UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DEFECT IMPROVEMENT TOWARDS PRODUCTIVITY FOR SME COMPANY

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Manufacturing Engineering Technology (Process) with Honours.

by

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Faculty of Mechanical and Manufacturing Engineering Technology

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BORANG PENGESAHAN STATUS LAPORAN PROJEK SARJANA MUDA

Tajuk: DEFECT IMPROVEMENT TOWARDS PRODUCTIVITY FOR SME COMPANY
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ABSTRAK

Kajian ini membincangkan penggunaan tujuh alat kawalan mutu asas untuk mengurangkan kecacatan produk dalam industri IKS, Mi Kuning Juwita Sdn. Bhd. Objektif kajian ini adalah untuk menyelesaikan sisa semasa bagi barisan pengeluaran peratus yang ditolak dan menentukan keperluan alat statistik dan membangunkan alat dengan menggunakan perisian Microsoft Excel 2016 dan Minitab. Dalam kajian ini, teknik ini digunakan untuk menganalisis pengumpulan data dari bahagian rolling. Data yang diperoleh dianalisis dengan menggunakan Carta Aliran, rajah Pareto, Rebab dan Kesan rajah dan Carta Kawalan yang merupakan carta X bar dan R. Dengan menggunakan gambarajah Pareto, bahagian bergulung menyumbang jumlah cacat tertinggi. Diagram Pareto menunjukkan bahawa berat yang cacat adalah masalah kritikal dalam bahagian rolling. Oleh kerana pengurangan keuntungan untuk Mi Kuning Juwita Sdn Bhd, analisis Rancangan-Do-Study-Act (PDSA) adalah disyorkan untuk mengurangkan kelemahan berat kritikal panjang tepung. Walau bagaimanapun, data itu dikumpulkan dari talian pengeluaran di Mi Kuning Juwita Sdn Bhd yang terletak di kawasan Melaka. Dengan menggunakan alat kawalan kualiti yang sesuai, analisis telah dijalankan untuk menentukan masalah utama kecacatan Kuning Mi dengan sumber variasi semasa pembuatannya dalam barisan pengeluaran. Kemudian, data yang dikumpulkan akan digunakan untuk mengesahkan Minitab yang telah dibangunkan. Sebagai kesimpulan, Mi Kuning Juwita Sdn Bhd dapat meminimumkan kelemahan produk dan meningkatkan produk berkualiti untuk mencapai kelebihan daya saing.

ABSTRACT

This study discusses an application of seven basic quality control tools to reduce product defects in SME industry, Mi Kuning Juwita Sdn. Bhd. The objective of this study is to resolve current waste for rejected percentage production line and determine the requirement of statistical tools and develop the tools by using Microsoft Excel 2016 and Mini-tab software. In this study, this technique is applied to analysis the data collection from rolling section. The data obtained were analysed using Flow Chart, Pare-to diagram, Cause and Effect diagram and Control Chart which are capability chart. By using Pareto diagram, rolling section contributed the highest total defects. Pare-to diagram showed that weight of defective was the critical problem in rolling section. Due to profit reduction for Mi Kuning Juwita Sdn Bhd, Plan-Do-Study-Act (PDSA) analysis is recommended to reduce the critical weight defective of length of flour. However, the data were collected from the production line at Mi Kuning Juwita Sdn Bhd which located in Malacca area. By using the appropriate quality control tools, the analysis was carried out to determine the major problem of Yellow Mi defect with the source of variation during their manufacturing in production line. Then, the data collected will being used to validate the Mini-tab that had been developed. As a conclusion, Mi Kuning Juwita Sdn Bhd can minimize the product defective and increase the quality product to achieve competitive advantage.

DEDICATION

Dedicated to my parents Hj Ab Maullod Bin Yasim and Hjh Norsidah Binti Abd Ghani.

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Alhamdulillah, thank Allah for giving me the strength to complete this Final Year Project. His help and blessing give me strength and taught me patience to complete the project. I have learned a lot and really enjoyed while working on this final year project. First and foremost, I am extremely grateful to associate Salleh Bin Aboo Hassan my supervisor for guiding and helping me in order to finish this final year project. Thanks to my beloved best friend Izuddin Bin Said for their unwavering love, support, and understanding in completion of this project. To all of my friends and everyone that has been contributed by supporting my work and for helping me during the final year project till it was fully completed.

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LIST OF ABBREVIATIONS

SPC	Statistical Process Control
SMED	Single Minute Exchange of Dies
TPM	Total Productive Maintenance
UCL	Upper Control Limit
LCL	Lower Control Limit
FYP	Final Year Project
SME	Small and Medium Sized Enterprise
IKS	"Industri Kecil dan Sederhana"

CHAPTER 1

INTRODUCTION

This chapter will discuss briefly about the overview of the study and the main purpose of this study. This chapter also covers the problem statement of the study, the objectives that will be achieved by the scope of the study to be conducted.

1.1 Project Background

Every manufacturing industry needs a plan to improve and achieve its business goals and successfully compete for customer. Customer is expecting for a higher quality at lower price and with better services. With great operation, planned production and good quality product will improve productivity yet, enhance management development. That is how the process underlying with production management will produce the valuable product.

Productivity is the value of outputs (service and products) produced divided by the values of input resources (wages and cost of equipment). Furthermore, productivity at the same time is seen as one of the most vital factors that affecting the manufacturing industry competitiveness, efficiency and frequently among others. It is strongly affected the price a company pays for their inputs and receive for its inputs. Many people sometimes misunderstood about the term of productivity because they keep discussing the general issues of performance. However, increasing productivity is important in operation because it can performed the high quality operation means it flawed services.

Today, too many quality problems found in manufacturing company. This occurs because there is a mistake in the way of quality control. As we know, all parts or product must to follow the specifications and pass the Quality department. However, the department

Always has faced a lot of defection problems. In this way quality to determine the cause of the quality problem, so that it can be prevented in the future. The effect based on the higher reject of parts, it's have increased the cost for re-work. Other than that, the operators maybe have taken more time on re-work than actual work. Furthermore, the production activity will slow because of writing the parts and can't achieve the output. As competition increases and global economics crisis occur throughout the world, quality becomes dominant issue for organizations and high priority to understanding what quality is. Quality must be a fundamental business strategy for a company to survive and this new strategy is seen as the driver of an immense culture change in companies (Winchell, 1991).

These cause of problem normally occur by the variation in manufacturing process. Besides that, Statistical Process Control can also help manufacturing organization to predict future performance with reference collected data by analyzing the control charts and prediction that can be made through process is performance.

In order to survive during this competitive market, up the standard and productivity of a product or method should be for any company. It's encouraged the company to build up their quality improvement program not only focused on external customer but also its internal customer. Internal customer may be a division, individual or is the receiver of products, materials, services or data from other units within the same company according to (Clarisse, 2011).

The aim of this study is to develop the statistical tools for analyzing the product quality. These statistical tools relies on seven basic quality tools. The seven basic quality tools is that the key implement of Statistical Process Control in production line that the most effective way to apply for decrease number of defectives. During this study, the statistical tools are develop and the data are collected from Juwita Yellow Mi Sdn Bhd. Then, the analysis will be held for the identify problem occur that are related with quality issue of product.

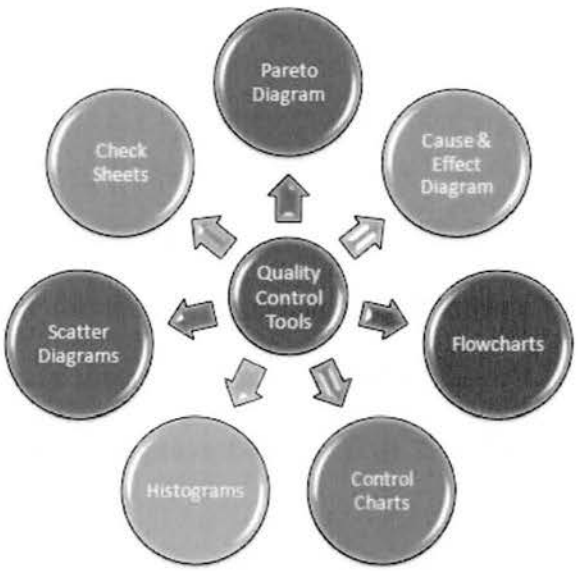

Figure 1.1: Seven Basic Quality Tools

1.2 Problem Statement

Juwita Yellow Mi Sdn Bhd Company is Muslim Food production which produces Yellow Mi, Tofu, Roti Canai, Curry puff, Doughtnuts, Chicken/Beef Samosa, Grass Jelly and many more. The major output of products in the Production Department, especially Yellow Mi has faced many defect problems. These quality defect have contributed increase rate rejected for outgoing inspection every month. All manufactures are trying to satisfy their customer by producing a good product with high

quality. Poor product quality will not meet the customer requirement and may cause the user to choose competitors product. These quality issues makes the manufacturer to consider applying the Statistical Process Control (SPC) to solve and control quality of their product. The application of Statistical Process Control (SPC) to the production line has been a challenging issues for industries. The idea of this study is to develop a statistical tool which will make the statistical analysis more accurate and flexible. This tool is expected to eliminate the unnecessary steps to improve the manufacturing process.

1.3 Project Objective

The objectives of this study are followed:

1. To resolve current waste for rejected percentage production line.
2. To perform analysis data collection at SME Company.
3. To propose improvement and improve quality at SME Company.

1.4 Project Methodology

The purpose of this project is to identify defect at the production line. In addition, to reduce the existing defect rate at the machine in production line. Project methodology is function as guider to achieve the project by following the flowchart. The step is:

i. Make a research on other journal and other thesis that has same pattern of defect in the production line and will be put in literature review.

ii. Follow by identifying defective features, taking the highest defect data, and providing project development steps.