



UNIVERSITI TEKNIKAL MALAYSIA MELAKA

**A STUDY OF PROJECT MANAGEMENT BASED ON
MANUFACTURING COMPANY**

This report submitted in accordance with requirement of the Universiti Teknikal Malaysia Melaka (UTEM) for the Bachelor Degree of Manufacturing Engineering (Manufacturing Management) with Honours.

By

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DECLARATION

I hereby, declared that this report entitled “A Study of Project Management Based on Manufacturing Company” is the result of my own research except as cited in references.

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APPROVAL

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ABSTRACT

Project management is a basic skill which is very vital in order to achieve organization success. It provides effective tools and techniques for organization to implement in their project so that it will runs smoothly as required especially in delivery aspect. This report presents the finding of effective project network for variety characters of pressure vessel and determining the appropriate factors which mainly referred as critical activities during developing this product. It is because these factors created a big problem because it has no slack at all which straightly influence the next processes of the pressure vessel. Therefore, extra attention should be given to them because it contributes to project delay. This report only covered the study and analysis of Program Evaluation Review Techniques (PERT) and Critical Path Method (CPM) diagram of pressure vessel. The research has been developed by conducting interviews to UMW Advantech Sdn Bhd's (UASB) engineer which particularly involve in pressure vessel project. From the results obtained, 30% of pressure vessel projects have been delayed. Consequently, UASB has to pay penalty for the impact of the delay but only depend on the agreement signed. The biggest factor that influences this delay besides drawing approval is pressure vessel fabrication. The particular strength of this study is providing enhancement of project management In terms of project scheduling which reflected the needs of manufacturing industry.

ABSTRAK

Pengurusan projek merupakan satu kemahiran asas yang sangat penting untuk mencapai kejayaan bagi sesebuah organisasi. Pengurusan projek dilengkapi dengan teknik-teknik berkesan bagi membolehkan sesebuah organisasi menjalankan projek dengan lancar terutamanya dalam aspek penghantaran. Laporan ini menyediakan penjadualan projek berdasarkan kepelbagaian ciri-ciri bekas tekanan serta menentukan faktor-faktor kritikal yang mempengaruhi penghantaran bekas tekanan. Ini kerana faktor-faktor kritikal ini akan memberi kesan kepada proses seterusnya dalam menghasilkan bekas tekanan kerana tiada hari tambahan disediakan dalam menghasilkan bekas tekanan ini. Oleh itu, faktor-faktor ini perlu diberi perhatian lebih kerana ia mempengaruhi kelewatan penghantaran bekas tekanan. Laporan ini juga menyediakan kajian serta analisis berkenaan gambarajah Teknik Pengaturcaraan Projek (PERT) dan Kaedah laluan Kritikal (CPM) yang berkaitan dengan bekas tekanan. Penyelidikan telah dijalankan dengan menemu duga seorang jurutera yang menjalankan project bekas tekanan. Berdasarkan keputusan yang diperolehi, sebanyak 30% daripada penghantaran projek bekas tekanan adalah tertangguh. Oleh yang demikian, UMW Advantech Sdn Bhd telah membayar denda bagi kelewatan tersebut tetapi bergantung kepada perjanjian yang telah ditanda tangani. Faktor terbesar yang telah mempengaruhi kelewatan penghantaran bekas tekanan ialah proses penghasilan bekas tekanan. Kekuatan kajian ini adalah untuk menambah baik pengurusan projek dalam aspek penjadualan projek yang memberi kepentingan dalam industri pembuatan.

DEDICATION

*To my beloved parent, Mr. Omardin bin Abdul Halim and Mrs. Zaitun binti Idris;
supervisor, Mr. Nik Mohd Farid bin Che Zainal Abidin;
brother and sister, Muhammad Farid bin Omardin and Faizahnur binti Omardin;
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bestfriend, Norsyila binti Md Desa;
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LIST OF ABBREVIATIONS

AI	-	Authorized Inspector
AOA	-	Activity on Arrow
AON	-	Activity-on-Node
ASME	-	American Society of Mechanical Engineers
BPVC	-	Boiler and Pressure Vessel Code
CP	-	Critical Path
CPM	-	Critical Path Method
CS	-	Circumference Seam
DP	-	Die Penetration
Dur	-	Duration
EF	-	Early Finish
ES	-	Early Start
ET	-	Expected Time
GTAW	-	Gas Tungsten Arc Welding
HT	-	Hydrostatic Test
ID	-	Identity
JIS	-	Japanese Industrial Standard
LF	-	Late Finish
LS	-	Late Start
M	-	Manhole or Manway
MPI	-	Magnetic Particle Inspection
NDT	-	Non Destructive Test
PED	-	Pressure Equipment Directive
PERT	-	Program Evaluation and Review Techniques
QA	-	Quality Assurance
QC	-	Quality Control
ROI	-	Return of Investment

- SL - Slack
- UASB - UMW Advantech Sdn Bhd
- WBS - Work Breakdown Structure

CHAPTER 1

INTRODUCTION

This report is designed to provide an overview of project management which in turn is to determine the scheduling solutions of current problem that specifically arise in pressure vessel project based on manufacturing company.

1.1 Background Study

Many people and organizations today have a new or renewed interest in project management. Until the 1980's, project management primarily focused on providing schedule and resources data to top management in the military and construction industries. Today's project management involves much more, and people in every industry and every country manage projects. Project is a temporary endeavor undertaken to create a unique product, service, or result. Project is a unique, temporary, and developed incrementally which requires resources, have a sponsor, and involve uncertainty. The triple constraint of project management refers to managing the scope, time, and cost dimensions of a project.

Today's companies especially manufacturing organizations are recognizing that to be successful, they need to be conversant with and use modern project management techniques. Individuals are realizing that to remain competitive, they must develop skills to become good project team members and project managers. They also realize that many of the concepts of project management will help them as they work with people and technology on a day-to-day basis.

Some project managers have used different tools that are useful for managing projects. For example, networks, bar charts, job costing, task forces, partnering, and scheduling. All have been used sometimes very successfully and other times with poor results. As the world becomes more competitive, the importance of managing the process of project management and getting right the first time takes on new meaning.

Management is continually seeking new and better control to cope with the complexities, masses of data, and tight deadlines that are characteristics of many industries and their highly competitive environment today, as well as seeking better methods for presenting technical and cost data to customers. Project management appears to be ideally suited for business environment requiring accountability, flexibility, innovation, speed, and continuous improvement.

1.2 Objectives

The objectives of this study are:

1. To establish the effective project network for variety character of pressure vessel process flow in order to clearly illustrate the cycle time of each projects.
2. To identify the appropriate factors or critical activities so that extra attention would be given as these factors effecting the time delivery of pressure vessel.

1.3 Scope

Specifically, this report is primarily covered about:

1. The study of network diagram focusing in PERT and CPM diagram conducted based on project management procedure of UMW Advantech Sdn Bhd.
2. The appropriate analysis of PERT and CPM diagram such critical path, slack time and major factors influencing the time delivery of pressure vessel.
3. This report will only cover project related to fabrication work of pressure vessel.

1.4 Problem Statement

Since established 30 years ago, UMW Advantech Sdn Bhd (UASB) has come out with several projects concerning a wide area of manufacturing engineering field. Involving in process equipment fabrication, this organization had been recognized by American Society of Mechanical Engineers (ASME) for U1, U2 and R Code Stamps certification. Consequently, this organization has a strong link between well-known company such as Petronas, Shell, Titan Chemicals Corp Bhd, and much more.

However, project management is poor implemented by this company. Back to basic, project management is an essential to provide people with a powerful set of tools to improve their ability to plan, implement, and manage activities in order to achieve specific organizational objectives. By ignoring this vital project management, a lot of problems had arisen during project execution especially in time scope. By 2008, 30% of pressure vessel projects have been delivered behind what had been promised to the customers or specifically can be referred as project delay.

As a result, these projects delay directly contribute to increasing of project cost. In fact, based on customer requirement in a contract, UASB has to pay penalty for the impact of

this delay. In average, the penalty is 5% per day or even maximum to 10% per day. This increases the cost of the project which in turn decreases the profit of the company. Likewise, the cost of labor also increases because they have to work overtime to meet the project dateline. In addition, more contract labors are needed to accomplish the project instead of working overtime.

The most important thing that should be considered to build a long term company survival is how they satisfied their customers. By referring to this case, this company definitely reduces customer satisfaction because they are not capable to fulfill customer expectation. Here, customer satisfaction is seen as a key performance index which indicates of how successful organization at providing their services or products. In this case, this organization fails to optimize customer satisfaction as delivering the vessel on time is a part of their (customer) pleasure.

Therefore, it decreases customer trustworthy to this organization which indirectly caused poor credibility or reputation to other companies in which it can decrease sales of pressure vessel. Thus, project delay totally provides high risk and threat for this organization to survive in marketplace.

In summary, project management is a critical aspect that should be aware by any organization which tends to develop durable and strong organization. In other words, project management helps to shape organization's tomorrow. In such manufacturing company like UASB, the implementation of project management assist to minimize problems occurs as it integrates time, risk and cost management. It also contributes a big opportunity to this organization to enhance their performance and continually stays in marketplace.

CHAPTER 2

LITERATURE REVIEW

To put project into perspectives, project definition is a common starting point. All too often people call any work they have to do a “project.” Project actually has a very specific definition. If a set of tasks or work to be done does not mean specific definition, then it cannot be called a project. To use the project management techniques, project has to define first.

2.1 Definition of Project

Schwalbe Kathy states that project is a temporary endeavor undertaken to create a unique product, service, or result. Operations, on the other hand, is work done in organizations to sustain the business. Projects are different from operations in that they end when their objectives have been reached or when the project has been eliminated. Chapman R. James claims that a project is a temporary effort to create a unique product or service. Projects usually include constraints and risks regarding cost, schedule or performance outcome.