THE ADOPTION AND IMPLEMENTATION OF BEST PRACTICE IN BIOTECH INDUSTRY

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THE ADOPTION AND IMPLEMENTATION OF BEST PRACTICE IN BIOTECH INDUSTRY

Thesis submitted in accordance with the requirements of the Universiti Teknikal Malaysia Melaka for the Bachelor Degree of Manufacturing Engineering in Manufacturing Management

By

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I hereby, declared this thesis entitled "The Adoption and Implementation of Best Practice in Biotech Industry" is the result of my own research except as cited in references.

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APPROVAL

This thesis submitted to the senate of UTeM and has been accepted as fulfillment of the requirements for the Degree of Bachelor of Manufacturing Engineering (Manufacturing Management) with Honours. The members of the supervisory committee are as follow:

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Mr. Nor Akramin Bin Mohamad

Project Supervisor

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ABSTRACT

This research is about the best practice in biotech sector in Malaysia. Best practice is a management idea which stated there is a technique, method, process, activity, incentive or reward that is more effective at delivering a particular outcome than any other technique, method, process, and others. However in Malaysia, there is not much research done in biotech industry and they also need the information on the practice that they need to adopt and implement. In recognition of the best practice, this project is to collect data on current practice that biotech industries are applying and to determine the best practice for adoption and implementation. To achieve the objectives, 67 set of questionnaires was distribute to collect and analyze the practice used in Biotech Company. The questionnaires are the core of this research which all the feedback analyzes are basically on the result from the questionnaires. The questionnaires were developed base on the current practice used, advantage, disadvantage, impediment and the successful of the practice implementation. Based on the analysis of the questionnaires, there are 4 practices which are 5S, Kaizen, TPM and Kanban that is highly used by Biotech Company. The findings on the study can be adopt or implement by biotech industry to improve manufacturing activities.

Keyword: *Best Practice,Biotech Industry, Industry Survey.*

ABSTRAK

Kajian ini adalah mengenai ”amalan terbaik” di Malaysia di dalam sektor biotek. ”Amalan terbaik” adalah satu idea pengurusan di mana dinyatakan bahawa terdapat teknik, cara, proses, aktiviti, galakan atau ganjaran yang membuatkan lebih efektif dalam mengeluarkan hasil daripada cara-cara atau teknik yang lain. Walaubagaimanapun di Malaysia, kajian di sektor biotek adalah sedikit tetapi sektor ini juga memerlukan informasi mengenai amalan yang perlu diterap dan dilaksanakan. Dalam pengenalan “amalan terbaik” ini, projek ini akan mengumpulkan data tentang amalan yang diamalkan oleh industri biotek pada masa ini dan menentukan amalan terbaik untuk diterap dan dilaksanakan. Untuk mencapai objektif ini, sebanyak 67 set soalan telah diedarkan untuk mengumpul dan menganalisa amalan yang digunakan oleh syarikat biotek. Set soalan ini adalah teras kepada kajian ini di mana semua maklum balas yang dianalisa adalah jawapan daripada set-set soalan yang telah diedarkan. Soalan-soalan ini dibina berdasarkan amalan yang digunakan pada masa ini, kelebihan, kelemahan, halangan dan keberjayaan amalan tersebut dilaksanakan. Berdasarkan analisis daripada se-set soalan yand diedarkan, empat amalan aitu 5S, Kaizen, TPM, dan Kanban adalah yang digunakan paling tinggi oleh syarikat biotek. Hasil perolehan daripada kajian ini boleh diterap atau dilaksanakan oleh industri biotek untuk memajukan lagi aktiviti pembuatan.

***Kata kunci**: Amalan Terbaik, Industri Biotek, Kaji Selidik Industri.*

DEDICATION

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Jamal Bin Tukiman

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LIST OF ABBREVIATIONS, SYMBOLS, SPECIALIZED NOMENCLATURE

CEO	-	Chief Executive Officer
FRS	-	Fix Repeating Schedule
GDP	-	Gross Domestic Product
IT	-	Information Technology
JIT	-	Just in Time
KPI	-	Key Process Indicators
MBWA	-	Management by Walking Around
MIDA	-	Malaysian Industrial Development Authority
MTTR	-	Mean Time to Repair
NPC	-	National Productivity Corporation
OEE	-	Overall Equipment Effectiveness
OEM	-	Original Equipment Manufacturing
PDCA	-	Plan Do Check Act
QA	-	Quality Assurance
ROI	-	Return on Investment
Sd	-	Standard Deviation
SMED	-	Single Minute Exchange of Die
SMT	-	Self Managing Team
SPSS	-	Statistical Package Social Sciences
TPM	-	Total Productive Maintenance
TPS	-	Toyota Production System
UTeM	-	Universiti Teknikal Malaysia Melaka
Vs.	-	Versus
VSM	-	Value Stream Mapping

APQC	-	American Productivity and Quality Centre
MOM	-	Marketing Operations Management
ERP	-	Enterprise Resource Planning
HRM	-	Human Resource Management
PDCA	-	Plan, Do, Check, Act
R&D	-	Research and Development
PSM	-	Final Year Project (Projek Sarjana Muda)
SPSS	-	Statistical Package for Social Science
BPM	-	Business Process Management
SCM	-	Supplier Relations Management
PLM	-	Product Lifecycle Management
OEE	-	Overall Equipment Effectiveness
ROA	-	Return on Assets

CHAPTER 1
INTRODUCTION

1.1 Introduction

Biotechnology is the use of microorganisms, such as bacteria or yeasts, or biological substances, such as enzymes, to perform specific industrial or manufacturing processes (Hawkins, et al. 1998). Biotechnology has applications in four major industrial areas, including health care, crop production and agriculture, non food uses of crops and environmental uses. Biotechnology is also used to recycle, treat waste and clean up sites contaminated by industrial activities and produce biological weapons. Others applications include the production of certain drugs, synthetic hormones, and bulk foodstuffs as well as the bioconversion of organic waste and the use of genetically altered bacteria in the cleanup of oil spills. The most practical use of biotechnology, which is still present today, is the cultivations of plants to produce food suitable to humans.

Best Practice can be defines as planning or operational practices that have proven successful in particular circumstances and which are used to demonstrate what works and what does not and to accumulate and apply knowledge about how and why they work in different situations and contexts. They are innovative; they make a difference; they have a sustainable effect; and they have the potential to be replicated and to serve as a model for generating initiatives elsewhere.Commonly, “best practice” is a management idea which asserts that there is a technique, method, process, activity,

incentive or reward that is more effective at delivering a particular outcome than any other technique, method, and process. The idea is that with proper processes, checks, and testing, a desired outcome can be delivered with fewer problems and unforeseen complications.

Benchmarking is a process used in management and particularly strategic management, in which organizations evaluate various aspects of their processes in relation to "best practice", usually in same field and industry. This then allows organizations to develop plans on how to adopt such "best practice", usually with the aim of increasing some aspect of performance. Benchmarking may be a one-off event, but is often treated as a continuous process in which organizations continually seek to challenge their practices.

1.2 Statement of Problem

Nowadays, there is not much research done in the biotech industry. Same as other major type of industries, biotech industry also need their conclusion on the practice that they need to adopt and implement. The comparison and benchmarking on the same field of industry will lead to the final result as the "best practice". The adoption and implementation of the "best practice" can identify and replace poor practices, raise the performance of poor performers closer to that of the best, avoid reinventing the wheel, minimize re-work caused by use of poor methods, save costs through better productivity and efficiency, and improve their performance in gain profit. The rapidly changing competitive environments in their field need them to change the strategies in order to remain competitive.

1.3 Objectives

The objectives of this research are:

a. To collect data on current "practice" that biotech are applying.
b. To analyze the feedback data of the "best practice" for adoption and implementation on the biotech company.
c. To determine the "best practice" on biotech industry as a result to increase productivity, can indeed generate for the company considerable profits of performance.

1.4 Scope of Study

This study is a case study of "best practice" adoption and implementation in biotech company in Malaysia. The method use to collect the data is using one set of questionnaire that will distribute to the biotech company. The tool use to determine the "best practice" on biotech is using analyzing techniques that lead to the final decision from the involve company feedback. The main focus of this research is to analyze the performances comparison between manufacturing units of the same identity or comparison with other organizations recognized as the best within the area. For data gathering, a survey using questionnaire will be distributed to Biotech Company for their feedback on the "best practice". Some of the data was analyzed by using SPSS or Minitab programming.

1.5 Potential Benefits of Study

This study will give benefits to the industry and also to the student by:

a. The findings on the study can be adopt or implement by the industry to improve manufacturing activities.
b. The study may enhance student's skills in making questionnaire on a topic and improve their attitudes and soft skills when developed this study.
c. Improves the current practices used by all company to one practice that called "best practice" that can increase their performance.
d. As a reference for academic studies related to "best practice" especially in biotech industry.

1.6 Report Outline

This study is divided into six (6) chapters. Chapter 1 is generally about the introduction which consists of problem statements, objectives, scope of study, potential benefits of study and the study outlines. Chapter 2 is the literature review. Based on the reference gathered, this chapter discusses the definition and the introduction to the key words which are the biotech, "best practice" and. benchmarking. Chapter 3 describes the methodology adopted in the study in order to collect the data. In this chapter, it discussed the project methodologies that were used to collect the relevant data to support the development and analysis of the study.

Chapter 4 discusses the analysis on the data that have been collected. This chapter will contain on the feedback of the questionnaires from the selected company. In chapter 5, results and discussion will go through the development of the study on the benchmarking analysis and the determination of the effectiveness practices. Finally in chapter 6, it will give conclusion of the whole project with the recommendations to improve the practice using in biotech industry.

1.7 Report Structure

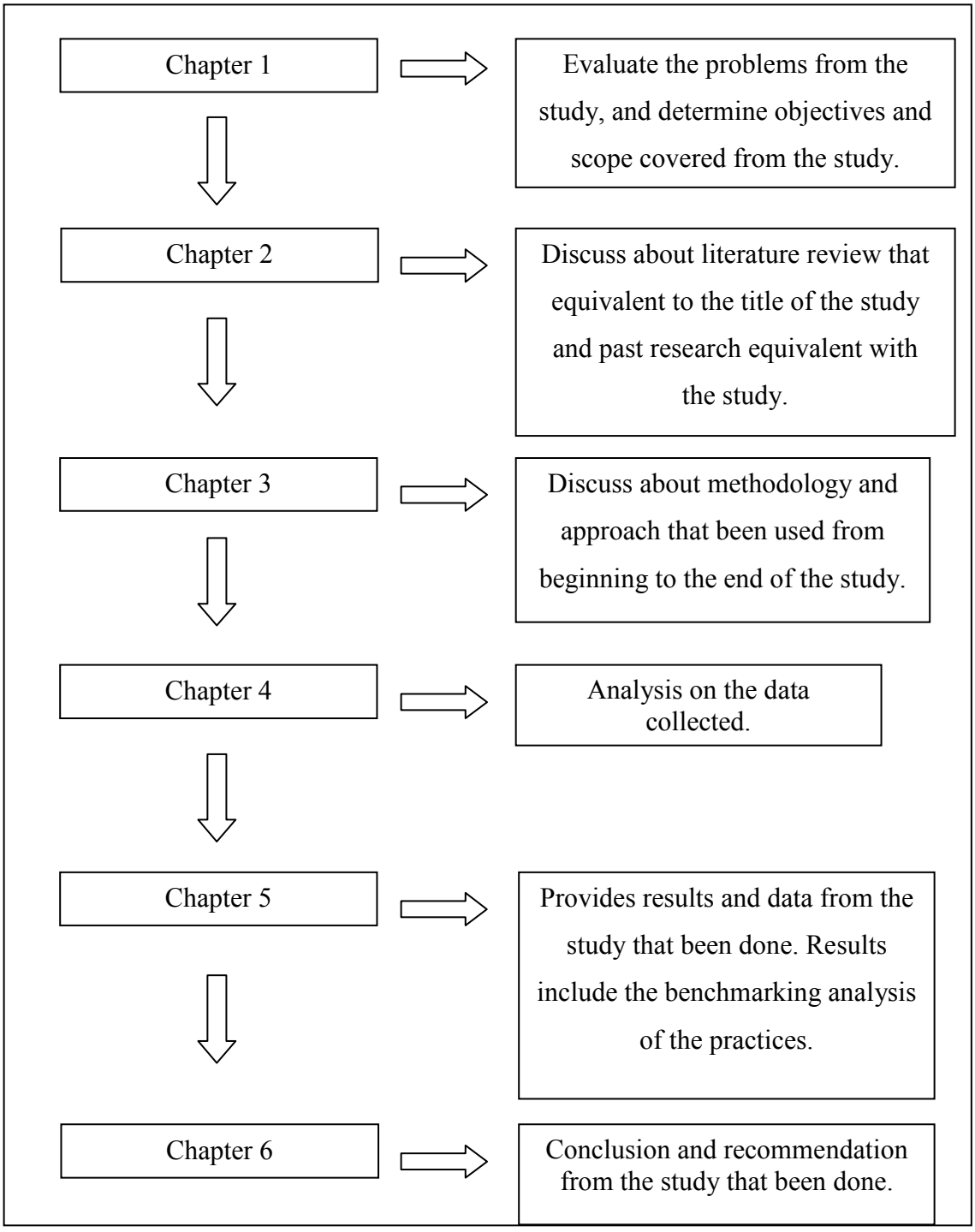

Figure 1.1: Report Structure