THE IMPLEMENTATION OF 5S IN MANUFACTURING INDUSTRIES:

A CASE OF FOREIGN WORKERS IN MELAKA

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This report submitted in partial fulfillment of the requirements for the award of

Bachelor of Technology Management (Innovation technology)

Faculty of Technology Management and Technopreneurship

Universiti Teknikal Malaysia Melaka (UTeM)

I/ We hereby declared that i/ we had read through this thesis and
in my/ our opinion that this thesis is adequate in terms of scope and quality which
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is the result of my own research except those as cited in the references. This thesis

has not been accepted for any degree and is not concurrently submitted by

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DEDICATION

I would like to appreciate the dedication of my beloved families who educated me and motivate me to learn until this level, the lecturers and friends who give me support and advice throughout the research. Without their blessing and encouragement, this research is impossible to complete within short period of time.

ACKNOWLEDGEMENT

The author would like to express his sincere appreciation to the supervisor, Dr Haslina Musa for her guidance and encouragement given throughout completing this final year project.

Besides that, the author would like to express the thankfulness to En. Mukhiffun Mukapit who positively guidance, support and contribute his opinion to encourage the author to complete the final year project smoothly.

Finally, the appreciation is also extended to those who involved either directly or indirectly towards his project. Hopefully, this report will be a reference to others in the future.

ABSTRACT

Lean manufacturing system has been infiltrated in manufacturing sectors across the world. In fact, Lean manufacturing system is a practice which regards the use of the resources, creation of value for the end customers, and as the ways to eliminate the waste. There are several tools that can be used to eliminate the waste within industry. This research is study for the implementation of 5S in manufacturing industry. Despite this, the research study will be focus in manufacturing industry which has been implemented 5S system in Melaka State. Although there are a number of tools and technique available to help in improve the manufacturing process, however there is only a few industries could implement the tools successfully. In this research, foreign workers play a main role in implement the 5S systems as the manufacturing industry in Malaysia adopt large amount of foreign workers to work as employees. Therefore, it is important to ensure the foreign workers truly understand the concept of 5S system and adopt the best ways to implement it in order to have better performance. This research study has been proposed with the research model of the successful implementation of 5S in manufacturing industry among foreign workers. A several research method has been adopted to do the research such as descriptive research design with quantitative method, survey questionnaire and cross-sectional studies.

Keywords:

5S, Manufacturing industries, barriers, understanding level, rate of acceptance, foreign workers.

ABSTRAK

Sistem lean manufacturing telah menyusup dalam sektor pembuatan di seluruh dunia. Malah, sistem lean manufacturing adalah satu amalan yang berkenaan dengan penggunaan sumber, penciptaan nilai untuk pelanggan akhir, dan sebagai cara untuk menghapuskan sisa. Terdapat beberapa alat yang boleh digunakan untuk menghapuskan sisa dalam industri. Dalam kajian ini adalah kajian berkait dengan pelaksanaan 5S dalam industri pembuatan. Walaupun begitu, kajian penyelidikan ini akan menfokus dalam industri pembuatan yang telah melaksanakan sistem 5S di Negeri Melaka. Walaupun terdapat beberapa alat dan teknik yang ada untuk membantu dalam meningkatkan proses pembuatan, namun hanya beberapa industri sahaja yang boleh melaksanakan lean dengan alat yang sedia ada dengan jayanya. Dalam kajian ini, pekerja asing memainkan peranan utama dalam melaksanakan sistem 5S sebagai industri pembuatan di Malaysia disebabkan kebanyakan industri menggambil jumlah yang besar pekerja asing untuk bekerja sebagai pekerja. Oleh itu, ini adalah penting untuk memastikan pekerja asing betul-betul memahami tentang konsep sistem 5S dan mengamalkan cara terbaik untuk melaksanakannya supaya mendapat prestasi yang lebih baik. Kajian penyelidikan ini telah dicadangkan dengan model penyelidikan tentang halangan pelaksanaan 5S dalam industri pembuatan di kalangan pekerja asing. Kaedah penyelidikan ini telah mengunakan beberapa kaedah untuk melakukan penyelidikan seperti reka bentuk kajian deskriptif dengan kaedah kuantitatif, kajian soal selidik dan kajian keratan rentas.

Kata kunci:
5S, industri pembuatan, halangan, tahap kefahaman, kadar penerimaan, pekerja asing.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

In the recent years, most of the traditional manufacturing industries in Malaysia are currently encountering to the rapid changing of customer needs, raw materials' cost and technologies. For most of the industries, the top management will find alternative ways to reduce the cost of hiring the foreign workers as labors instead of changing new technologies.

However, there are some problems in the industries that will affect the industries suffer the loss in profits. This is mainly due to the industries could not use the resources with efficiency. In order to remain and retain market share in this global market, continuous improvement of manufacturing system processes in the manufacturing industry has become a necessity. (Asaad et al., 2015). Hence, the top management in industries will adopt lean manufacturing with the aim of reducing the wastes. Among the tools in lean manufacturing such as 5S, Kaizen, Just-in-Time (JIT), Total Preventive Maintenance (TPM) and Value Stream Mapping (VSM), 5S will be the beginning tools for most of the industries to start implement the lean manufacturing in the workplace.

5S is a system that used to reduce unwanted waste and optimize productivity through continuously maintaining the system in the workplace in order to consistent the operational results. The 5S method is a tool for continuous improving lean management processes, where the task is to create a highly efficient, clean, and ergonomic working environment. (Paweł Falkowski, 2013) 5S systems is similar as the quote "A place for everything, and everything in its place"statement Franklin which solution is to keep the best solution is keep things in their correct positions to avoid from the waste or unwanted actions.

According to Nordin et. al. (2010), the ultimate goal of a lean system is to create a smooth and high quality manufacturing that is able to produce finished products based on the customers demand without producing any waste during the operations. However, many industries in reality are not able to transform themselves to a lean manufacturing organization towards creating the world-class companies. This is due to less effectiveness of implementing the 5S systems into the workplace.

Before the industry starts to implement new manufacturing process, the top management should identify the true meaning of 5S, why and how to implement 5S system so that it will give beneficial for the industry. This report is concerned with the implementation of 5S in manufacturing industries with the performance of foreign workers which located in Melaka. All members within the industry, from the top management to the operator, should work together to have a better performance in implementing 5S system and create the situation as one of the competitive advantages for the industry.

1.2 PROBLEM STATEMENT

Lean manufacturing is the system as one of the methods that used by the industries to achieve competitive advantage in order to maintain their status in the marketplace. This is intent to improve the organization's performance in order to eliminate unwanted waste in the industry. However, most of the manufacturing industry in Melaka has difficulty to implement 5S system in the workplace. According to the Jagtar et al. (2014), failure implementation of 5S is mainly due to lack of understanding of the foreign workers regarding to the true concept of 5S system for the overall operation in a manufacturing. The foreign workers come from different countries such as Bangladesh, Nepal, Myanmar, and so on. The languages they use are totally different from Malaysia which using Malay as National language. The results cause low effectiveness in the workplace and it affects the successful implementation of the 5S system.

The importance of 5S System was not being fully utilized by the employees when they are working in their workplace and it had been abandoned by employees over time. Additionally, the employees might think that the implementation of 5S systems only involves for 5S committee in the workplace and it has nothing to do with them, even consider it as a burden and resist it. (Gomez, Byers, Stingley, Sheridan & Hirsch, 2010).

Hartika et al. (2011) summarized results from a number of interviews which indicate that lack of motivation is one of the factors that hinders successful implementation of 5S System. The foreign workers receiving less motivation from the top management will cause them to assume that the 5S implementation is not considered as important role in the process. Hence it will affect the efficiency of using 5S systems in overall within the industry.

1.3 RESEARCH QUESTIONS

This research begins with identifying the ways for the industry to implementing 5S system in the workplace. The main purpose of this research is to investigate the factors that may hinder the successful by implementing 5S in manufacturing industry.

Therefore, the researcher comes out following research questions to be defined in the research as below:

- What is the understanding level for foreign workers to encounter and adapting 5S systems to improve their performance?

- What is the rate of acceptance of foreign workers to implement 5S in their workplace?

- How effectively the 5S system could improve the worker performance and reduce unwanted waste?

1.4 RESEARCH OBJECTIVES

This research purpose is to provide a theoretical framework to understand the key concept of lean manufacturing, and 5S is the main tools that will be focused on this research for the industry to implement lean production.

This objective of this research is to investigate how effectively the foreign workers can deal with the implementation of 5S systems so that the foreign workers could react and counter in the new way of working environment. This research will also allow the researcher to examine the effectiveness of the 5S system in manufacturing organization in Melaka.

Therefore, the researcher comes out with several research objectives of this research as below:

- To measure the understanding level for foreign workers to encounter and adapting 5S systems to improve their performance.

- To identify the rate of acceptance for foreign workers to implement 5S in their workplace.

- To relate the effectiveness of the 5S system could improve the worker performance and reduce unwanted waste in the industry.

1.5 SCOPE, LIMITATIONS AND KEY ASSUMPTIONS OF THE STUDY

Because of the implementation of 5S system, possibly will leads advantageous in manufacturing industry in Melaka, it is important to identify the problems that causing failure to implement 5S among the foreign. The research model was designed to investigate the related question through questionnaires outlined in the preceding section. This research only focused on the manufacturing industry in Melaka, as the respondents will be the foreign workers that come from different countries. The research instruments include a combination of structured questionnaire and surveys will be used for further validation. The results study will focus on the foreign workers' performance and how they apply 5S systems in their workplace.

The limitation of this research is the research progress will be conducted in manufacturing industry in Melaka only. This research is investigating the performance of the foreign workers in their workplace and how they apply the 5S systems in their workplace. However, the respondents might not fully understand the needs and the research objectives of this research due to different language problems. Therefore, the results obtained may not be represent the overall of the foreign workers that worked in manufacturing industry.

The key assumptions of this research are all the respondents are willing to help the researcher to complete this research, as they answered the questionnaire with honest and willing to give any suggestion to help improve their performance. Hence, the research is practical and the information is very useful for the industry.

1.6 IMPORTANCE OF THE RESEARCH

The importance of this research is to understand the relationship between the implementation of 5S systems and the foreign workers' performance and find the best solution to solve the problems in order to complete the implementation as according to the plan. The research is the aim of understanding the reality fact of the foreign workers' problems when they apply 5S to their workplace. This research was done for the purpose to justify several significant which considered important to be the reference for the manufacturing industries such as:

1) To study the relationship between the understanding levels of foreign workers with the 5S systems, also the impacts that may arise if 5S system does not implement well. The result of this study a good information to the industry to get well known that the barriers that faced by the foreign workers and it is the responsibility to ensure that every activity in the industry will be completed according to the plan.

2) To study the factor that may cause the acceptance levels from foreign workers when they implement 5S in their workplace. The results will be the guideline for the industry that involve, so that it can be used to avoid any troubles or the risk that might happen in the future.

3) To investigate the effectiveness of the 5S system that applied in the manufacturing industry. This will help the researcher and the parties that involved understanding on how exactly the plan works in the workplace, so that it can avoid any additional cost that might need to add on when implement the 5S systems.

1.7 SUMMARY

This chapter of this research begins with a brief introduction and background of the research topic. As Paweł Falkowski (2013) started out that 5S is a system that used to reduce unwanted waste and optimize productivity through continuously maintaining the system in the workplace in order to consistent the operational results. This chapter will end with the importance of the research which state out the relationship between the implementation of 5S systems and the foreign workers' performance. 5S system has been adopted by many manufacturing industries in these recent decades and the industries are kept moving forward on the implementation in order to continuously improve the workers' performance. There are some specific problems among the foreign workers discussed on the implementations of 5S in manufacturing industry in Melaka and will be documented in the preceding chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

As in the chapter 1, the overall of lean manufacturing is briefly discussed. In this chapter, the theory for Lean manufacturing, the Lean Manufacturing tools such as Kaizen, 5S 7 Wastes, Just-in-Time (JIT), Value Stream Mapping (VSM), and theoretical framework will be explained in more details. 5S will be discussed significantly in this research, as it is the process of successful in lean implementation. In this research, the theories use the guideline from the journals, books, thesis and other published materials as references to support and strengthen the meaning of theoretical framework. To understand the implementation of 5S system better and to manage them more effectively, each methods of 5S are more likely to be discussed in this chapter.

This chapter explains more about the theoretical framework. These theoretical frameworks are formed in term of the knowledge collected from the secondary data such as book and journal about the implementation of 5S in manufacturing industry. It will begin with section 2.2 the introduction to lean manufacturing, section 2.3 lean manufacturing tools, section 2.4 type of wastes, section 2.5 implementation of 5S system, section 2.6 the barriers of the implementation of 5S system and section 2.7 summary of chapter 2.

2.2 INTRODUCTION TO LEAN MANUFACTURING

According to Amit et. al. (2014), Lean manufacturing is defined as the way of the system to produce more than the mass production with using less effort, lesser space, without any new inventory, better quality and lesser defects. Sharma (2013) point out that Lean Manufacturing uses everything lesser compared to mass production, half of the human efforts in the factory, half of the manufacturing space, half of the investment in tools and half of the engineering hours to develop a new product. In short, Lean Manufacturing system supports to provide the minimum resource that required for produce a product or perform a service.

Lean Manufacturing also plays the role in new product development and the improvement of existing products, which including idea creation, innovative design, assembly and test, rapid prototyping, market and competitor analysis, risk management, sales forecasting, product forecasting, setting key performance indicators (KPI) and value analysis in order to reduce the cost of the existing products.

However, the change from traditional manufacturing system to lean manufacturing is not an easy task. Nordin (2010) states that the changes involve four critical factors: leaders and management, finance, skill and expertise and also supportive organizational culture. Therefore, it is an essential to apply the full set of lean principles and tools in order to contribute to the successful Lean Manufacturing transformation.

2.3 LEAN MANUFACTURING TOOLS

The Lean Manufacturing system is used to identify and eliminate the waste during the process of producing the products, as it aims to find the root cause, and find a solution to solve the problems. There are several lean Manufacturing tools that can be used to eliminate the waste. Each of them has its own theory, benefits and it depends on the situation to use it. Below here are some of the tools that will be explained in this chapter, such as Kaizen, Just-in-time, Total Productive Maintenance, and value Stream Mapping

Kaizen (Continuous Improvement process)

Kaizen is a focused and structured improvement project, which using a dedicated cross-functional team to improve a targeted work area, with specific goals, in an accelerated timeframe. Kaizen can produce speedy and significant improvement in the technical systems, especially in the work area, processes and targeted products. (Wiljeana, 2010) In addition, there are significant technical system improvements after a Kaizen event, including improvements to lead-time, floor space, WIP, setup time/loading time, market share, walk time/parts travel time, defect rate/quality issues, and on-time delivery/customer waiting time (Desta, 2014).

Just-in-Time (JIT)

According to Akbar et. al (2013), Just-In-Time (JIT) manufacturing that comes from the Japanese management philosophy that applied in manufacturing which involves having the right products of the right quality and quantity and deliver in the right place and the right time. In other words, in a JIT manufacturing, materials are purchased just in the right time and produced as and when it is needed. It has been widely reported that the appropriate use of JIT manufacturing has resulted in increases in quality, productivity and efficiency, also improved communication with the customers and reduces in costs and wastes. (Akbar et. al, 2013)