Faculty of Technology Management and Techopreneurship

IMPLICATION OF LEAN MANUFACTURING TOOLS TO ELIMINATE WASTE IN MANUFACTURING INDUSTRY IN MELAKA

UTeM
اونيۏرسيتي تيکنيکل مليسيا ملاک
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Bachelor of Technology Management (Supply Chain Management and Logistics)

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

IMPLICATION OF LEAN MANUFACTURING TOOLS TO ELIMINATE WASTE IN MANUFACTURING INDUSTRY IN MELAKA

VINNETHA A/P KUMARAN

Report submitted in fulfillment of the requirement for the Degree of Bachelor of Technology in Supply Chain and Logistics with Honours (BTMS)

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

Faculty of Technology Management and Technopreneurship (FPTT)

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2022

DECLARATION

I, Vinnetha A/P Kumaran, declare that this thesis entitled “Implication of Lean Manufacturing Tools to Eliminate Waste in Manufacturing Industry in Melaka” is the result of my own research except as cited in the reference. The thesis has not been accepted for any degree and in not concurrently submitted in candidature of any other degree.

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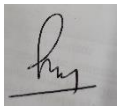

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DEDICATION

I dedicate my thesis work to my creator, educators, my family, and my friends. A special thanks to my loving parents, Mr. Kumaran and Mrs. Nagajothi who guide me through the valley of darkness with hope and compassion. My sisters, Dharminy, Thanessha, and Varshini who never left my side and are very precious to me. Throughout various obstacles, they have been a consistent source of encouragement and support. I will also always grateful to my friends for everything they have done for me, especially Uthireiswaran for helping me in enhancing my technology skills and motivating me to work hard for the things that I desire. Next is Divya for the countless hours of proofreading and for being a pillar of strength for me throughout this programme. Essentially, I am grateful for my academic adviser for guiding me through this process and the committee for keeping me on course.

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ABSTRACT

This study deals the concept eliminates waste in manufacturing industry in Melaka. The objective of this study is to apply Lean Manufacturing concept, principles and tools to eliminate and reduce the occurred wastes in manufacturing industry in Melaka. Many companies have adopted this concept, and experienced reduction in manufacturing lead time and material handling cost, and improvement in quality with other benefits. It is generally agreed upon that a Lean Manufacturing concept to be very effective, it should include a set of tools and techniques or provisions to ensure management commitment, employee involvement, identifications of wastes, development of controls for wastes, and training and education for employees. The implementation of Lean Manufacturing reduces wastes in the manufacturing industry and increases profitability and production.

This was a descriptive research, and the data was collected using the quantitative analysis method. The data was collected through questionnaires from 103 respondents, with the majority of the respondents are manufacturing industry customers. Besides, to analyze the collected data, the researcher will be using the Statistical Package for Social Science (SPSS). To describe the variables numerically and find the relationship between the independent variables and dependent variables.

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Keywords: Lean Manufacturing, waste, customer, manufacturing industry

ABSTRAK

Kajian ini membincangkan konsep menghapuskan sisa dalam industri pembuatan di Melaka. Objektif kajian ini adalah untuk mengaplikasikan konsep, prinsip dan alatan Pembuatan Lean untuk menghapuskan dan mengurangkan sisa yang berlaku dalam industri pembuatan di Melaka. Banyak syarikat telah menerima pakai konsep ini, dan mengalami pengurangan dalam masa utama pembuatan dan kos pengendalian bahan, dan peningkatan dalam kualiti dengan faedah lain. Secara umumnya dipersetujui bahawa konsep Pembuatan Lean adalah sangat berkesan, ia harus merangkumi satu set alat dan teknik atau peruntukan untuk memastikan komitmen pengurusan, penglibatan pekerja, pengenalpastian sisa, pembangunan kawalan untuk sisa, dan latihan dan pendidikan untuk pekerja. . Pelaksanaan Pembuatan Lean mengurangkan sisa dalam industri pembuatan dan meningkatkan keuntungan dan pengeluaran.

Ini adalah kajian deskriptif, dan data dikumpul menggunakan kaedah analisis kuantitatif. Data dikumpul melalui soal selidik daripada 103 responden, dengan majoriti responden adalah pelanggan industri pembuatan. Selain itu, untuk menganalisis data yang dikumpul, pengkaji akan menggunakan perisian Statistical Package for Social Science (SPSS). Untuk menerangkan pembolehubah secara berangka dan mencari hubungan antara pembolehubah bebas dan pembolehubah bersandar.

Kata kunci: Pembuatan Lean, sisa, pelanggan, industry pembuatan

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APPROVAL

I, Dr. Nurhayati Binti Kamarudin, hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of Bachelor of Technology Management (Supply Chain Managament and Logistics) with Honours.

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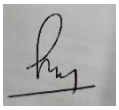

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter describes about the background of the study, research problems, research questions, research objectives, scope, limitations and significance of the study. To complete the Bachelor's Dissertation (PSM Bachelor Project) at the Faculty of Technology Management and Technopreneurship (Bachelor of Supply Chain Management and Logistics), to investigate Implication of Lean Manufacturing Tools to Eliminate Waste in Manufacturing Industry in Melaka was chosen.

1.2 Background of the Study

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This study is to identify common problems that occur in manufacturing industry based on the perception of Lean Manufacturing and provide appriotiate methods or tools that can be applied with less cost and time to overcome them. Manufacturing industry refers to industries that are engaged in the manufacture and processing of goods and indulge either in the creation of new commodities or value-added. The final product can either serve as a finished good for sale to the customers or as an intermediate goods used in the production process. However, despite the large product range, they all have the same function as to eliminate or reduce the manpower expenditure, or required to complete a job. In addition, a smooth production flow, increased productivity, reduced production costs, employee involvement and reduced inventory are better for quick decision making and response. (Atul Palange, Pankaj Dhatrak, 2021)

Manufacturing industry consists of enterprises and organizations that manufacture or supply goods and services. Industry can be classified into three. Firstly, primary industry is defined as industries that is concerned with extracting the earth's natural resources so that they can be converted into disposable products. For example, coal, minerals, agriculture industry and many more. Next, secondary industry is industries that uses raw materials as input and creates finished products as output. This can be distinguished from the primary industry which produces raw materials and the tertiary industry which produce services. This industry includes steel production, automobile manufacturing and telecommunications. (Hitesh Bhasin, 2019) Then, the tertiary industry also known as service industry. The industry which provide a services such as transport and finance. (Adam Hayes, 2022)

1.3 Problem Statement

Firstly, manufacturing skills gap. The industry has an aging workforce that consists primarily of baby boomers. As such, the manufacturing industry is in dire need of skilled and younger workers. Lack of skilled labor will hinder productivity. Today, manufacturing is very specialized and requires great knowledge, mastery of skills and proficiency in various types of competencies. Moreover, the interest in this highly skilled labor comes in a period when organizations face a large percentage of its workforce retirement rates and an approaching labor era that lacks the right skills and specialized learning required for manufacturing activities. (Katana, 2022)

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Secondly, controlling inventory. It is the most common problem in the manufacturing industry. Holding too little inventory can affect both profitability and customer relationships. Storing too much inventory can result in costs to store and difficult to sell. Inventory management is difficult but it becomes easier with the help of automated solutions. Manual inventory checks are inefficient and error-prone, which can result in inaccuracies, shortages and overages. Therefore, investing in the right software and processes to track and manage raw material flows. It also allows them to keep track of work in progress and finished products. This level of

observation means company can prevent inventory issues by intervening at the first sign of a problem. (Chai, 2021)

Thirdly, improving efficiency. Manufacturers have been looking for effective ways to reduce costs and increase efficiency in their companies. Many of them choose to minimize the quality of their products to reduce their production costs, but this will only reduce their profits as dissatisfied customers will stop buying from them. One of the most effective ways to optimize efficiency in a manufacturing industry is to modernize processes and systematize workflows. Manufacturers need to reduce time-consuming, material waste and streamline their supply chains. Enterprise Resource Planning (ERP) systems can simplify it all, thus enabling manufacturers to achieve optimum efficiency. (Chai, 2021)

Fourth, adapting technology. In fact, every year, there is always a new technology on the horizon, including Internet of Things (IoT), robotics and manufacturing. Technology is advancing at a warping speed, and most manufacturing companies are struggling to compete, let alone to say at the forefront. At a time when many IT departments have gone through the process of researching, obtaining approvals, purchasing and installing new technologies, faster and more agile solutions may have emerged. Avoiding technology is certainly not a good move, because manufacturers need to adapt to any changes, to stay ahead in a highly competitive market. Manufacturers also need to consider the company's budget to determine if they are willing to invest in the desired technology. (Kanya, 2022)

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1.4 Research Questions

The main study question has been constructed following the need to be achieved by researcher. Below are the questions:

RQ1: How Lean Manufacturing tools impact on eliminating waste in manufacturing industry in Melaka?

RQ2: What are the relationship Lean Manfacturing (independent variable) and eliminate waste (dependent variable)?

1.5 Research Objectives

In order to achieve the goals of this study, the objective of the study has been listed down according to the needs of the study. Below are the research objectives:

RO1: To determine Lean Manufacturing tools to impact on eliminating waste in manufacturing industry in Melaka.

RO2: To investigate the relationship between Lean Manufacturing (independent variable) and eliminate waste (dependent variable).

1.6 Scope of Study

This study is to identify the implication of Lean Manufacturing tools to eliminate waste in manufacturing industry in Melaka. The respondents used in this research are focused on employees in manufacturing industry. Through this study, it was also discussed about the tools and methodologies of Lean Manufacturing in manufacturing industry in Melaka. The scope of this research focused on Lean Manufacturing in manufacturing industry in Melaka because there were no constraints. It is simpler to discover employees in manufacturing industry and individual are more willing to share information without revealing their identity. Therefore, this are the respondents for this research.

1.7 Limitation of Study

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