

DECLARATION

“ I declare this thesis entitled ‘ The Impact of Seven Waste Programs Towards Manufacturing Industry Performance. A study at Texas Instruments Electronic Melaka is my own work except the summary and excerpts of each of which I have mentioned the source”

Signature :

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Date : 25 June 2014

DEDICATION

Dedicated to my family, especially to my father and mother for being supportive, encouraging and caring all the time. Thank you for helping, loving, supporting, and always being there whenever I need you and for the strength that I feel because both of you have loved me so wonderfully well.

ACKNOWLEDGEMENTS

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I have furthermore to thanks to my respondent, the staff in Texas Instruments Electronic Melaka (TIEM) as their cooperation in answering my survey questions. Their cooperation in answeing the questions are very important to collect datas in order to complete this research.

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ABSTRACT

Nowadays, performance of any industry in Malaysia is really important, especially in the manufacturing industry in order to ensure the sustainability of the production execution. There are findings that some wastes, including waste of defect, motion, inventory and waste of waiting significantly affect to the achievement of manufacturing industry performance. The purpose of this study was to identify the effectiveness of seven waste program to measure the capability of the manufacturing industry performance. This research uses a questionnaire as a quantitative method for selective respondent in TIEM. The result indicated that the seven wastes approach significantly contributed to the enhancement of manufacturing industry performance. The result of research provides the two sides. It is good to strengthen for the competitiveness by replicating the seven wastes, on the other side, academia could do some further research based on this study result.

Keywords: seven wastes program, manufacturing industry performance

ABSTRAK

Pada masa kini, pelaksanaan mana-mana industri di Malaysia adalah benar-benar penting terutama dalam industri pembuatan bagi memastikan kemampanan pelaksanaan pengeluaran. Terdapat penemuan beberapa pembaziran termasuklah pembaziran dalam kerosakan, pergerakan, pengendalian, pengeluaran berlebihan, pemprosesan berlebihan, inventori dan pembaziran dalam menunggu member kesan ketara kepada pencapaian prestasi industri pembuatan. Tujuan kajian ini adalah untuk mengenalpasti keberkesanan program tujuh pembaziran dalam mengukur keupayaan prestasi industri pembuatan. Kajian ini menggunakan soal selidik seperti kaedah kuantitatif bagi pilihan responden di TIEM. Hasil kajian menunjukkan pendekatan tujuh pembaziran ketara menyumbang kepada peningkatan prestasi industri pembuatan. Hasil dari kajian ini disediakan untuk kedua-dua belah pihak. Ia bagus untuk menguatkan daya saing dengan mereplikasikan tujuh pembaziran, pada kata lain, ahli akademik boleh melakukan beberapa penyelidikan lanjut berdasarkan keputusan kajian.

Kata kunci: program tujuh pembaziran, prestasi industri pembuatan

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LIST OF ABBREVIATIONS

FPTT	Faculty of Technology Management and Technopreneurship
UTeM	Universiti Teknikal Malaysia Melaka
TIEM	Texas Instruments Electronic Melaka
STPM	<i>Sijil Tinggi Pelajaran Malaysia</i>
SPSS	Statistical Package for Social Science

Chapter 1

INTRODUCTION

1.1 Background of the study

Nowadays, wastage becomes the factor affected to the competency of organizational functioning. The research major purpose is to see the solution in order to overcome this wastage. In this work, the wastage is already specific to seven wastes that are overlooked as an important factor affected to organizational performance especially in industrial manufacturing. The appropriate and relevant resolution is being tried and will be utilized in this field.

The study is about how to improve the enhancement of the manufacturing industry performance by using seven waste approach. The research focus on the effort of the program on the seven wastes which means how the seven wastes approach contribute to enhance the performance of manufacturing industry.

Based on this program, lean is widely applied in manufacturing and transactional environments across many industries in private, public and government sectors (Pereira, 2009). Lean battles seven commonly recognized wastes as transportation, inventory, motion, waiting, overproduction, overprocessing and defects. Seven wastes lean manufacturing is also included in the study of operation management for an industry. According to Andrew (2013) stated that the widest sense of activity in the operation that does not add any value is considered as waste.

According to Pereira (2009), all the seven types of waste define as per below:

- i. The waste of transportation occurred during material and good being moved. To be fair, some form of transportational ways would be needed, but the act of simply moving things around the plant or office adds no real value to the product or service.
- ii. The waste of inventory is tricky because some inventory is needed to produce any type of good or services. However, the inventory being controlled carefully.
- iii. The waste of motion is probably the most misunderstood waste of all. The confusion with the waste of transportation arised when the waste of motion has been any movement of people that does not add value to the product or service. It is an extremely high productivity disaster.
- iv. The waste of defect recognized as any work that is less than the level the customer requirement.
- v. The waste of waiting happened when anytime people are queued up.
- vi. The waste of overproduction occurred when a company produces more than its customer needs.
- vii. The waste of overprocessing happened when a company doing more than a customer asks for.

Seven wastes become the guidance for the organization to alert whether this waste is available or not. If this seven waste occurs, the organization needs to arrange and manage the strategy to overcome it and after that avoiding it. The successful company always concerns about every single waste in their company. Any drawback such the waste will be eliminated immediately to sustain company performance. This seven wastes approach is to change the organizational mind set to zero waste in the company. The researcher identified that seven wastes are a part to reach zero waste which become austerity measure and at once can give a positive effect to the industrial performance. That is why seven wastes are being chosen to study.

1.2 Problem Statement

In high-tech industry like TIEM, understanding what aspects should be involved in conducting seven waste program is very important in order the program can be achieved. This kind of seven waste is continuously occurring regarding to this wastage is seems overlooked. This may affect to the recovering the cost of the waste. It has definitely become a threat to the reputation of manufacturing industry. Therefore, problem statement of this research can be formulated as a followings research question:

1. What is the location of seven types of waste that existed in manufacturing industry?
2. What is the relationship between seven types of waste and manufacturing industry performance?
3. What level of each component in seven wastes affected to performance?

Depending on this program, all manufacturing industries can get guidance on current performance level.

1.3 Objectives of the Study

The aim of this research is to study the seven waste program that affected manufacturing industry performance, as a medium to measure the capability of enhancing manufacturing industry performance.

The specific objectives of this study are as follows:

1. To identify the existence of seven types of waste in manufacturing industry.
2. To investigate the relationship between seven waste and manufacturing performance
3. To determine the level of each component in seven wastes which affected to the manufacturing industry performance.

1.4 The Scope of Study

This study was conducted on TIEM premise for about 4 months. The focus is covered at anywhere in TIEM place which applying the seven wastes approach, whether all the seven types of waste occur. Some respondents and feedback from, there are included as well.

1.5 Importance of the Study (contribution)

Nowadays, an industry very emphasizes about the best performance. Quality management often becomes the first option in order to overcome or improve the industry performance. The researcher chooses to find the other ways that can make some improvement or enhancement towards the industry performance. Then, seven waste approach becomes the technique chosen by the researcher to enhance this performance. The better performance they get the better competitiveness they have in the market. That is why knowing the seven wastes is very important for manufacturing industry like TIEM.

On the other hand, result from this study can contribute to the academic side since the relationship between the components of seven waste can be used as a pattern for the other type of industries. It should become another interesting topic to be discussed in the future. Therefore, seven waste approach is a program that can be specified as guidance for all people in the industry. By applying this program, the wastage can be overcome and at once the industry performance would be enhanced. However, seven waste approach must be located at the same level as other practices of quality tools like 5S practices, Kaizen and so forth to achieve the main subject. Instead, seven waste approach is recommended by the researcher because of the industry seems not too stress about the wastage occur even they were realised that the waste will affect the industry performance. Because of this overlooked, the researcher decided to suggest the approach.

1.6 Flow of Study

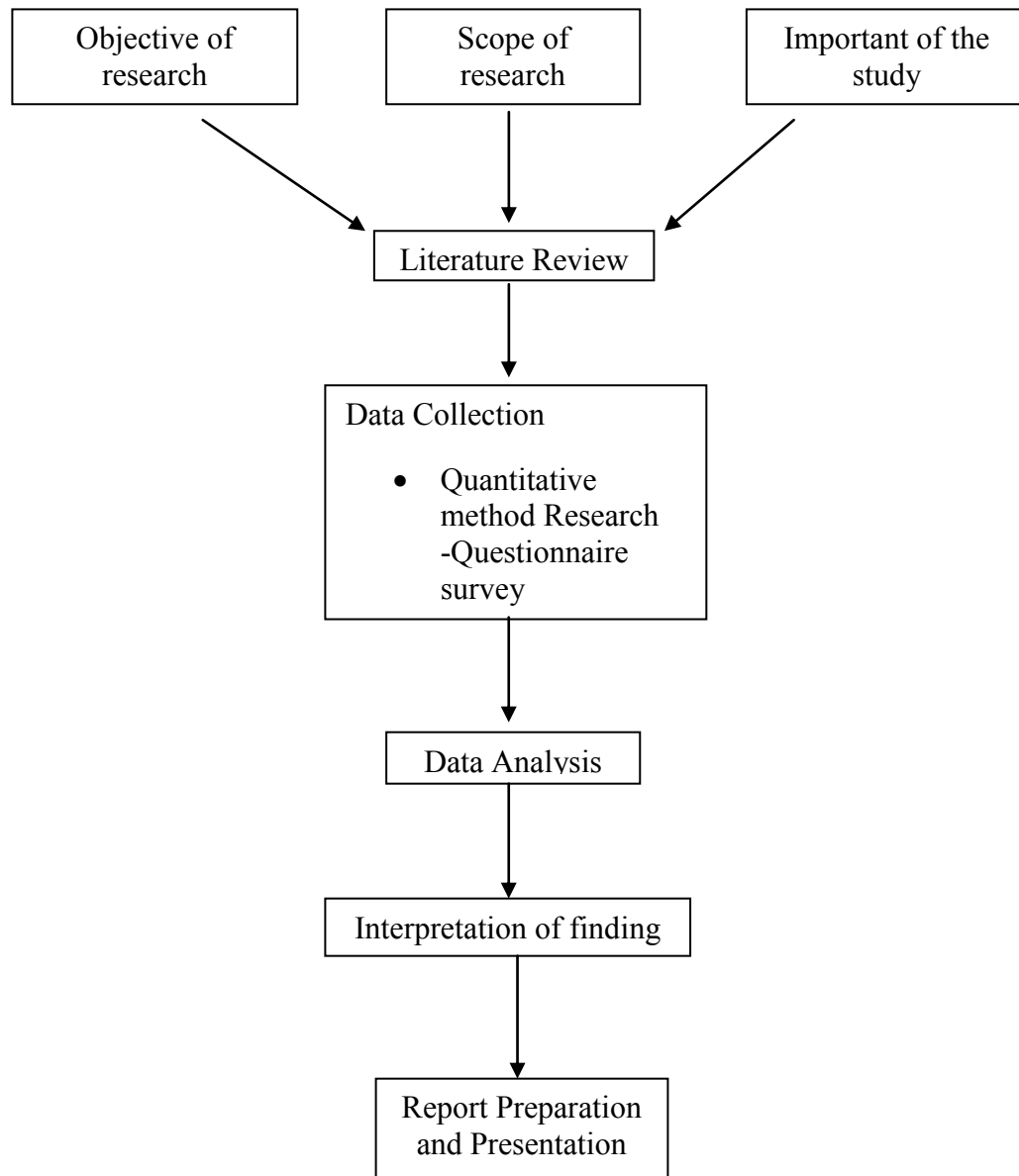


Figure 1: Flow of study

1.7 Summary

This chapter discusses all about the initial background of the study. It was provided on the problem statement and also the objective of the research study. Hence, this chapter also discusses about the scope, limitation and also the importance of the research study. Furthermore, It also discussed on the flow and the method from the first and last research will go through. This introduction indicates that it becomes as a guidance to the next chapter.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

Research regarding motivation is familiar among psychology researcher. This is proven by numbers of resources which are, discussed upon this matter. In order to conduct a research, literature review is a necessary as one of the important reference sources for the researcher. Through literature review, researchers may find out issues highlighted by the previous researcher and their research can be improved towards better outcomes which is beneficial to the society. According to Dena (2012), a literature review is an account of what has been available on a topic by ascribed scholar and researcher. Instead, a literature review must do the things as:

- i. Be organized around and related directly to the thesis or research question that are developing
- ii. Synthesize results into a summary of what is and is not known
- iii. Identify areas of controversy in the literature
- iv. Formulate questions for further research

In this chapter, researcher highlights several sources which are related and supporting the recent research from reading materials. Besides, literature review allows the meaningful sights from various perspectives which enable researcher to open up more towards flexibility, changes and development of humans.

2.2 Seven waste programs

Before going further about how the seven waste program able to improve or enhance the manufacturing industry performance, the researcher intents to explain about the meaning of the seven wastes. According to the business dictionary (2013) stated the seven wastes are categorized of unproductive manufacturing practices which mean of an integral part of the lean production. Hence, the categories of seven wastes are overproduction, waiting, transportation, inappropriate processing, excessive inventory, unnecessary motion, and also defects. Those wastes are closely related to give a big impact towards the performance of any manufacturing industry. If this program approach were ignorance, manufacturing industry will likely to bear the deteriorating performance caused by the waste.

According to Jeff (2013), the seven wastes are one of the most important continuous improvement terms that attend to and most of the lean tools, at the core, focus on improving flow by reducing waste. Instead, the seven wastes also provide a systematic way to categorise the problem and classify improvement priority and when assessing a process, looking for the seven wastes help lean teams find more opportunities to simplify the flow of work. Based on the theory, it shows the important role of seven waste in order to improve the continuous work by referring to the guidance of the waste occurred.

2.3 The meaning of seven waste categories

As per discussed before, the category of seven waste is included of overproduction, waiting, transportation, inappropriate processing, excessive inventory, unnecessary motion and defects. According to business dictionary (2013), those wastes define as:

- i. **Overproduction** was a assemble of products beforehand or in surplus of demand wasted money, time and space.
- ii. **Waiting** was identified as a hopeless process, and wasted time when one process waits to begin while another finishes. If not, the flow of operations should be quiet and uninterrupted. For example, as much as 99 percent of a product's time in manufacture is actually spent waiting.
- iii. **Transportation** refers to product movement between manufacturing processes adds no value is costly and can cause breakage or product ruin.
- iv. **Inappropriate processing** defines as overly elaborate and expensive is wasteful if simpler machinery would go equally comfortably.
- v. **Excessive inventory** refers to the wastes resources through costs of warehousing and maintenance.
- vi. **Unnecessary motion** defines as the dissipation of resources if workers have to stoop, turn over or walk distances to perform their chores. A workplace ergonomic appraisal should be conducted to design a more proficient environment.
- vii. **Defects** refer to inventory inspection and quarantine taking time and costs money.

According to Nayak, (2012) states that seven wastes include the waste of waiting, unnecessary motion, overprocessing, excess inventory, unnecessary handling, overproduction and rework or defects. All the seven waste type defined as shown in Table 1.

Table 1: Definition of Waste

Types of Waste	Definition
Waiting	Time spent waiting for items needed to finish a project. For instance, information, material, supplies, instruction.
Unnecessary Motion	Any movement that does not add value to a product or service.
Overprocessing	Elbow grease and time spent on processing material which does not add value.
Excess Inventory	Material that is waiting for processing or not needed per client demand.
Transportation	Unnecessary handling of material by conveyor, forklift, or foot travel.
Overproduction	Producing more products than the crucial customer requires.
Rework or Defects	Time spent on reworking or repairing defective products.

According to Khalid et al. (2013) state the seven main types of waste which initially were identified by Toyota Production System has been custom-made and prolonged by various practitioners of lean manufacturing. It includes of:

i. Overproduction

It defines as when an unnecessary product being produced more than customer demand and hence product being made too early before it is required.