly to associated new challenges and competition, and presents particular problems for small businesses given their small size and limited resources. Small businesses increasingly face competition not only from their peers but also from large corporations participating in niche markets once regarded the preserve of smaller businesses. In fact, reliance on domestic markets for business growth is a thing of the past for many small and medium sized businesses (SMEs). Consequently, they need to identify, prioritize and effectively tackle these challenges in order to be more competitive and relevant in the business world (Hasnah and Ishak, 2010).

1.3 PROBLEM STATEMENT

This studies the production productivity improvement in processing. Also that, the issues of low productivity is can impact the business. Researcher focus on the problem caused by low productivity, and the process in the product. The empirical evidence presented in this study, which was obtained from an analysis of several production processes, is intended to validate the model of production that the article proposes. The central question is product quality adversely affected by output of product? It is possible that this question may be answered in affirmative. In cases of production, that factor must from employees, given that the work group on the assembly line as a whole is less qualified, since not all the workers in the group have received the specific training deemed necessary for the performance of their task, product quality may be low. Besides that, in this research, also that can see in analysis of product. Almost shop, not use same machine or advance technology to produce the product. Almost than that, the company use manual methods.

Companies with low levels of productivity could theoretically get significantly more work done, but they have factors that hold them back from their full potential. This leads to wasting money and losing ground to competitors. Knowing the reasons company's productivity is lacking directs to appropriate solutions to improve productivity and profits (Gunasekaran, 2000).

1.4 RESEARCH QUESTIONS

Based on problem statement following question will be answered by this research:-

i. Why low productivity can happen in SMEs production?
ii. How manager can solve the low productivity level and increase customer satisfaction in much better way?

1.5 RESEARCH OBJECTIVE

I. To identify reasons for low productivity level of production in food processing industry.

II. To propose methods to increase productivity level of production in food processing industry.

1.6 SCOPE OF STUDY

This study focus on productivity improvement and how to increase production level. In this study, is aiming to identify reasons of low productivity and to propose the method for solving the problem in food processing industries. In this research, focus is on Small Medium Enterprise (SME) Company. Small and Medium Enterprise (SMEs) is one of the principal driving forces in economic development. They stimulate private ownership and entrepreneurial skills, flexible and can adapt quickly to changing market in term of demand and supply.

Also those, in this study choose one of company in SMEs which producing frozen food. Located in Kelantan is chosen. In Kelantan, is one of strategic place to get the business. Almost of people in Kelantan get the business as the family income

1.7 SIGNIFICANCE OF STUDY

1.7.1 To The Researcher

This study will definitely be most beneficial to the researcher. It will increase the researcher's current understanding on how productivity and improvement give effect to the company. Therefore, it will help researcher to be more understand about the company's productivity and their improvement on the business. It also may develop necessary skills for the researcher to continue doing other researches in future. Besides that, this study also trains the researcher to possess the characteristic such as a high self-motivation, creative thinking as well as optimism.

1.7.2 To the Organization

It is important to organization to know the weaknesses and strength of their company. The information provided can help them to identify the courses of the low productivity and improvement to their successful the business. Successfully managing customer satisfaction is essential for the long-term growth of a company. By comparing the performance metrics and customer demand data between like plan with separate and different work structures, this study will isolate the impact that work structures have on cost, productivity, quality and employees. This research study will be support to support the time, effort and financial venture that go into facilitating effective self-directed work teams and high productivity using right methods.

1.8 THEORITICAL FRAMEWORK

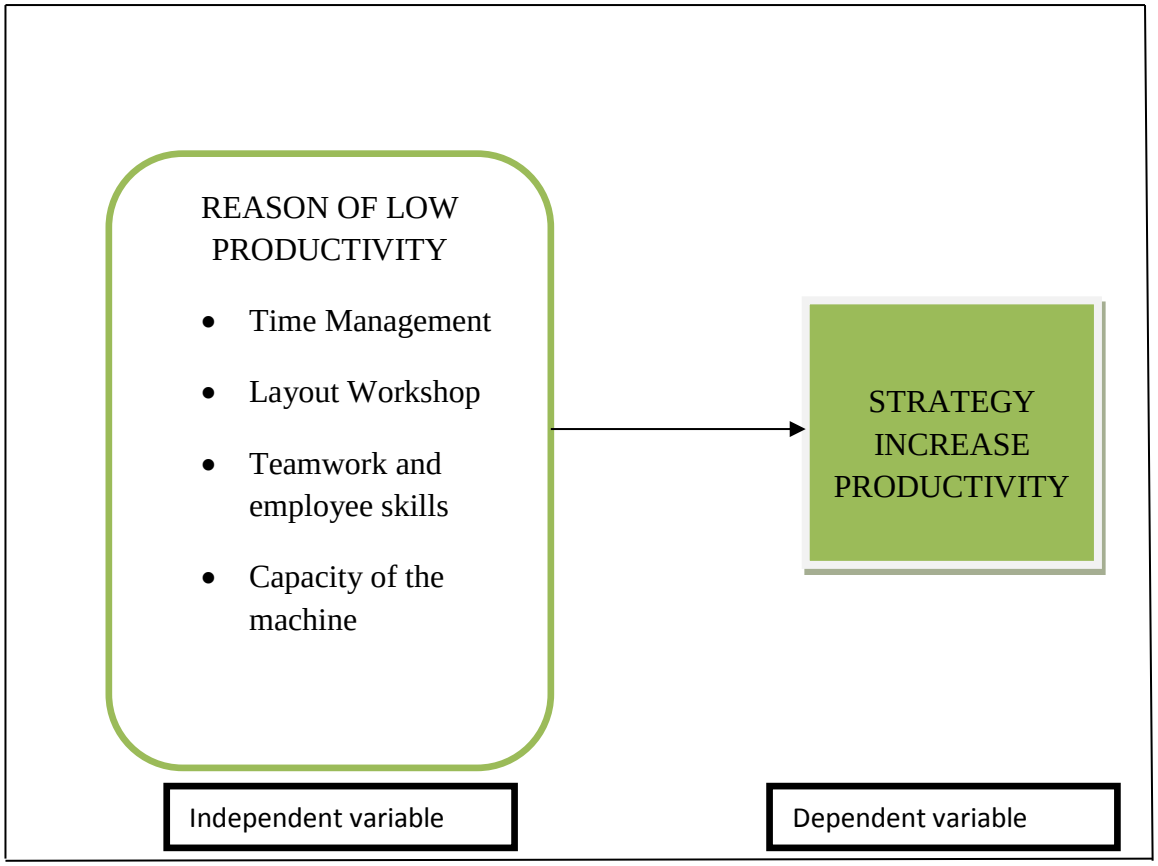

Figure 1.1: Theoretical framework in reason of low productivity and strategy.

The steady improvement in productivity can only succeed if all factors are identified and examined regularly for possible improvement. There is some strategy to get the improve productivity. Normally, improvement process is based on a set of activities generally accepted as important. There is start from top management commitment. After that, create the methods and material requirement.

According the (Franklin, 2001), the average worker only spends about 40 percent of this time on task that are directly related to this company goal. Given these statistic, it is easy to see how implementing a system to improve productivity in this company result. It most cases, workers aren't doing this because they don't want to work honestly doesn't know how to properly manage time.

In the cost, such as raw material, machinery, material of packaging and others. Normally small company not use advances technology to use their product. The manager reduce cost to maintain the profit, it is depends on goal of company.

In food processing, quality need to hard score. Normally, customer will be choosing in good cover and quality of product. So that, in this study, the researcher observes in their process and packaging in this company. How that company improve it.

1.9 OPERATIONAL DEFINITION

1. Organization system

Organizational systems are stable, influence everyone's performance and can be consciously designed. However, prior to planning an organizational system, knowledge of the various types of systems that exist is required. Organizational system types, also known as organizational structures, refer to the design of a group or company where roles, responsibilities and relationships are determined by the type of system in use (Pegels, 2003).

2. Innovation

Innovation is the development of new values through solutions that meet new requirements, inarticulate needs, or old customer and market needs in value adding new

ways. This is accomplished through more effective products, processes, services, technologies, or ideas that are readily available to markets, governments, and society (Berkun, 2013).

3. Advanced Technology

The word advanced technology refers to the making, modification, usage, and knowledge of tools, machines, techniques, crafts, systems, and methods of organization, in order to solve a problem, improve a pre-existing solution to a problem, achieve a goal, handle an applied input or output relation or perform a specific function. It can also refer to the collection of such tools, including machinery, modifications, arrangements and procedures (Consistent Innovation Message, 2006).

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In economics, productivity is the amount of output created (in terms of goods produced or services rendered) per unit input used. For instance, labor productivity is typically measured as output per worker or output per labor-hour. Production, however, is the act of making things; in particular the act of making products that will be traded or sold commercially. Production decisions concentrate on what goods to produce, how to produce them, the costs of producing them, and optimizing the mix of resource inputs used in their production (Tabije, 2007).

Production is the process of converting resources into finished goods for consumption. Technology is needed in the process of production. In fact, the advancement in technology has greatly helped in easing out production. Thus, manager can definitely say that the aspect of technology is very important in the whole equation (Tabije, 2007).

To increase production, a company must have the necessary number of labor force to meet production target. To increase production, it would be important to augment the number of workers. However, increasing the number of workers does not always result to increased productivity. Depending on the nature of a business, many businesses choose to minimize the number of workers in their factories. The rising labor costs in developed countries can eat much of the production costs resulting to decreased competitiveness in the prices of certain products. However, minimization of labor may also lead to other disadvantages (Miller, 2007).

Improving productivity is at the top of nearly every manufacturer's list but making it happen can be a challenge. There are some great methods that are proven to significantly improve productivity. One of the best is to measure, analyze and set goals for improvement. Only then can employee work toward a logical plan for improving productivity. Then do it again and again until the process is where it needs to be.

Furthermore, higher productivity brings higher margin in a business. And increment in productivity level reduces garment manufacturing cost. Hence factory can make more profit through productivity improvement.

Any Manufacturing unit has production as its core activity. Products are manufactured with the help of labor and machines .Manufacturers can increase the output through various methods without putting any investment in the production setup.

The researcher consider productivity enhancement as a process to achieve higher levels of output while consuming same or lesser amounts of input resources. Also, believe that if the same output level is reached in a shorter time period, it indicates improved productivity. It is this respect that projects designed to improve productivity must also consider time as a key resource (Joyce, 2000).

Productivity measures the efficiency with which resources such as labor or capital are employed in the production process. There are two widely used productivity measures is labor productivity and multifactor productivity.

Productivity is effectively using the capital and labor in order to turn them into the products and services that company can offer to their customers. This is important if company want to make sure that are not wasting money in producing products. How well manager convert their input to output is also a measure for economic well-being. Not doing so will end up in slow productivity and even slower growth (Jorgenson et.al, 2007).

When company are productive it will be comes to creating goods and services, company will be able to achieve low costs per unit for end products. This means company can save money in the production phases of their operation. This will enable

to make more products out of savings or use the amount that has saved for logistic expenses.

In order to improve productivity, company have to start off with the employees. Employees are also considered part of the resources of particular business. Manager need to provide them with the training programs that can help them learn how to prioritize work or use new procedures that improve productivity (Jay et al, 2010).

Increasing the productivity of these frontline staffers will help them accomplish this effectively and efficiently, while increasing customer satisfaction. Organizations need to provide these employees with customer relationship management (CRM) business software to help them be prepared, provide customers and prospects with the solutions they need on their terms, and ultimately, close the sale within a shorter timeframe than ever before.

2.2 SMALL MEDIUM ENTERPRISE

2.2.1 Definition of Small Medium Enterprise (SME)

Malaysia adopted a common definition of SMEs to facilitate identification of SMEs in the various sectors and subsectors. This has facilitated the Government to formulate effective development policies, support programmes as well as provision of technical and financial assistance. An enterprise is considered an SME in each of the respective sectors based on the annual sales turnover or number of full-time employees.

The Small and Medium Enterprise (SME) sub sector plays a vital role in the Malaysian economy and is considered as the backbone of industrial development in the country. An enterprise is considered as an SME based on the annual sales turnover or number of full-time employees. An SME in the manufacturing sector is defined as an enterprise with full-time employees not exceeding 150 employees or with annual turnover not exceeding RM25 million. On the other hand, SMEs in the service and primary agricultural sector and ICT are enterprises with full-time employees not exceeding 50 or annual turnover not exceeding RM5 million. The SMEs in both sectors are further categorized into medium, small and micro enterprises, as shown in table 2.1.

Table 2.1 Definitions of SMEs in Malaysia

	Micro Enterprise	Small Enterprise	Medium Enterprise
Manufacturing, manufacturing related services and agro-based industries	Sales turnover of less than RM250,000 or less than 5 fulltime employees	Sales turnover between RM250,000 and less than RM10 mil or between 5 or 50 fulltime employees	Sales turnover between RM10 mil and RM25 mil or between 51 or 150 fulltime employees
Services, primary agriculture and information and communication technology (ICT)	Sales turnover of less than RM200,000 or less than 5 fulltime employees	Sales turnover between RM200,000 and less than RM1 mil or between 5 or 19fulltime employee	Sales turnover between RM1 mil and RM5 mil or between 20 and 50 fulltime employees.

Source: Small and Medium Industries Development Corporation (SMIDEC), 2005

2.2.2 Total Established of Companies by Size

Malaysian SMEs are a vital component of the country's economic development. According to SMIDEC (2005), SMEs accounted for 93.8 percent of companies in the manufacturing sector. They contribute 27.3 percent of total manufacturing output, 25.8 percent to value-added production, own 27.6 percent of fixed assets, and employ 38.9 percent of the country's workforce. In addition, value added products from SMEs are expected to be worth RM 120 billion or 50 percent of total production in the manufacturing sector by 2020. Despite these statistics, Malaysian SMEs' share of total exports is approximately 20 percent lower than many other countries', such as the Philippines, Hong Kong, Taiwan and even the US (SMIDEC, 2002). SMEs in Malaysia are concentrated in the textile and apparel, food and beverages, metals and metals products and wood and wood products sectors. The majority of manufacturing companies are located in the central parts of Malaysia and around the country's major industrial regions.

The Malaysian Government's commitment to, and concern for, the development of SMEs has been clearly evident since the early 1970s. The 'New Economic Policy' was introduced in 1971, which aimed to improve people's welfare and restructure ethnic economic imbalances. The government's commitment to the development of SMEs can also be seen in the second Industrial Master Plan (IMP2), which ended in 2005, which is followed by the Third Industrial Master Plan (IMP3) 2006–2020, to coincide with the country's vision for 2020 (MITI, 2005). The Malaysian Government has implemented various policies and strategies under these plans. The IMPs were formulated to enhance the growth of the manufacturing sector across the entire value chain and cluster-based industrial developments. Hence, this plan provides an integrated approach to the development of industrial areas and opportunities for growth of SMEs (MITI, 2005).

In terms of the total numbers of SMEs in the country, the 2000 census conducted by the Department of Statistics showed that there were 20,455 active establishments in the manufacturing sector out of the 44,185 manufacturing companies registered with the Companies Commission of Malaysia (CCM), as shown in Table 2.2. Out of these 18,271 (or 89.3 per cent) were SMEs. The textiles and apparel sector accounted for approximately 17 per cent of the total, making it the largest. This sector is followed in size by food and beverages (greater than 14 per cent), metals and metals products (14.3 per cent) and wood and wood products (13.6 per cent). The 2000 census also captured a total of 192,527 establishments in the service sectors, of which, 96.8 per cent were SMEs. Most of the companies in the services sector (88 per cent) were in the retail and wholesale, followed by education and health (4.4 per cent), professional services (2.9 per cent) and transport and communication (two per cent).

Table 2.2: Distribution of SMEs by Size

Type	Number of establishment	Share (per cent)
Micro	7,171	39.3
Small	9,445	51.7
Medium	1,655	9.1
Total SMEs	18,271	89.3
Large	2,184	10.7
Total	20,455	100

Sources: Malaysian Department of Statistics, Census 2000

2.3 FOOD PROCESSING INDUSTRIES

2.3.1 Introduction

The food processing industry in Malaysia plays a significant role in the economy of the country. It serves not only as a source of employment but also a market outlet and added value for primary agricultural products. Under the Industrial Master Plan (IMP) 1986-1995, the food processing industry has been identified as one of the priorities among the twelve manufacturing sectors for industrial development. Such priority was determined on the basis of its potential contribution to manufacturing development, particularly with respect to employment generation, foreign exchange saving and value added creation. In addition, the rationale for the development of this sector lies with the fact that the industry has a strong linkage with other sectors of the Malaysian economy (Government of Malaysia).

Food, being a basic necessity, has always provided ample opportunities for investment consideration. These opportunities were given a boost when the government, as mentioned above, acknowledged the food-processing sector as one of the priority sectors in the context of the industrial development of the country. The Government's intentions will be to see further growth of the local food-processing sector, especially through the utilisation of the local raw materials. Relevant government policies such as the National Agricultural Policy (NAP) and the first and second Industrial Master Plans (1986-1995 and 1996-2005) were established to clearly promote and provide direction for the development of the sector. There is however a dichotomy in the structure of the Malaysian food processing sector. On the one hand, Malaysia has large food industries, which are well organised and using modern and up-to-date machinery and technologies. With ample capitalisation, they are in a position to keep abreast of the dynamic changes taking place in the sector; however, a large proportion of their raw material inputs are imported. On the other hand, the country has medium and small industries (SMIs), which use low level technologies, and are often relatively more labour intensive in operation (MIDA, 2010).

Food processing includes the methods and techniques used to transform raw ingredients into food for human consumption. Food processing takes clean, harvested or

slaughtered and butchered components and uses them to produce marketable food products. There are several different ways in which food can be produced (Economic Research Service, 2009).

Smaller nations like Malaysia are bound to face difficulties in competing in the global trade economy which is mostly dominated by the larger economies, as well as it is a complex process to develop adequate resources in the development of the food industry and trading by Malaysia. In addition, as stated by Salleh (2006), "the ever changing competitive business environment often requires firms to adapt quickly to a challenging environment, even more so for small businesses. Small businesses are facing competition not only at their peer level but also from bigger corporations". Thus, the SMEs today need to identify, prioritize and minimize their business challenges in order to be more competitive and relevant in the business world. This scenario is also applicable to SMEs in Malaysia (Salleh, 2006). Likewise, the development of the SME sector in Malaysia has been phenomenal there by contributing significantly to the economic growth process over the years (BNM, 2005).

At the moment, the food industry seems to be one of the potential and an important industry in Malaysia and therefore it is necessary to ensure the conformity, assurance and trustworthiness of the quality of food products. The quality of a food product is referred to be in every single aspect of the food including the safety, nutrition and hygiene (Musa, 2008; Talib , 2009). In Malaysia, some consumers are using the halal certification as important criteria when making a decision in purchasing food by assuming that it is a standard for quality food (Nooh et al., 2007). However, Good Manufacturing Practices (GMP) or Hazard Analysis Critical Control Point (HACCP) and ISO certification is the criteria in the European market as well as in other countries (Elsadig et.al, 2011).

The food processing industry, due to its diverse nature and a policy of SSI reservations, has ordained a predominant role for small enterprises. The organised sector, consisting of mostly large companies, accounts for only 25% of the market while the remaining 75% of the market is divided between the small scale and the unorganised sectors. The micro and local community based food processing enterprises have

dominated the primary processing segment of the industry. Small and medium firms are mostly operating in niche markets.

2.4 REASON OF LOW PRODUCTIVITY

Productivity is an average measure of the efficiency of production. Productivity is a ratio of production output to what is required to produce it (inputs of capital, labor, land, energy, materials. The measure of productivity is defined as a total output per one unit of a total input (Tetsuji, 2011).

A producing company can be divided into sub-processes in different ways; yet, the following five are identified as main processes, each with a logic, objectives, theory and key figures of its own. It is important to examine each of them individually, yet, as a part of the whole, in order to be able to measure and understand them. The main processes of a company are as follows:

- Real process.
- Income distribution process
- Production process.
- Monetary process.
- Market value process

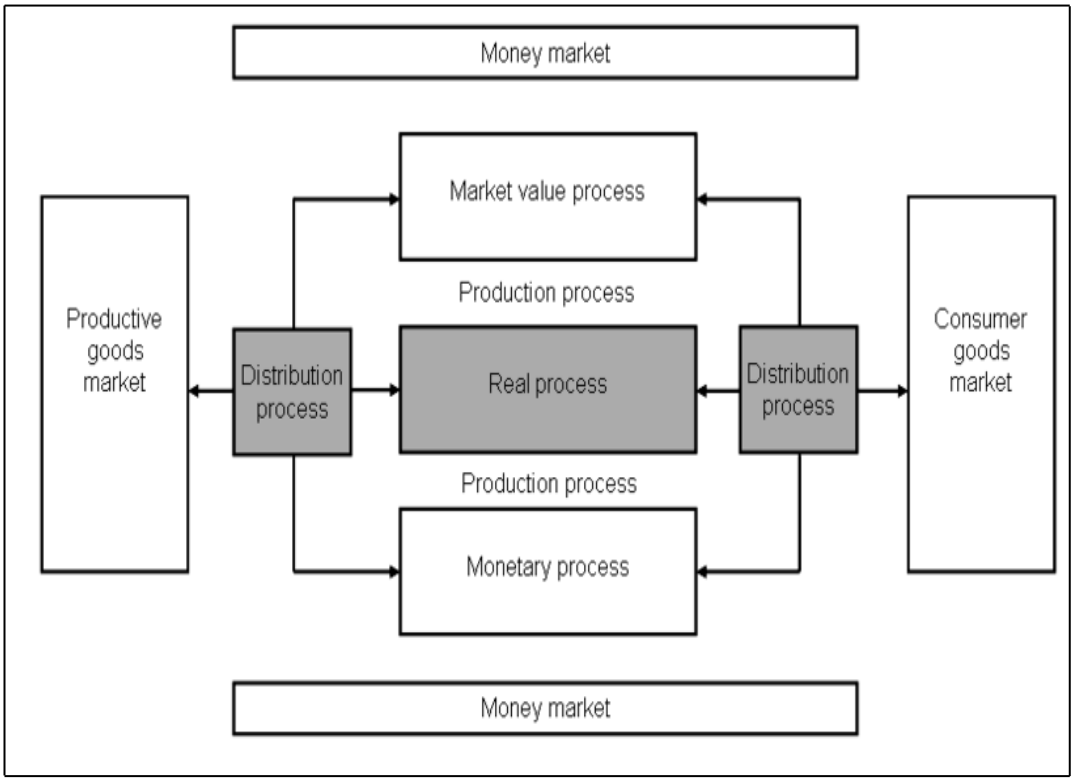

Figure 2.1: Main process of company

Sources: Consultants Inc JAPAN. Asianization Initiatives

Besides that, companies with low levels of productivity could theoretically get significantly more work done, but they have factors that hold them back from their full potential. This leads to wasting money and losing ground to competitors. Knowing the reasons your company's productivity is lacking directs you to appropriate solutions to improve productivity and profits. The main part of process on production process. In this process quality is important, the entire product, must be create a good quality for the reduce rejection in this process.

2.4.1 Time Management

Ineffective time management practices decrease a company's productivity in several ways. The overall strategy for such a company contains inefficiencies because the manager doesn't see and take steps to implement the most productive ways to complete tasks. Individual employees flounder under poor management. They don't have the freedom and coaching to reach their full potential, so they don't get as much

done as they could. Employees who do not feel like their supervisors recognize their efforts often don't try hard to perform to their full capacity (Jones et.al, 2000)

If have employees look at areas that seem to be time wasters, such as personal phone calls, coffee breaks, talking with friends stopping by for non-work discussions, or personal Internet searches. That's not to say that these are areas that must be avoided, everyone needs a break and the ability to take care of reasonable personal issues. Employees must take break, to get energy to continue their job, but not to waste time.

This is will be for analysis purposes to see where wasted time is spent and to create an awareness of time wasters and typical weekly amounts. Employees are often surprised about how much time is wasted on trivial things. In becoming more aware of actual time spent, they can easily find ways to use time more wisely. This is where follow-through, or organizational time management, truly begins (Rochon, 2000).

In tracking their work activity, managers get a clear view of how much time they thought a task would take in comparison to actual timeframes. This will promote better estimating practices for tasks. Project task estimates will become more realistic, and company project plans will vastly improve in regards to time, cost, and scope. That is including in workflow.

Likewise, operational, team, and all other tasks will become better estimated as this process evolves. Staff will find ways to meet expected durations better by becoming more aware of the reasons they missed deadlines. Not only does this area provide for better estimates but also improvements in their use of time in delivering assigned tasks (Sav et.al, 2012).

2.4.2 Layout Workshop

In a manufacturing organization, a job to be manufactured spends most of the time in moving and waiting. For reduction of this moving and waiting time of jobs/parts, it is necessary to have proper layout and proper scheduling procedure. (Sugiarto, 2006).

Workshop layout in manufacturing planning also forms an integral part of factory planning. The factory planning layout consider as a strategies of the organization. Planning layout begins with the design the position of the factory building and goes up to the location and movement of a work table of the machine.

According Article of Planning layout, 2013, for these reasons, planning and the proper workshop layout will enable a good and pleasant work. When planning the workshop layout, it is necessary to consider a number of factors that affected of the work:

- What exactly company want to do in the workshop: in order to make proper plan about required dimensions of the workshop and its organization, at first think about what are going to use it for, what are your affinities, plans and working possibilities in the future.
- Estimate the costs and time required to equip the workshop: evaluate the company options and what do company need for workshop so it could become functional.
- Manager should plan the arrangement of the machines and worktables to ensure enough space to makeover.
- The number of machines and workshop accessories (e.g. sawhorses, benches...);
- Calculate the number of workers / people in the workshop.
- Will manager be making small objects such as toys and models, or you will manufacture large items such as doors and windows. This is very important when planning the space requirements, size of the machines, storage space for materials and finished products.
- Space for storing lumber and other materials for processing, and the storage of finished products.
- How easy is the access to the home workshop: The workshop should have direct entrance from the outside (not from the house), because it will often be necessary to carry in or out some large, heavy or dirty things, and a lot of waste as well. It may require access for the freight vehicle. Besides that, various works that produce noise, dust or unpleasant smells will be often made in the workshop, so it's good that the workshop is not located in the immediate area of the buildings where the people live.

2.4.3 Team and Employee Skill

Dissatisfied employees are generally unproductive ones, while happy employees who are passionate about their jobs get the work done effectively. People have a natural tendency to prioritize tasks they like, so an employee who likes his job will naturally put his job ahead of his other desires, such as relaxing, chatting with a co-worker or getting through the day so he can go home. Getting the right employee for the job can lead to a satisfied employee and productive company (Kristen, 2001).

According to Business Directory, team work has been defined as the process by which a group of people work collaboratively to achieve a set or given goal or task. According to this definition, team work means that people will try to cooperate, using their different individual skills and talents to provide constructive feedback despite the fact that individuals may have personal conflict among themselves. This definition acknowledges that team work brings together ideologically different people, with different skill sets for the accomplishment of a set target or goal.

Team refers to the system of getting people in a company or institution to work together effectively. The idea behind team effectiveness is that a group of people working together can achieve much more than if the individuals of the team were working on their own. So that, in the team, manager will be manage team effectively for the lower impact on business and productivity (Anderson, 2013).

Team effectiveness depends in part on bringing together people who have different skills that somehow complement each other. This can mean different technical abilities or communication skills. In fact, teaming up people who share the exact same characteristics is often a recipe for disaster. Team effectiveness depends on people taking on different roles in a group setting. If there is no agreement on who does what in the group, it is unlikely that the team will prosper.

Team work has one major downfall. Sometimes groups end up making decisions they know are not in the best interest of the project, just so they can keep the process moving. Conflict is innate to any work done in groups, and should be taken as part of the challenge rather than as something to be avoided by compromising. Team effectiveness should be increased, not compromised, through conflict (Wise Geek Article, 2003-2013).

Besides that, the proactive employee is important. In the workplace, a positive attitude breeds increased productivity. According to the American Management Association, a management team that maintains a positive approach and reinforces positive behavior will get positive results. Spend time emphasizing employee accomplishments by recognizing them in public. Employees will begin to associate a strong work ethic with being recognized for positive results. This will increase productivity. It also reduces the need to dwell on negative performance aspects. When employees see the benefits of productive work, they tend to want to emulate that rather than experiment with the possibility of negative results (David, 2013).

2.4.4 Capacity of Machine

One of the most important issues that businesses have focused on in the last 20-30 years has been quality. As markets have become much more competitive, quality has become widely regarded as a key ingredient for success in business. The quality of product consider with the capacity of machine that company have

Using the latest or advanced machine is given to more quality in processing. For example, using for cutting machine dough, it given fit size for every kind of product. The sizing of dough can make the same, also it can be less for rejection of the product.

2.5 STRATEGIES IMPROVING PRODUCTIVITY IN SMEs

Increase productivity with real-time goals. What the problem is plant floor employees are informed of production goals when it is too late to act. Deliver real-time production goal information to the plant floor. Display a shift or job based goal. Additionally the target can be displayed in real-time as a count based on the product take time. Actual count can also be shown as well as calculated production efficiency and much more. People respond to information that tells them where they are and where they should be in relation to production goals. Show the goal count, an actual count, a per cent efficiency, pieces to goal, the estimated time to goal, a piece or time variance from goal, OEE Performance and more in any combination (Vorne Industries Inc,2001).

Besides that, get a handle on small stops and reduced speed operation (OEE Performance). Downtime is normally easy to identify because the equipment or process

is simply not running, small stops and reduced speed operation, however is much more difficult to detect. What's worse is that these events, if logged, are often incorrectly logged making it difficult to identify and correct the problem. OEE Performance is a great tool for monitoring manufacturing performance (Vorne Industries Inc.2002).

Almost of strategies, conclude that production is more important. So, manager or organization must be practising some of strategies and thinking how to increase the production. All of company goal is the profit. Any work in the business must be control and try to reduce the cost and budgeting for any resources. For example, purchasing planning should be follow such as follow the step of planning purchasing, try to get the best supplier and deal the best method of purchasing.

2.5.1 Training

Training is the acquisition of knowledge, skills, and competencies as a result of the teaching of vocational or practical skills and knowledge that relate to specific useful competencies. Training has specific goals of improving one's capability, capacity, productivity and performance. It forms the core of apprenticeships and provides the backbone of content at institutes of technology (also known as technical colleges or polytechnics). In addition to the basic training required for a trade, occupation or profession, observers of the labor-market recognize as of 2008 the need to continue training beyond initial qualifications: to maintain, upgrade and update skills throughout working life. People within many professions and occupations may refer to this sort of training as professional development.

According to Business and Resource Article, (2013), the importance of training of employees is both new and experienced and cannot be overemphasized. Effective training of new employees results in employees who:

- Know what they're doing
- Save time
- Have a good feeling about the company

1) New Hire Orientation

New hire orientation programs include showing new workers how to perform their jobs safely and efficiently. But leading companies know the importance of employee training and that orientation is a great opportunity to introduce employees to the company, its products, its culture and policies and even to the competition. Adding these elements to new employee orientation checklist can greatly improve worker satisfaction and employee retention.

2) Supervisor Management Training

The importance of employee training doesn't end with new workers. Manager training and development is equally important to workplace safety, productivity, and satisfaction. Among the most useful skills that can be addressed are manager communication, employee motivation, and employee recognition.

3) Required Employee Training

Many standards promulgated by the Occupational Safety and Health Administration (OSHA) explicitly require employers to train employees in the safety and health aspects of their jobs. Other OSHA standards make it the employer's responsibility to limit certain job assignments to employees who are "certified," "competent," or "qualified" meaning that they have had special previous training, in or out of the workplace. These requirements reflect OSHA's belief that training is an essential part of every employer's safety and health program for protecting workers from injuries and illnesses.

From an human resource perspective, a growing number of states are requiring workplace harassment training for employees, and states such as California, Connecticut and Maine specifically require employee sexual harassment training, yet another example of the importance of employee training.

2.5.2 Standardized Process Work

Standardized work is the foundation for consistent and stable quality. This consistency and stability is the first step towards Continuous Improvement (Kaizen) (Booz & Company Inc,2009). The standardized process work can:-

a) To maintain the safety at work place.
b) To guarantees quality for the customer.
c) To achieve better production performance.
d) To create efficient production sequence with less waste

Every good business tries to get their employees to use the best methods for achieving successful results. This is a common sense approach to do things right, the first time. However, what actually happens is that business owners do not follow through to implement these best practices throughout their organization. This leads to inconsistencies and variation in results. Standard Work is the method for defining these best practices and ensuring that every employee is following them to deliver value to their custom (Chris, 2008).

Besides that, Standardized Work is the most efficient combination of person, machine, and material. The three elements of standardized work are:

1) Takt time

2) Work sequence

   a) Standardized Work Combination (SWC) Chart
   b) Standardized Work Diagram (SWD)
   c) Standardized Work Instructions

3) Standardized work-in-process

The benefits of standardized work include documentation of the current process for all shifts, reductions in variability, easier training of new operators, reductions in injuries and strain, and a baseline for improvement activities. Standardizing the work adds discipline to the culture, an element that is frequently neglected but essential for

lean to take root. Standardized work is also a learning tool that supports audits, promotes problem solving, and involves team members.

The important thing in the standardized work is a cycle time. Cycle time is the total time from the beginning to the end of process, as defined by the company and their customer. Cycle time includes process time, during which a unit is acted upon to bring it closer to an output, and delay time, during which a unit of work is spent waiting to take the next action.

According to the Article from Booz &Co, there are seven steps to implementing standardization, an approach that Booz & Company and RWD Technologies, our lean manufacturing partner, call the "standard work wheel". This is a comprehensive framework that can be used across all industries and for all levels of an organization, from senior management to shop floor employees. The first three steps establish a working sequence that enables subsequent standardization efforts by defining and formalizing the standardized work itself:

1) Taking Inventory: Use tools like value stream mapping (VSM) to determine which aspects of production must be standardized. VSM can help define the material and information flows that most impact quality, lead time, process cycle time, and safety operations and focus the organization on the critical work instructions that would most benefit from standardization.

2) Generating Content: Establish workshops to write best-in-class instructions for standardization. These sessions should be multifunctional, involving employees from operations, engineering, quality control, and other departments to ensure that the new standards are a synthesis of best practices throughout the organization and that they are carefully maintained. For example, at Toyota, one operator is now deemed the "primary process operator," solely responsible for keeping all of the process documentation in order. This employee has total ownership of the process and pride in making sure that the standards are the best the company can produce. Time analysis should be a key element of all work instructions, as it is the foundation for improvement.

3) Formatting & Availability: Define the optimal layout for the standardized work instruction. Although the “look and feel” aspect is often underestimated as too fuzzy to pay much attention to, that is not the case: User-friendly and easily accessible work instructions will be used more frequently and more enthusiastically because they enlighten rather than confuse. At Boeing, operators use small portable screens that alert them to the correct procedures and feed information to a repository.

4) Training: Use work instructions as the basis for providing standardized training for employees new to a particular job and for those who need retraining.

5) Control and Action: Impress upon employees that failing to follow the organization’s standards will not be taken lightly. The best way to do this is to tell workers that managers will complete audit checklists to make sure that everyone is complying with the rules. It’s important to note that control is a significant differentiator.

6) Updating Content: Encourage workers to suggest improvements to standardized work instructions. Each suggested change to equipment, machinery, buildings, or processes should be directed at improving worker performance, product quality, and employee safety as well as throughput, productivity, or lead time.

7) Governance: Give all management functions specific tasks related to standardization. Implementing standardization requires a lot of communication and training at all levels of an organization. Each person in the corporate pyramid has a job to do in making certain that standardization is established in a sustainable way.

2.5.3 Changes Layout

When planning the layout of a workshop, it is one thing to move the actual items around the space you have until the layout looks functional, but often the items are bulky and cumbersome, and trying different layouts becomes arduous.

The term 'layout planning' can be applied at various levels of planning: Plant location planning (where manager are concerned with location of a factory or a warehouse or other facility.) This is of some importance in design (Tompkins, 2010).

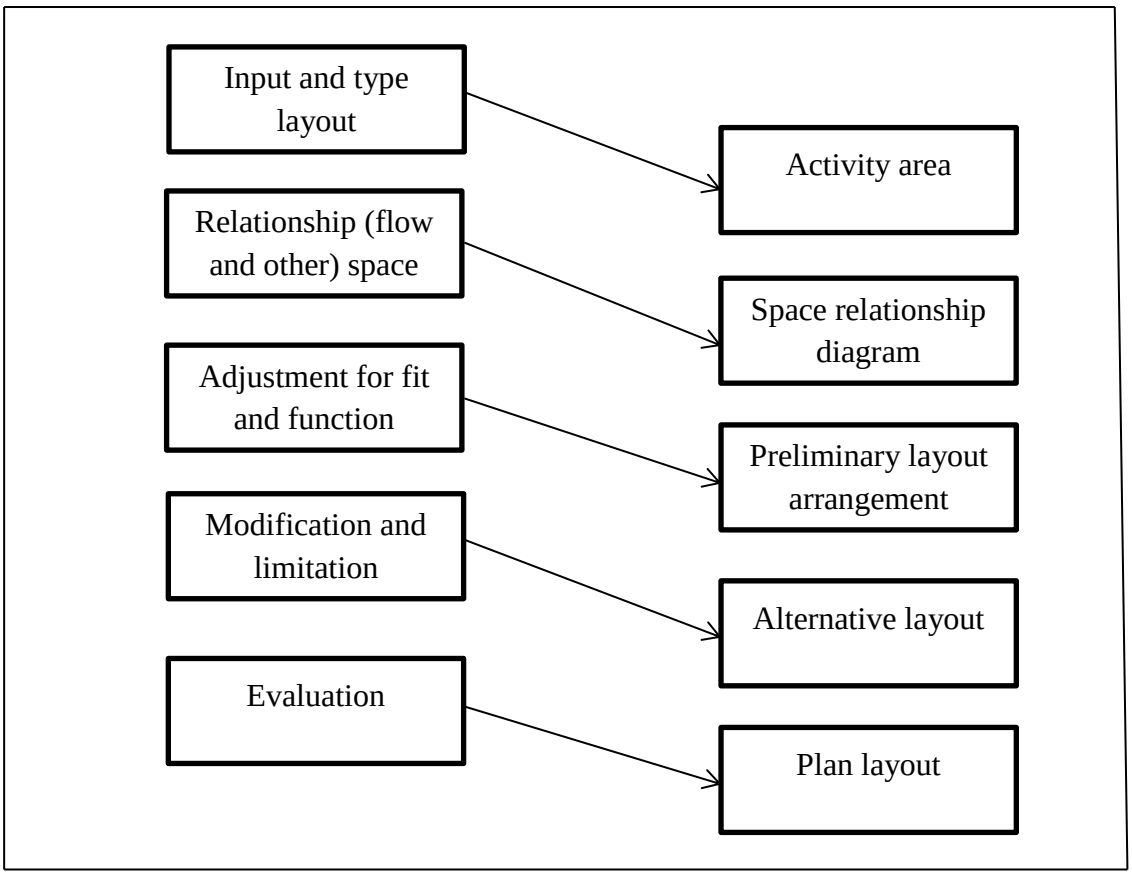

Figure 2.2: Systematic Layout Planning Pattern

Source: Richard Multher & Associates

The systematic layout planning pattern of procedures is five section series of procedures resting squarely of the three fundamental of relationship, space of workshop and adjustment for the changing. Facilities planning is requires of input data by product, quantities of material, routing, supporting services and timing management. The facility planner must collect data from others for each of the five key inputs (Muther, 2004).

2.5.4 Adding Machine Capacity

Adding the machine capacity is including the planning of capacity. Capacity planning is the process of determining the production capacity needed by an organization to meet changing demands for its products. In the context of capacity planning, design capacity is the maximum amount of work that an organization is capable of completing in a given period, effective capacity is the maximum amount of work that an organization is capable of completing in a given period due to constraints such as quality problems, delays, material handling, etc. The phrase is also used in business computing as a synonym for Capacity Management. A discrepancy between the capacity of an organization and the demands of its customers results in inefficiency, either in under-utilized resources or unfulfilled customers. The goal of capacity planning is to minimize this discrepancy. Demand for an organization's capacity varies based on changes in production output, such as increasing or decreasing the production quantity of an existing product, or producing new products (Elaine, 2000).

According the Article of Professional & Effective Services (2013), the suitable machine is can be control the quality. Quality control is checks the quality of completed products for faults. Quality inspectors measure or test every product, samples from each batch, or random samples as appropriate to the kind of product produced. The advantage of control the quality is inspection is intended to prevent faulty products reaching the customer. This approach means having specially trained inspectors, rather than every individual being responsible for his or her own work. Furthermore, it is thought that inspectors may be better placed to find widespread problems across an organisation. Rejected product is expensive for a firm as it has incurred the full costs of production but cannot be sold as the manufacturer does not want its name associated with substandard product. Some rejected product can be re-worked, but in many industries it has to be scrapped is either way rejects incur more costs.

Management may want to consider adding more machines to ensure meeting demand. Cost of machinery, the value of demand customer and other alternative to meet the customer order are all factor that influence decision to determine if machinery should be added. If meeting customer order on time critical, then a certain amount of access capacity at all times will be desired. It was assumed the machinery would be

operational immediately after financial maintain and added to an existing facility in the region, where floor space was available (Elaine, 2000).

2.5.5 5S (Sorting, Straightening, Systematics, Standardized and Sustain)

In order to participate in the global economy and compete against companies that are advantaged by overseas production, businesses are looking to find ways to reduce cost improve quality and increase productivity. For this reason, businesses are implementing manufacturing, which allows for improvements in productivity while increasing the quality of the output. Manufacturing systems use minimal amounts of resources to produce high volume of high-quality goods with some variety, allowing companies to make better use of available resources (William, 2012).

According the article of Hudgik (2000), 5S is a structured approach to getting a workplace cleaned up, organized, standardized is eliminating waste materials and wasteful practices, and then sustaining the improvements that were made. It is called "5S" based on the five Japanese words, each of which starts with the letter "S," that describe the five steps this involves. There are many articles describing 5S, but what are the benefits of 5S?

The key benefits of 5S are:

- Less Waste (Improved Efficiency)
- Reduced Space Used For Storage
- Improved Maintenance
- Improved Safety
- Better, More Committed Employees
- Improved Quality

A key principle of 5S is to get rid of items that are not used, and make it more convenient to find those items that are needed. This gets rid of clutter, unnecessary tools, scrap materials and unused supplies. It organizes labels and places close at hand those tools and materials that are needed on a regular basis. The result is that more time

is spent productively and less time is wasted finding needed tools and materials (Hudgik, 2000).

Implementing 5S Equals Improved Safety. The benefit of the implementing of the 5S is:-

- Clean means that spills get cleaned up ASAP, eliminating the potential for slips and falls.
- Clean means clutter is removed, revealing hidden electrical, chemical or mechanical hazards.
- Having needed tools, materials and supplies close to where they are needed greatly reduces travel (movement) and as a result reduces the potential for injury.
- Standardization means that unsafe practices are eliminated because those practices are not a part of the standards.
- Employees who have their eyes open for spotting ways to improve using 5S principles will also be more aware of their surroundings and potential safety hazards.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This study extracted to examine the level on production productivity improvement in one company of small medium enterprise in Kota Bharu, Kelantan. Here, researcher want to know the reason of how the low productivity can happen in production of food by conduct descriptive study for obtaining primary data meanwhile secondary data are gain from analysis and researcher done by employees. Secondary data also obtained from books, journal, articles, conferences, newspaper articles and internet as well. Books and articles which have explained about Small Medium Enterprise industries in Malaysia and productivity improvement in food process.

This part is discussion on study methodology that is applied. Early stage is description to methodology that used followed further by explanation about method and technique that used this study.

In the following part, influential management approaches are shortly outlined and examined with regard to the question whether they are a comprehensive management concept in the sense of the above described Integrative Management used as analysis model. In addition each concept is shortly examined by its support for educational organizations.

These two techniques are sometimes called survey research methods, there is questionnaire and interview. In this study choose the interview as a method of survey. In survey research a sample of participants is drawn (usually using one of the probability sampling methods) from a larger population. The intent of surveys is to

make inferences describing the whole population. Thus the sampling method and return rate are very important considerations with provide an excellent source for persons who want to develop and conduct their own questionnaire or structured interview. Interviews are a series of questions presented orally by an interviewer and are usually responded to orally by the respondent (Morgan et al, 2002).

Besides that, interviews to be more open-ended, allowing the participant to provide detailed answers. Open-ended questions do not provide choices for the participants to select, and must formulate an answer in their own words. This type of question requires the least effort to write, but they can be difficult to code and they are demanding for participants, especially if responses have to be written or concern issues that the person has not considered. So that, the interview can provide with manager and employers.

3.2 POPULATION AND SAMPLING TECHNIQUES

In this study, the researcher chooses observation data. In quantitative research, observation is used to collect data regarding the number of occurrences in a specific period of the time or duration of a very specific process.

Besides that, in this study, researchers focus on productivity improvement on processing. The location of this research in frozen food processing. There is looking that on time, employee, quality and output of product. An analysis of cases grouped together according to the process variable. The second form of analysis carried out involved the division of the observations of each workshop or production process.

3.3 DATA COLLECTION TECHNIQUES

Data collected via interview with an interview, and observation guide and with process study sheet (Appendix B and Appendix C). For this study, data triangulated by observation, and document review. The primary method in phase one in the interview guide, in phase two is was observation, in phase three it was the production process and observation.

The data was collected follow the framework is:-

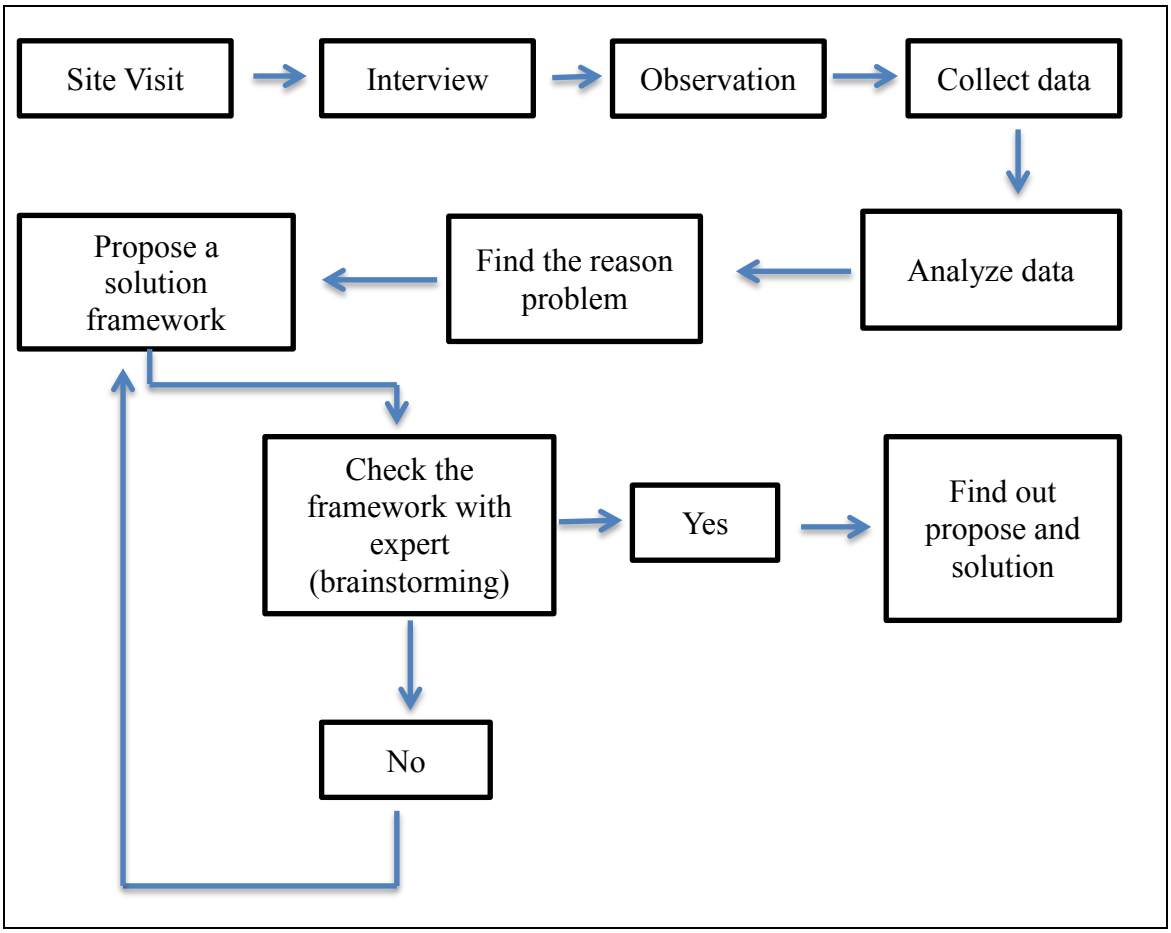

Figure **3.1:** Data analysis framework

3.3.1 Interviews

Interviews were both formal and informal. In the formal interview, researchers choose manager and informally interview with fulltime employees who carried out part or all of the design and development work were interviewed. An interview has been used to collect data for analysing the characteristics of the organization's people, process, and tools and technology improvement. An interview guide was used to help carry out interviews (Robert et al, 2009). The interview guide was based on the one used in Morgan's (2002) doctoral research. Interviewing is a suitable method for situations in which specific information is not needed and information is needed from relatively few people (McCelleland, 2000). Interviews may allow for focusing on a particular topic, a deeper exploration of issues, and unprompted feedback (George et al,

2001). During interviews the researcher assumes a role similar to the facilitator in focus groups and as such, is subject to the same potential biases, and also requires a keen skill set (McClelland, 2000).

For this study, undergo educational visited to one company to do interview with manager and employees in production process and asked some question to the manager out of the data of low productivity in output of product and also know how the low productivity can occur in company. Then, after the data gathered, analysing process for increased productivity can be proceeding. In the interview, the researcher wants to know about the background of the company, also to get some data of production. Lastly, find the some solution for solve the problem and get brainstorming analysis with accepted from the manager.

3.3.2 Observation

Even though interview obtained responses from the subjects, it is possible to gathered data without asking question of respondent. So, it can be observed in their natural work environment or in the production process and their activities and behaviour or other points of interest recorded. In this study, researcher use observation document or observation guide (appendix B) for the record in collect data.

In addition, from the activities performed by individual under study, their movement, work habit, the statement made and meeting conducted by them, their facial expression of joy, anger and other emotions and body language can be observed and the most important is observe time work process for the documentation of process sheet. Other environment factors, such as workplace layout, workflow pattern, how close the seating arrangement is can also note.

In observation, time must be same, for example, if the researcher starts observe at morning, so the next observation must be at morning also. The researcher has been observing every kind of process workers done with the product. The observation was take 6 times for more confident the data process.

The researcher has been play two roles while gathering field observational data like:

- Nonparticipant-observer
- Participant-observer

Nonparticipant-observer

It have been collected the needed data in the role of research without trying to become an integral part of the organization system. For example, it might sit in the corner of an office and observe and record how the process making the product. Observation of all the activities of all of employees over a period of several days allowed to make some generalization on how people typically in processing.

By only observing the activities, recording tabulating information, then come up with some findings. For this purpose, researcher has been physically present in the workplace for extended period of time, which makes observational studies time consuming.

Participant Observer

This study was subjected to both the strengths and limitations of participant observation since the researcher was an active participant in the information sessions, pre-workshop session, workshop, and any needed sessions. As a result the researcher has been observed participants' behavior in relation to the introduction of product development principles, process, and tools while conducting the aforementioned sessions.

Noteworthy is that for some topics there are no ways of collecting evidence other than through participant observation. The likelihood that there was an internal lean practitioner who operates from a socio-technical systems perspective who possessed both expertise in instructional design and change a gentry was remote, hence the researcher's role of active participant. Participant observation can result in additional opportunities for data collection. Observations were recorded in the form of case study notes and research narratives (Robert et al, 2009).

Observations can provide quantitative and qualitative data. They are useful for analyzing required skills and knowledge. In addition, they are ideal for observing particular processes or procedures. This method is appropriate if it is important to see what is happening or the interactions amongst employees are important (McClelland, 2000). Observations are contextual and can be undertaken in real time during an event (Robert et al, 2009).

Five reasons for including participant observation in employee studies, all of which increase the study's validity:

- It makes it possible to collect different types of data. Being on site over a period of time familiarizes the researcher to the employee, thereby facilitating involvement in sensitive activities to which he/she generally would not be invited.
- It reduces the incidence of "reactivity" or people acting in a certain way when they are aware of being observed.
- It helps the researcher to develop questions that make sense in the native language or are process.
- It gives the researcher a better understanding of what is happening in the process and lends credence to one's interpretations of the observation. Participant observation also enables the researcher to collect both quantitative and qualitative data through surveys and interviews.
- It is sometimes the only way to collect the right data for one's study.

3.3.3 Limitation of Observation

Researchers had been noted the limitations involved with using observations as a tool for data collection. For example, (Dewalt 2002) note that male and female employees, researchers have access to different information, as they have access to different people, settings, and bodies of knowledge. Participant observation is conducted by a biased human who serves as the instrument for data collection, the researcher must understand how his/her gender, sexuality, ethnicity, and theoretical approach may affect observation, analysis, and interpretation. The way of job between

male and female also different, so that, the researcher can observe two options and compare it.

Stephen et al (1999) refer to participation as meaning almost total immersion in an unfamiliar employee to study others' lives through the researcher's participation as a full-time employee or contract, though they point out that most observers are not full participants in this company. Another factor they mention that may inhibit one's acceptance relates to what they call the structural characteristics, that is, those mores that exist in the community regarding interaction and behaviour. Some of the reasons they mention for a researcher's not being included in activities include a lack of trust, the low innovation technology, potential danger to either the community or the researcher, and the employee's lack of funds to further support the researcher in the study.

The limitation on this study, researcher observing to see to all aspect of process and activities employees in workshop but limited on the participant. In observing, researcher just chooses two or three employees but limit in the time.

3.4 DEVELOPMENT OF INSTRUMENT

The respondent for survey has conducted in Malay language for easy participant to understand. The questions choose for the interview would be open-ended. An open-ended interview is way of gathering information from people. An interview ask question of a participant, who then answer those question. The interview is considered open-ended because even though the questions can be scripted, the interviewer usually doesn't know what the contents of the response will be. These interviews may have some questions to gather basic factual data on participants such as age and gender, info about this company but usually they focus more on the participant's thoughts, experiences, knowledge, skills, ideas and preferences.

One advantage of an open-ended interview is that, in addition to fulfilling the original interview objective, the provided complete explanations can lead interviewers, researchers and other businesspeople in new directions, letting them see perspectives

and opportunities they didn't consider before. Participants also can clarify what they mean, with motivations often revealed.

Besides that, in this study, observation guide (Appendix B) paper has been use, in this paper called document for observation. In this observation guides, the researcher take note about the time, location of observe, data output product and implementing in process.

3.5 DATA ANALYSIS METHOD

3.5.1 Secondary Data

Secondary data are gathered through such existing sources from various sources of information that already exist and do not have to be collected by the researcher. These data are accessible, documented and inexpensive and quickly obtained. Secondary data is the data collected for some purpose other than the problem at hand. The information that been gathered may be ready to use or may require considerable processing before they are useful. Secondary data can be collected from either internal sources or external sources. For example, company records or achieves government publications, industry analyses offered by the media, web sites, and the internet and so on.

The advantage of secondary data is the saving in time and costs of acquiring information that are generated.

3.5.2 Primary Data

Primary data are those which are collected for the first time and so are in crude form. Primary data are always collected from the source. It is collected either by the investigator himself or through his agents. There are different methods of collecting primary data. Each method has its relative merits and demerits. The investigator has to choose a particular method to collect the information. The choice to a large extent depends on the preliminaries to data collection.

In the primary data, this study also use Microsoft Excel software by using the statistical calculation and software for enter all the data. The advantage of this software is take advantage of all data in order to uncover new business opportunities and increase revenue and move the scientific discovery process forward by applying the latest statistical techniques. Besides that, also provides an easy way to perform statistical analysis in Microsoft Excel. This Statistical Process Control (SPC) software is very cost effective and user-friendly. SPC is an attractive alternative for many organizations. It is the perfect tool to use for statistical analysis, process improvement, problem solving and statistical training.

3.5.3 Descriptive Statistic

Descriptive statistics is the term given to the analysis of data that helps describe, show or summarize data in a meaningful way such that, for example, patterns might emerge from the data. Descriptive statistics do not, however, allow us to make conclusions beyond the data researcher will be have analysed or reach conclusions regarding any hypotheses might have made. This is simply a way to describe data.

Descriptive statistics are very important because if the simply presented raw data it would be hard to visualize what the data was showing, especially if there was a lot of it. Descriptive statistics therefore enables us to present the data in a more meaningful way, which allows simpler interpretation of the data.

3.5.4 Brainstorming Analysis

Brainstorming combines a relaxed, informal approach to problem solving with lateral thinking. It encourages people to come up with thoughts and ideas that can, at first, seem a bit crazy. Some of these ideas can be crafted into original, creative solutions to a problem, while others can spark even more ideas. This helps to get people unstuck by "jolting" them out of their normal ways of thinking (Mind Tool Ltd, 2012).

Therefore, during brainstorming sessions, researcher should avoid criticizing or rewarding ideas. The researcher are trying to open up possibilities and break down incorrect assumptions about the problem's limits. Judgment and analysis at this stage

stunts idea generation and limit creativity. Evaluate ideas at the end of the brainstorming session, this is the time to explore solutions further, using conventional approaches consider the cost and product produce.

Brainstorming helps address specific questions or problems by encouraging a free flow of ideas that are written down. The goal is to generate a large quantity of data by welcoming all ideas and not inhibiting the thought process of participants. There are no bad ideas and a long list will ideally generate more opportunities to identify a quality solution. There is typically a leader of the process that determines the level of guidance and structure for the activity (Michael, 2013).

CHAPTER 4

DATA ANALYSIS (RESULT AND DISCUSSION)

4.1 INTRODUCTION

This chapter presents the research findings and the result of the brainstorming analysis in term of interview and observation method. It is structured following the descriptive statistic in more to graphical analysis, reason analysis and brainstorming result. Finally the end of this chapter, this is summary of all the data and result discussion.

The data of production in 6 month in 2013 start from January until June with four products daily is carry puff, fried bread, sausages bread and donut. The data collect by week every month. How many pcs the product in term of enough time and demanded from customer. The data show is:-

Table 4.1: Data of Production

Product	January			
Week	1	2	3	4
Carry puff	3200	3000	2800	2900
Fried bread	4500	5000	3400	4200
Sausages bread	4800	5000	6200	4600
Donut	5200	5500	5000	5600
	February			
Carry puff	3000	3300	2800	2800
Fried bread	4000	4350	2000	1500
Sausages bread	3000	3500	3470	3400
Donut	3360	3450	2340	5000
	Mac			
Carry puff	4000	4700	2900	3490
Fried bread	4700	2550	3400	5000

Sausages bread	5000	3600	3000	5500
Donut	4500	1400	4400	2500
	April			
Carry puff	5500	3500	1950	5300
Fried bread	3000	2670	6000	1400
Sausages bread	3000	4500	3490	2000
Donut	2400	2550	4100	4400
	May			
Carry puff	4700	3500	3470	3400
Fried bread	1300	3000	3000	3000
Sausages bread	4000	4350	2000	1500
Donut	1500	1550	4300	4450
	June			
Carry puff	5050	800	1600	4200
Fried bread	1200	5000	5000	5540
Sausages bread	3200	3000	2800	3400
Donut	7000	1230	1000	800

The table 4.1 shows of data production with four daily products. This data contributed by week every month start week one until the end of month. In addition, this table show, data production of product is not fixed amount.

The overall product produce showed is:-

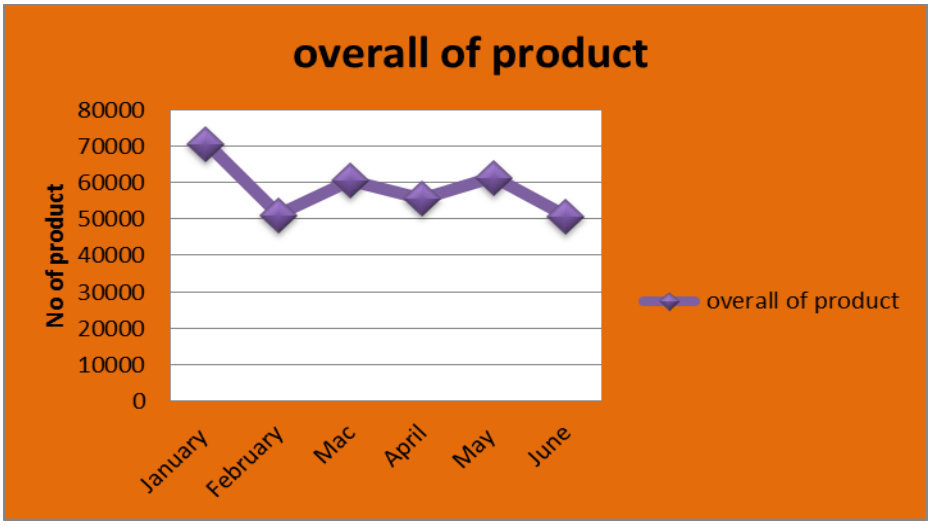

Figure 4.1: Number of production overall of product in 6 month

From the graph shows the production data outcome slowly in month February and May. In the day, the demand come increase time to time. From the interview analysis, in February and May, they take new workers. Sometimes, in this month is semester breaks or school holiday, so, they have part time workers, and this is one of factor getting low production. In February, just 51270pcs produce the product.

Figure 4.2: Number of demanded from customer in 6 month

The graph shows the demand from customer. The demand is not getting low, just maintain of the demand. From the interview, customer of this company not just around in Kelantan, every Friday, they are supply the product in others city such as in kuantan, Termeloh, Dungun, Kuala Terangganu, and etc.

From the analysis data between data production and demand from customer, the data shows are this company low to fulfill their demand. Furthermore, from day to day, demand will be increased, but, this company sometimes take just they can fulfill and enough time to produce.

4.2 ANALYSIS OF REASON FOR LOW PRODUCTIVITY

Based on the data will collected, this company have problem with the low productivity. From the interview and observation, the most important reason is from

employee and lower equipment in workshop. Low productivity it can be many problems in term of to fulfill demand from customer and expired date raw material. It is can be waste the raw material.

From the observation, layout also not proper. Capacity of equipment is not located in suitable area to easy worker walk every time. Sometimes, layout workshop in small company like this company is not important, but consider the time workers have taken for produces the product, it most important to get comfortable for workers done their work.

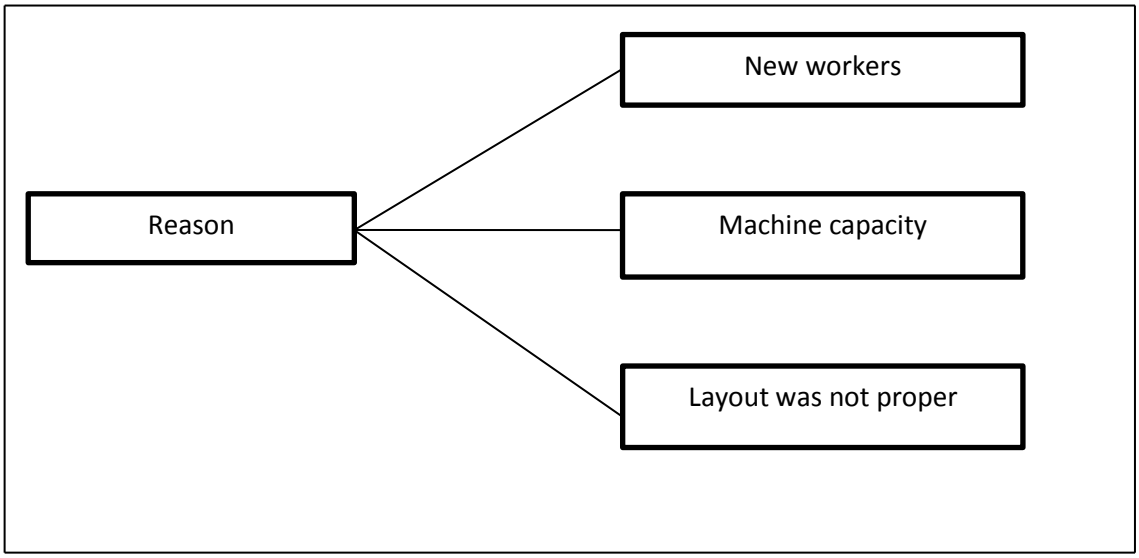

Figure 4.3: Reason of low productivity

4.2.1 New Workers

Employees can be challenging as they come with different styles of communication, motivational levels, attitudes and desires. If this company only has two workers to manage, well easier than a manager who has many workers. So that, from the interview with manager, they has six fulltime employers and anytime take part time employees especially at midterm break, school holiday or public holiday consider the demand of product. In addition, this company also takes reservation for cake, biscuit and chips especially in celebration day.

Furthermore, the changing of personnel in an office can have both a positive and negative effect on the business. Watching a person, or group of people, depart an organization only to see the company soon staffed with a new crew can demonstrate both advantages and disadvantages to the business.

One of the most significant disadvantages of new employee is the loss of fully trained employees. When the most experienced person departs for retirement or greener pastures, there is a vacuum of intellectual knowledge that goes with them. All the training that they went through to gain knowledge is now gone with their exit. This can be costly because giving the job to a less experienced person that needs time away from the job to get trained can delay productivity. For instance, lost time on projects as the new person gets spun up can cause setbacks. What happen in this company, the food process must have focus on the quality of the product, so to train for the new workers it can be take more times. Normally, the small company don't enough time and money for get the training.

4.2.2 Machine Capacity

One of the most often asked finishing questions is how to estimate capacity. Capacity planning is important in organization. Capacity planning is the process of determining the production capacity needed by an organization to meet changing demands for its products. One of question should be asked is this capacity of machine enough with the demand product and number of employees? If one of the machine damaged? What kind the managers do?

In this company, they has one machine spiral dough, one cutting dough machine, one oven, eight big freeze for storage, one cutting material machine, rolling dough machine, sealing machine and other equipment for processing product. Besides that, capacity of machine is most important to speed up of work.

machine spiral dough

freeze for storage

oven

rolling dough machine

cutting dough machine

cutting raw material machine

sealing machine

Figure 4.4: Capacity of Machine

Capacity can be increased through introducing new techniques, equipment and materials, increasing the number of workers or machines, increasing the number of shifts, or acquiring additional production facilities. So that, the capacity must be adequate equipment or machines, enough with the many employees in the work process.

Capacity is calculated: (number of machines or workers) × (number of shifts) × (utilization) × (efficiency). Fully capacity equipment can give more production product and easy to produce product.

4.2.3 Layout Was Not Proper

A large number of beginners and hobbyists eventually become professionals, so the number of tools and machinery in the workshop is increasing, which leads to the need for the bigger workshop. Nowadays, not many people own enough large space to adapt it into a home workshop. Most people are setting their workshops in the basement, garage, or they are adapting some rooms that were originally intended for other purposes (Tompkin, 2010).

From the observation, the layout is not proper because:-

- The equipment storage is not proper place, workers have move to a certain distance and take more time for the walking.
- The area between processing product and machine dough is different.
- Also that, between the freeze for the storage and packaging the product area takes time to workers walk and bring the product in the freeze.
- Capacity of freeze is so many, arrangement of freeze is not suitable area, cause interrupts the space of work process.
- Space for packaging must near area fried product, for easy workers packing the product.

Besides that, the layout must be considering the space of area in workshop. The disadvantage of the layout is the equipment can see irregular and minimum safety. Based on the Figure 4.5 show the original layout workshop, the layout is not proper with the process step.

Figure 4.5: Original Layout Workshop

4.3 DECISION ON THE PROPOSED METHOD

From the observation and brainstorming with manager, the method of researcher can be proposed for the improving productivity is training, standardized work, adding the capacity machine, change layout and practice the 5S (sorting, straightening, systematic, standardized, and sustain) consider with the finance of the company.

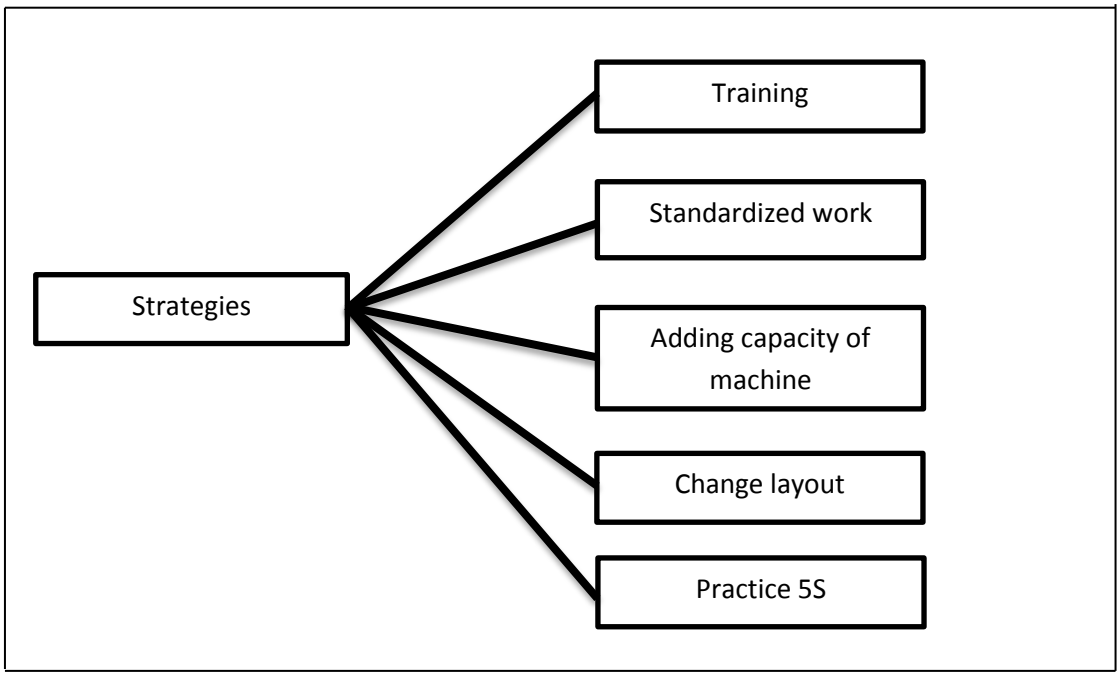

Figure 4.6: Strategies of the Improving Productivity

From the brainstorming, between five strategies proposed for the improving productivity, just four strategies accepted from company excluded training strategies. Training in a small company is not easy to do with the seminar or other training. Training is the acquisition of knowledge, skills, and competencies as a result of the teaching of vocational or practical skills and knowledge that relate to specific useful competencies. Training has specific goals of improving one's capability, capacity, productivity and performance. Disadvantage of the training is different learning levels of those being trained can cause some to be bored because it’s too elementary or it may cause others to be frustrated because it’s too complicated and the purpose of the employee training may be lost from the start.

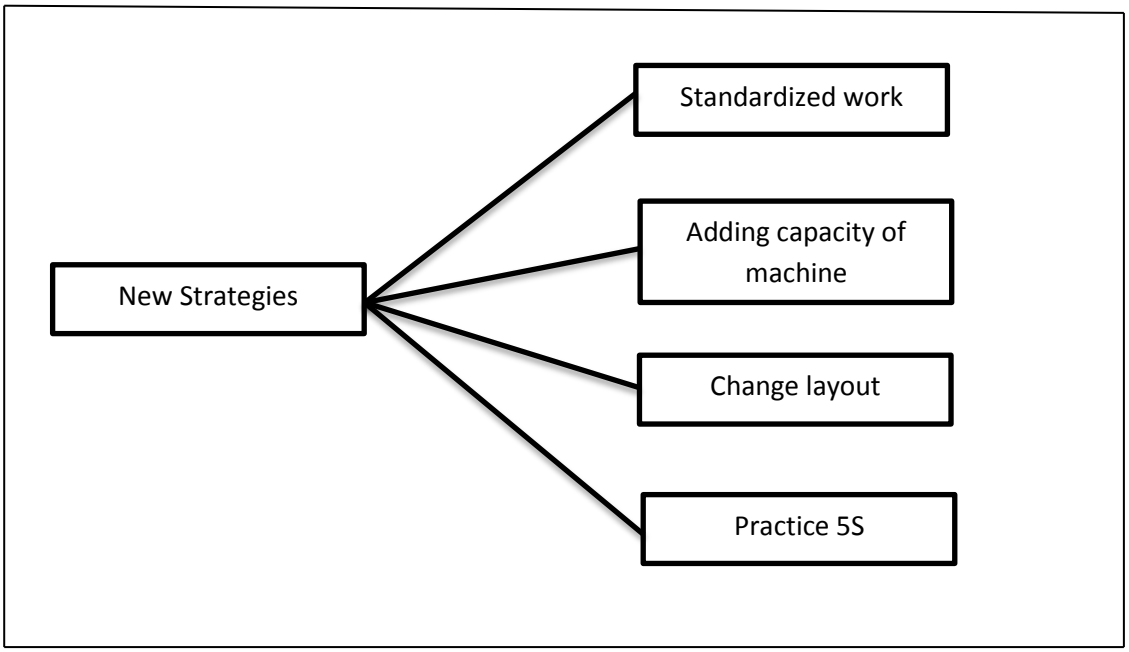

Figure 4.7: New Strategies of the Improving Productivity

4.3.1 Standardized Work

Standardized work is one of the most powerful but least used tool. By documenting the current best practice, standardized work forms the baseline for kaizen or continuous improvement. As the standard is improved, the new standard becomes the baseline for further improvements, and so on. Standardized work chart is generating content with the establish workshops to write best-in-class instructions for standardization. Improving standardized work is a never-ending process (Grichnik et. al, 2009).

From the brainstorming and observation, the standardized work chart needed in this company. Standardized work can help for the training employees in term of minimize the cost. The advantage of the standardized work is:-

- Well-trained employees armed with specifics instruction about how to do their jobs produce a safe and healthy work environment.
- With fewer unplanned interruptions, schedules are more predictable and on-time deliveries to customer increase.
- Quality improves as output benchmarks are embedded into process standardized.

- By delineating rigorous work instructions, companies can show that they are serious about complying with financial, safety and environmental regulation.
- A well-functioning procedure management process achieves and shares the organizations best practices, historical record and institutional knowledge otherwise lost when people leave the company.
- Alignment of the entire organization to follow a distinct set of procedures increases discipline and precision, laying the foundation for a continuous improvement culture.

This is company produce frozen food, so, the process of the production must be considered with the quality, time and cost. Besides that, standardization is a centrally managed initiative involving the process and functional specialists in the company. By contrast, continuous improvement can be seen as a more grassroots initiative, driven by this challenge to the company. The daily product has four product is curry puff, fried bread, sausages bread and donut. Besides that, the kind of process in four product is has different with using the machine and spiral the dough. Standardized work is fully instruction of the process start product until the end of finished product.

The standardized work chart must be complete or observed times with process study sheet (Appendix C) as before create standardized work. The Process Study Sheet is used to define and record the time for work elements in a process. Before timing, observe and list the work elements required to produce one element. Then observe and define the actual time required for each individual work element. In the process study sheet, the advantage of this sheet is collect in real times at the process, time each work element separately and always separate operator time and machine time.

STANDARD WORK CHART			FACILITY: PROCESS PRODUCT			PRODUCT: DONUT			
			VALUE STREAM: DONUT			OPERATION: 1 OF 1			
			PROCESS: DONUT MAKING			PAGES:			
			SHIFT : 1						
CREATED BY:	APPROVED BY:	DATE:	VOLUMES: 400 PCS DONUT						

STEP	MAJOR STEPS	MANUAL TIME	MACHINE TIMES	WAIT TIMES	WALK TIMES	WORKING SQUENCE	SAFETY	SWIP	QUALITY
							+		QC
1	Spiral the dough using the machine with right ingredient.	5	12	3	3				
2	Measure the weight at 800g before spiral dough manually	20	0	5	3				
3	Cutting the dough with cutting machine	15	3	1	2				
4	Spiral manual to create right shape of product	30	0	4	0				
5	Fried the dough half baked	20	0	7	10				
6	Packaging the donut with machine packaging(packing donut 8pcs/packaging)	10	10	2	0				

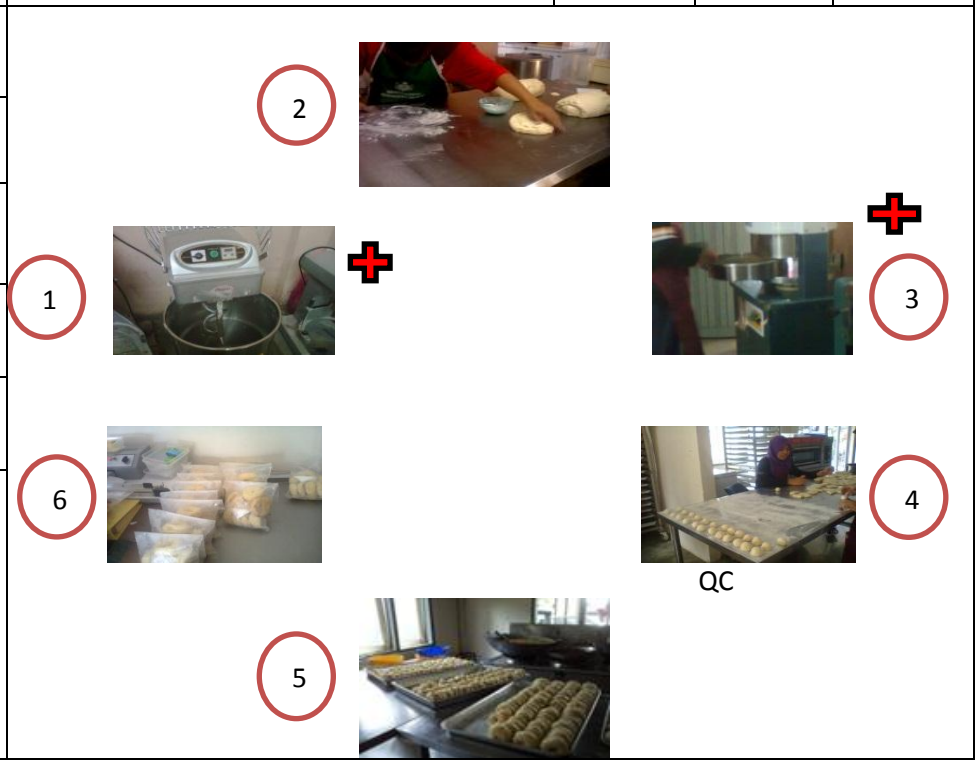

Figure 4.8: Standardized Work Chart for Donut

STANDARD WORK CHART			FACILITY :PROCESS PRODUCT			PRODUCT : CARRY PUFF			
			VALUE STREAM: CARRY PUFF			OPERATION : 1 OF 1			
			PROCESS : CARRY PUFF MAKING			PAGES:			
			SHIFT : 1						
CREATED BY:	APPROVED BY:	DATE:	VOLUMES: 800PCS CARRY PUFF						

STEP	MAJOR STEPS	MANUAL TIME	MACHINE TIMES	WAIT TIMES	WALK TIMES
1	Spiral the dough using the machine with right ingredient	18	0	2	0
2	Spiral dough using roll machine.	5	10	0	5
3	Cutting dough manually, follow the fixed size of product.	8	0	2	0
4	Put the source or filling in the dough and fold slowly until fixed size.	25	0	1	0
5	Fried half cook before packing.	15	0	8	0
6	Packing 9pcs per packaging and sealer.	10	-	1	4

WORKING SQUECES

SAFETY	SWIP	QUALITY
+		QC

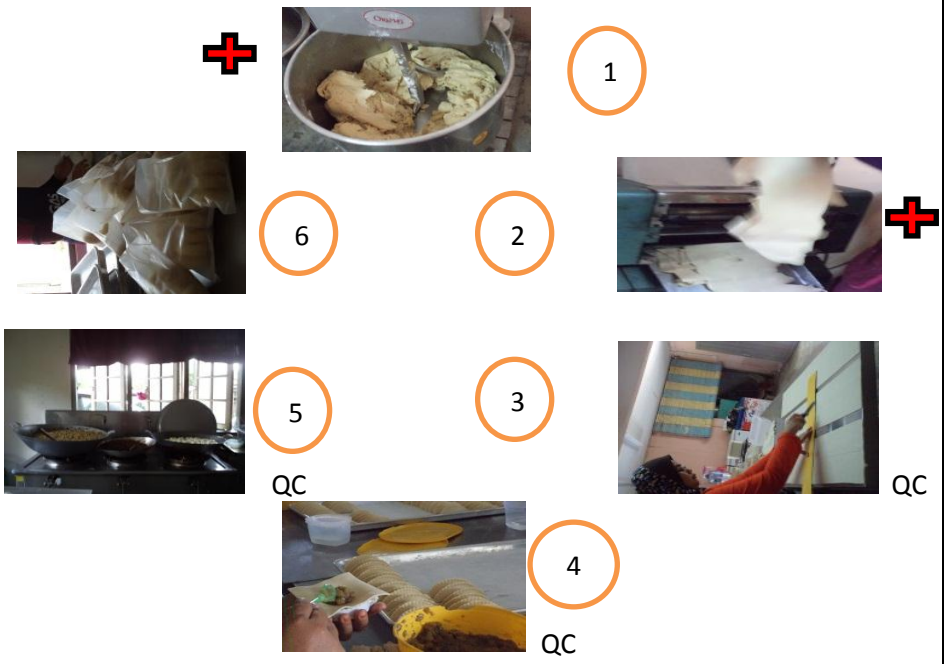

Figure 4.9: Standardized Work Chart for Carry Puff

STANDARD WORK CHART			FACILITY: PROCESS PRODUCT			PRODUCT: FRIED BREAD			
			VALUE STREAM: FRIED BREAD			OPERATION: 1 OF 1			
			PROCESS: MAKING FRIED BREAD			PAGES:			
			SHIFT :						
CREATED BY:	APPROVED BY:	DATE:	VOLUMES: 800PCS FRIED BREAD						

STEP	MAJOR STEPS	MANUAL TIME	MACHINE TIMES	WAIT TIMES	WALK TIMES	WORKING SQUECES	SAFETY	SWIP	QUALITY
1	Spiral dough using machine with right ingredient	5	12	0	-		+		QC
2	Measure weight at 612g before spiral manually	15	0	2	-				
3	Cutting the dough using machine with the fixed size.	15	10	8					
4	Spiral to create shape size and put the filling of fried bread	25	-	30					
5	Fried with the half cook or until change the colour	20	-	10	-				
6	Packing into plastic packaging (9pcs/pack) and sealer.	20	15	-	-				

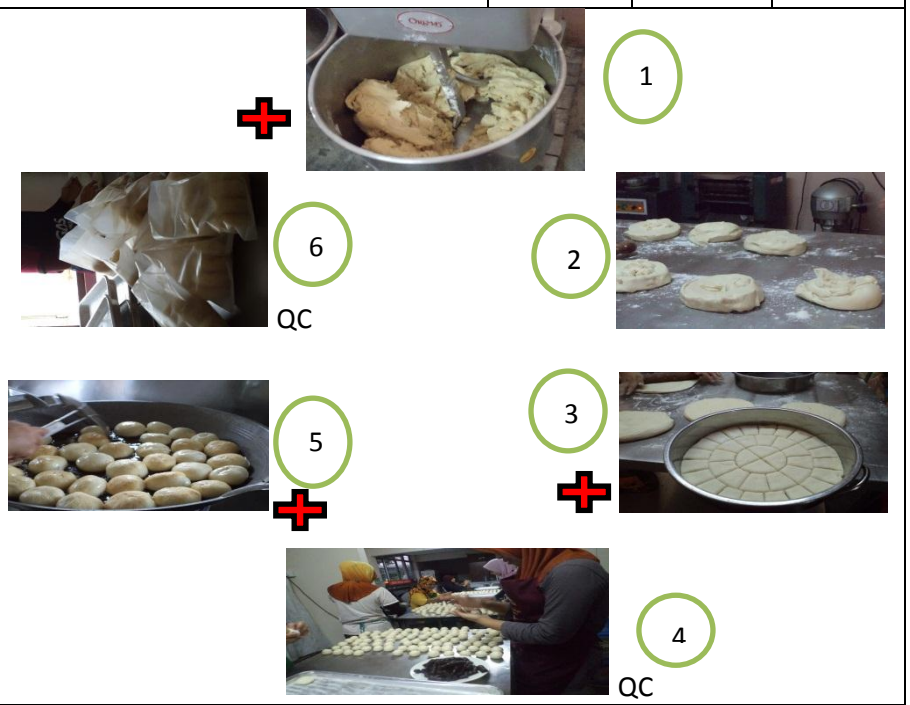

Figure 4.10: Standardized Work Chart for Fried Bread

STANDARD WORK CHART			FACILITY: PROCESS PRODUCT			PRODUCT: SAUSAGES BREAD			
			VALUE STREAM: SAUSAGES BREAD			OPERATION: 1 OF 1			
			PROCESS: MAKING SAUSAGE BREAD			PAGES:			
			SHIFT						
CREATED BY:	APPROVED BY:	DATE:	VOLUMES: 800pcs SAUSAGES BREAD						

STEP	MAJOR STEPS	MANUAL TIME	MACHINE TIMES	WAIT TIMES	WALK TIMES	WORKING SQUECES	SAFETY	SWIP	QUALITY
1	Spiral dough with the right ingredient	10	18	2	-				
2	Measure weight at 540g before spiral manually	20	0	-	-				
3	Cutting dough with the fixed size	10	10	-	10				
4	Roll dough as length dough, use palm for the spiral the dough	20	-	10	-				
5	Roll the dough with the sausage until the fixed size of sausages (cutting the sausage 1/8)	20	-	30	-				
6	Fried the sausages bread half cook or until changes white brown colour	20	-	10	-				
7	Packing the sausages bread with plastic packaging (9pcs per packing) and sealer	20	15	-	-				

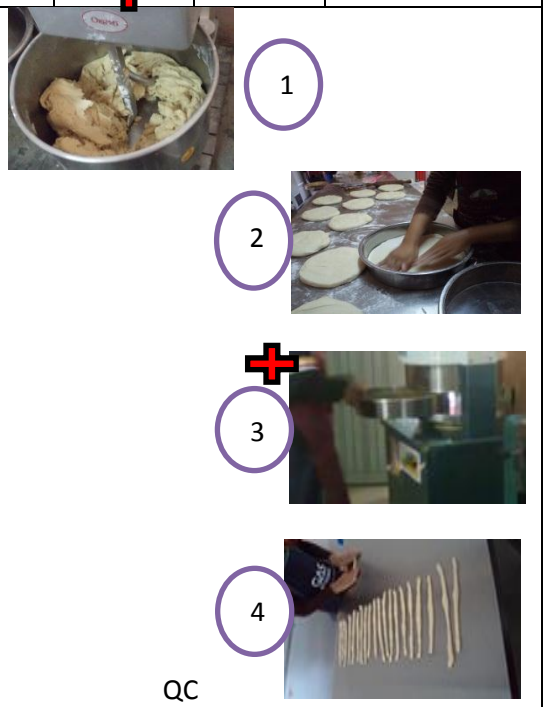

Figure 4.11: Standardized Work Chart for Sausages Bread

4.3.2 Adding Capacity of Machine

The capacity of machine dough has one machine. From the observation of processing product, machine dough is an important machine. The entire products use the machine dough. This also is first step in the process flow product. Normally, the time for the finish the spiral dough with machine take 18 minute consider with the product produce. What the question in the researcher, if the machine damaged, what happen in the process product?

Figure 4.12: Machine Dough

The machining is most important to get product in term of quality. The processing food must concern the quality because if the product damaged, customer maybe complained. The capacity of this machine can be produce 800 pcs of curry puff,400 pcs of donut, 800 pcs of fried bread and 800 pcs of sausages bread in one times produce.

Besides that, from the brainstorming with expert, the machine dough must be added to easy the worker use. The question can be think is, why not buy the bigger machine and sold this machine? The answer can be shared is, from the observation, if

buy 1 of the bigger machine dough, there must have taken more time to use, and the capacity of machine is bigger, but the benefit of the bigger machine it can be more productivity. Besides that, the disadvantage is the daily of the product is four products to produce and number of worker not enough to finish the product.

Furthermore, having two machine dough it can be save the time. The situation is in the one times, they can produce two products. The machine dough can help the workers, also goods can be produced, in large quantities, of the same size, shape and quality. The most important is it can minimize the cost of production and can increase the productivity. From the brainstorming with the manager, this machine may buy in the next year with consider the financial and maintain with demand of the customer.

4.3.3 Changes Layout Workshop

When planning the layout of a workshop, it is one thing to move the actual items around the space of company have until the layout looks functional, but often the items are bulky and cumbersome, and trying different layouts becomes arduous. So that, changes the layout is needs because too easy workers for the process and more take concern about the time.

Planning and the proper workshop layout will enable to a good and pleasant work. When planning the workshop layout, it is necessary to consider a number of factors that effect on work:

i. What exactly company want to do in the workshop: in order to make proper plan about required dimensions of the workshop and its organization, at first think about what are manager going to use it for, what are the affinities, plans and working possibilities in the future.
ii. Estimate the costs and time required to equip the workshop: evaluate manager options and what do manager need for their workshop so it could become functional.
iii. Manager should plan the arrangement of the machines and worktables to ensure enough space to maneuver;
iv. The number of machines and workshop accessories.
v. Calculate the number of workers or people in the workshop

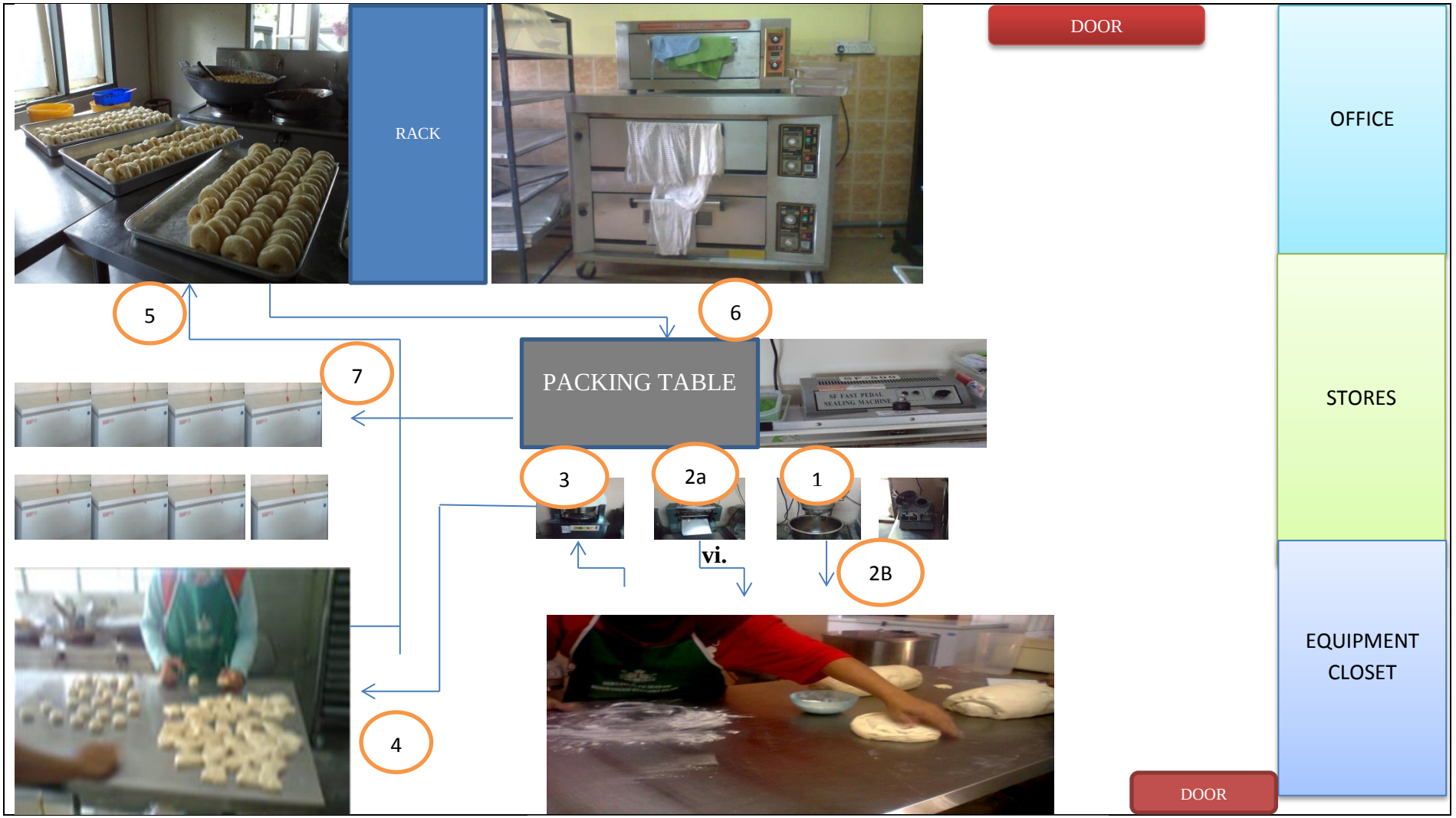

Figure 4.13: Layout Workshop Latest

From the layout at figure 4.13, the layout is accepted to changes from the manager of this company with the strong reason. The process of the product is normally having seven steps. Firstly, in using the machine, spirals the dough automatic. After that, spirals the dough manually in the work table. So that, the machine and work table must be near rather the other area because this part in need with each other. The third step is using the cutting machine or rolling machine. The two machines placed it same area with machine dough.

Besides that, the next process is spiral dough with the fixed size of product. This area must be change, before that, this area placed near freeze in front of workshop, but need to change at near work table spiral the dough. These it can save time workers, not more walk time for separate dough. The next step is fried the dough. This is the same area, cannot changes because normally, fried area must be placed at near the window for the good ventilation and for the quickly cool fried product before the packaging.

The second last step is packaging the product. The table packaging change at the near freeze for the storage of the product. The packaging table placed in front of the main door. Before that, this place have work process table, it is not good condition because customer come in the office, but work process near at the office, the environment it not suitable. Lastly is placed for storage. They have eight big freezes for storage product after packaging. This freeze is near packaging table for the easy workers bring the finished product at the freeze.

4.3.4 Practice 5S

The 5S process is one of the most fundamental and widely applied components of processing manufacturing. Its application is simple, involving basic common sense; however, the advantages cannot be underestimated due to its simplicity. Once implemented a 5s system can be the stabilizing force underlying manufacturing strategy (William, 2012).

5S is the name of a workplace organization method that uses a list of five is sorting, straightening or setting in order to flow, systematics cleaning, standardize and sustain. The list describes how to organize a work space for efficiency and effectiveness

by identifying and storing the items used, maintaining the area and items, and sustaining the new order. The decision-making process usually comes from a dialogue about standardization, which builds understanding among employees of how they should do the work (Stephenson, 2000).

From the brainstorming, manager accepts this idea, because they should know, the processing food is difficult to control their cleaning. So that, to practice 5s is the best solution. In manufacturing industries, especially food process, 5s system is normal to practice among the employers.

Figure 4.14: Implementing the 5S system

According the article of William (2012), the guiding principles underlying the 5S system involve organization, cleanliness and standardization. Overall workplace cleanliness, created by removing waste from the work area, promotes internal organization and enhances visual communication. By reducing wasted time and materials, productivity is increased along with safety and costs are reduced. The following is a list of the most obvious benefits which can be derived from implementation of the 5s system. The benefit of the 5S system is :-

1) Increases in productivity:

-Reduces lead times thereby improving product delivery times.

-Reduces equipment downtime, maintenance and cycle time.

-Improves daily and shift startup times and reduces changeover time.

-Reduces the amount of time wasted searching for tools and equipment.

2) Increases in quality:

-Improves quality by reducing the amount of errors/defects.

-Implements standardization thereby achieving output consistency.

-The pleasantries of the simplified work environment increases employee moral.

3) Reduction in cost:

-Provides cost-savings by reducing inventory, storage fees and space requirements.

-Improves safety thereby reducing the cost of worker injuries.

-Reduces the amount of scrap thereby reducing production cost.

4.4 SUMMARY

This section concluded the overall finding for subtopics in chapter 4 for this study including which was answered the research question 1 and research question 2.

From the introduction in sub topic 4.1, shows the table 4.1 is data production in 6month for this company. Also that, analysis the data show in graph of overall product and demand from the customer. In sub topic 4.2, the analysis discuss is the reason of the low productivity for answered in objective 1 in this study. After that, in sub topic 4.3 discuss about the strategy of improvement production with the brainstorming analysis. In this topic analyze the discussion of brainstorming and answered in the objective two in this study.

In the next chapter, researcher will discussed about overall conclusion for this study. The limitation during conducting this study also will be discussed in the next chapter along with recommendation and studies contributions.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

The objective of this study was to identify reason for low productivity level of production in food processing industry in the first objective. This study explores the primary causes for low productivity in one of SMEs Company in term of processing food. A literature review on the productivity in the food process industry and causes of low productivity provided a comprehensive understanding and also basis for launching specific observation in SMEs company. So that, the researcher finds several reason of the low productivity is new workers, machine capacity and layout workshop is not proper. Several of the reason was recommended to address the solution with the brainstorming analysis. The new workers come with not experience in the process product it can be difficult to increase the productivity and take time for expert with process. Machine capacity is not enough consider with the demand from customer and number of employee that company have. The original layout it not proper because the one area to another area is related between others follow the step of processing product.

Continuous improvement and proactive planning provide in meet customer requirement and increased the productivity, as shown in figure 5.1. The second objective is to proposed methods to increase productivity level of production in food processing industry. This objective recommended of several proposed solution is training, standardized work chart, change proper layout consider with functional area, adding machinery and implement 5S system for improving productivity. Therefore, standardized work chart are important in reducing defect product and control their quality of product. In addition, consistent and accurate data productions are key for the

increasing productivity. Customer loyalty and good will are dependent on the quality responsiveness to customer demand. By considering the training worker with standardized work chart for new workers, new layout workshop, adding machinery in capacity of machine and implementing 5S system will effectively result in increased productivity.

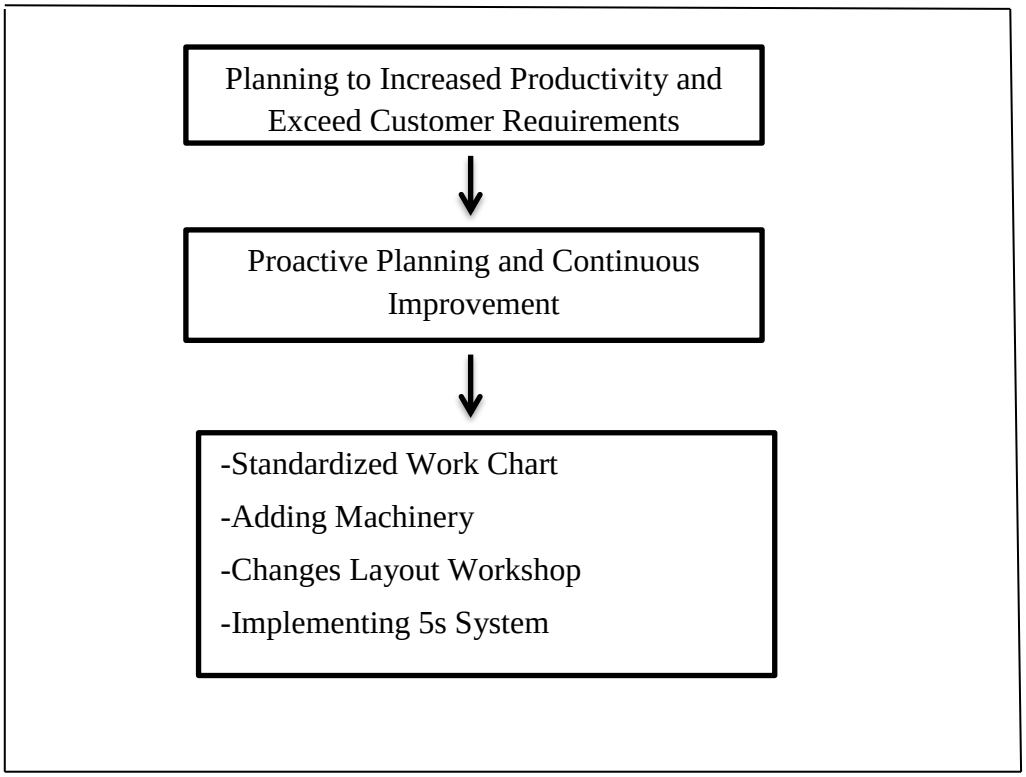

Figure 5.1: A Proactive Improvement Effort Enhances Company Ability to Increased Productivity and Exceed Customer Requirement.

In addition, improving productivity can have connotations of economizing on the use of inputs for example, adopting efficient production processes that minimize waste time. Equally, improving productivity can have connotations of yielding more output for example, using resources in activities or with technologies that generate more output. In term of productivity, Productivity growth is important to the firm because it means that it can meet its (perhaps growing) obligations to workers, shareholders, and governments (taxes and regulation), and still remain competitive or even improve its competitiveness in the market place.

At a firm or industry level, the benefits of increased productivity can be distributed in a number of different ways:

- to the workforce through better wages and conditions;
- to shareholders and superannuation funds through increased profits and dividend distributions;
- to customers through lower prices; x to the environment through more stringent environmental protection

In business and management people are always trying to improve productivity. The increased levels of standard of living people are enjoying today as compared to the past it is because of productivity improvement. Some people do fear that improvement in manpower productivity may lead to unemployment. However, the actual experience all over the world has been quite opposite. Increase in productivity of manpower by has always resulted in increasing employment in every economy across the world.

The productivity improvement and layout planning shows how improvement affects ability to meet the increased production level in term of the theoretical of framework. As a small company, the important thing is maintain the financial of company. In the large industry like U.S industry, the structure of production planning with R&D (research and development) and advanced technology.

5.2 LIMITATION OF THIS STUDY

The limitation of this study is the proposed idea not easy to accept. The researcher must be confident and come with improvement and it can be explaining the detail with brainstorming meeting. As a student, loyalty from others is low, so that, the researchers try the best way for give trust and collaboration any time for observe and interview. The challenge for the SME is to overcome barriers to the adoption of productivity improvement and to understand and implement some of the productivity strategies tools and techniques identified in this report. The application of such strategies should mean that SMEs can become and remain to preferred suppliers in the ever-developing agile supply chains of which they are a key element.

In this study, researcher observing to see to all aspect of process and activities employees in workshop but limitation of participant. In observing, researcher just choose two or three employees and limit in the time.

5.3 RECOMMENDATION FOR THE FUTURE WORK

Productivity improvement effort to increased production level for to fulfill the demand from customer and production strategies. Proposed method with brainstorming it can decrease the delay of time and problem of low productivity can be solved. In addition, the analysis of accurate data and their ability of proposed can be implemented that assist the company to increase their profit. The following recommendation would enhance implementation to all proposed of the methods:-

- Accelerating and broadening the quantity production level effort will result in increased productivity in term of quality and profitability of the product. A study on quality benefit would be helpful in specifying the tangible as well as intangible benefit especially in food processing. Tracking and controlling must be done to produce improvement. Management should consider increasing productivity to a point where facilities can shares resources.

- For effective implementation of the four proposed methods, commitment to quality in process improvement is required. An organizational analysis examines the metamorphosis the improvement must be documented. Transfer of knowledge between employees or workers regarding the best operating practice can assisted in increasing production levels. In addition, standard product operating procedures for all facilities will increase the value of common metrics.

- There are information resources that enable the improvement to learn from machinery. Additional, benefit can be gained by increased interaction between machinery and product operation. Studying and understanding the competitive advantage of the strategy production planning and layout planning will improve manufacturing policy and productivity.

In conclusion, this study has focused on the importance of increase production level in term of quality improvement of product. By achieving productivity improvement, capacity can be increased or adding with investing in functional of machinery. If improvement cannot be gained fast enough, then an alternative method of meeting all organization company needs to be implemented. The production planning with layout planning and quality improvement product in standardized work effort provide a framework for management to evaluate the company decision.

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APPENDIX A

GANTT CHART PSM I

		FINAL YEAR PROJECT I													
		WEEK													
NO	RESEARCH ACTIVITY	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Deciding the topic and objective of the research														
2	Discussed on the title and objective with supervisor														
3	SV approval the topic and objective of the research														
4	Prepare on chapter 1														
5	Prepare the paragraph and spelling in the words														
6	Complete the chapter 1														
7	Preparation on the literature review and design structure of the research														
8	Complete the literature review														
9	Prepare research methodology														
10	Add an information to improve the strong idea on chapter 1,2, and 3														
11	Submit draft proposal for supervisor to check														
12	Submit draft proposal with 2 copies														
13	Presentation PSM I														

GANTT CHART PSM II

NO	RESEARCH ACTIVITY	FINAL YEAR PROJECT II WEEK 1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Data collected during July & August 2013														
1	Revise **Chapter 1**														
2	Revise **Chapter 2**														
3	Revise **Chapter 3**														
4	Collect data for brainstorming														
5	**Chapter 4**														
6	Introduction														
7	Analysis of reason Low Productivity														
8	Proposed Strategy														
9	**Chapter 5**														
10	Conclusion														
11	Limitations of Study														
12	Recommendation														
13	Submit draft Report														
14	Submit Report														
15	Presentation														

APPENDIX B

OBSERVATION GUIDES

Field Day Evaluation

Location _____

Date _____

1. Number of employees of people work in that day and looked at exhibit _____
2. Number of people who actively use the interactive job _____
3. Did people seem struggle to done in job

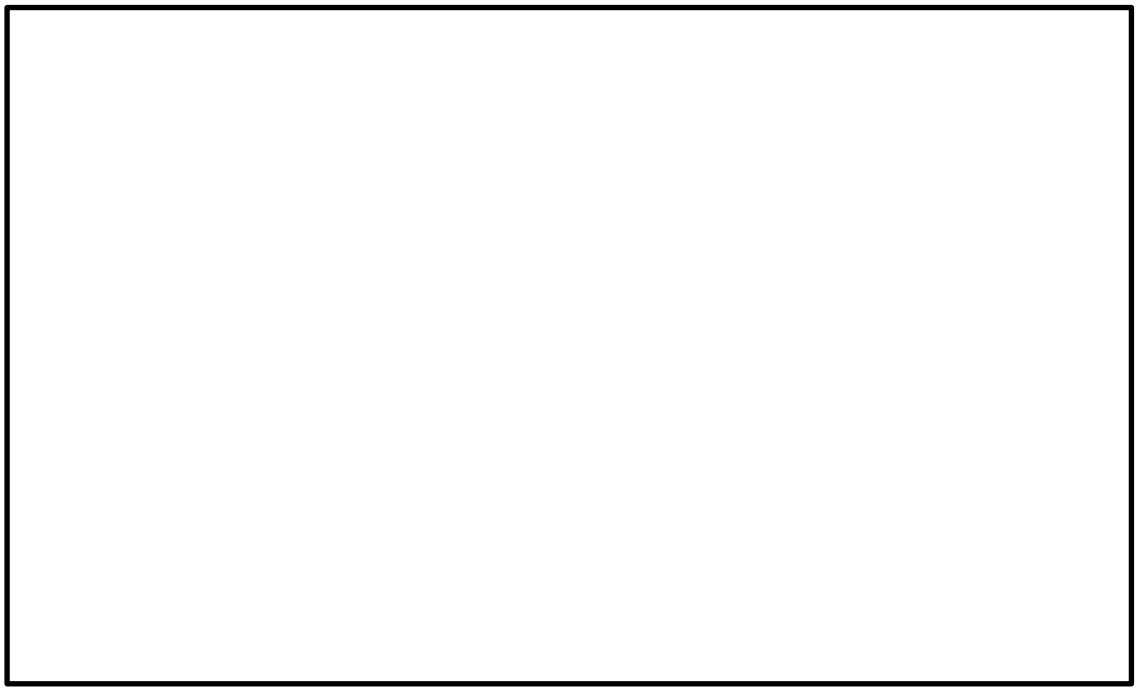
   ☐ Yes ☐ No

4. Were staffs always available?

   ☐ Yes ☐ No

In workshop or process

Layout workshop



Process product

Data output of product

No	Times to be take	Process	Output	Manual or auto

APPENDIX C

PROCESS STUDY SHEET

Process Study	Process:	Product:	Observer:	Date/Time:	Page

Process Step	OPERATOR						MACHINE Cycle Time	Notes
	Work Element	Observed Times				Repeatable		
		1	2	3	4	5		

APPENDIX D

STANDARDIZED WORK CHART

STANDARD WORK CHART			FACILITY:	PRODUCT:
			VALUE STREAM:	OPERATION:
			PROCESS:	PAGES:
			SHIFT	
CREATED BY:	APPROVED BY:	DATE:	VOLUMES:	

STEP	MAJOR STEPS	MANUAL TIME	MACHINE TIMES	WAIT TIMES	WALK TIMES		SAFETY	SWIP	QUALITY