

COMPONENTS OF TECHNOLOGY CAPABILITY ENHANCEMENT OF LOCAL  
PLAYERS IN MALAYSIAN OIL & GAS FABRICATION INDUSTRY

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## DECLARATION

‘I hereby acknowledge that I have read this and in my opinion this work sufficient in terms of scopes and quality for the award of a Bachelor Degree in Technopreneurship Course’

Signature :

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COMPONENTS OF TECHNOLOGY CAPABILITY ENHANCEMENT OF LOCAL  
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A project paper submitted  
In fulfilment of the requirements for the Bachelor Degree of  
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## DECLARATION

I declare that this project entitled “Components Of Technology Capability Enhancement Of Local Players In Malaysian Oil & Gas Fabrication Industry” is the result of my own research except as cited in the references. The project paper has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature : .....

Name : Nur Wahida binti Saupi

Date : .....

## DEDICATION

This research paper was dedicated to my greatest parents; Haji SAUPI HARUN and Hajah AZIZAH AWANG MEL, my lovely family siblings and family members, my special one and my future family.

More than millions of thanks I would like to give to each and every helpful souls for helping me during completion of this research paper.

May Allah grant all of you with His blessings and loves.

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## ABSTRACT

Oil and gas fabrication industry involves lots of activities starting from exploration, development, production, maintenance and abandonment activities. This variety of fabrication activities were being done in both upstream and downstream by fabricators – categorized as major, medium or even minor fabrication company. Categorization of those fabrication companies were done based on their capabilities; technological capability, yard capability and also financial capability. The categorization would able to help those fabrication companies to measure their capabilities and able to be internationalized; competitive and strong enough to stand next to international players. The problem statement of this research is how all local players in Malaysian oil and gas fabrication industry would be able to be internationalized in order to enhance their capability, so that there are competent enough. This research was conducted via collection and analysis of primary and secondary data from various sources apart from having some discussions from related personnel so that non-bias result of this research could be obtained. Primary data collected from survey questionnaire were being analysed using statistical software in three different analyses; reliability testing analysis, frequency analysis and correlation coefficient analysis. There is no regression testing analysis was conducted as this research is a non-hypothetical research.

**Keywords:** Technology capability, local players, Malaysian oil and gas fabrication industry

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Background Of Research

Located at the Equator line of Earth, Malaysia is one of the lucky countries who had been granted with a variety of natural resources which could be processed into useful products. One of examples of those natural resources is petroleum.

According to Merriam–Webster (2013), the word of „Petroleum“ itself originated from Latin was first known used in the 15<sup>th</sup> Century gives the definition of an oily, flammable bituminous liquid that may vary from almost colourless to black, occurs in many places in the upper strata of the Earth, is a complex mixture of hydrocarbons with small amounts of other substances, and is prepared for use as a gasoline, naphtha, or other products by various refining processes. Geologic transformation and decomposition of dead plants and animals that lived hundreds of millions of years ago derived the complex mixture of hydrocarbons and as a technical term, petroleum encompasses the liquid (e.g. Crude oil), gaseous (e.g. Natural gas) and vicious or solid (e.g. Asphalt, bitumen) forms of hydrocarbons that occurs in the earth, but the meaning usually restricted to the liquid oil form. Crude oil and natural gas are the most important primary fossil fuels apart from coal where burnt fossil fuels will provide heat, which may be used directly, as in home heating, or to produce steam to drive a generator for the production of electricity and fossil fuel supply nearly 90% of all the energy used by industrially developed and developing countries, such as Japan and Malaysia. Petroleum has been used in various industries such as automotive, shipping, aircraft and even in medical too.



The petroleum industry has its own long history, terms and activities in it – upstream and downstream activities. Upstream involves exploration, development and production of oil and gas (Petroleum Sector Briefing Note No. 1, 2007). For oil and gas exploration process, wells were being drilled in search of an undiscovered pool of oil and gas. Then, if a commercial discovery contains reserves that justify the investment of capital and effort to bring the discovery into production, production shall begin; development works are being done till commercial production may begin. In a simpler explanation, upstream activities are the related activities of getting crude oil and gas while on the other hand, downstream covers transport, refining, petrochemicals, distribution, and retail of those oil and gas in various types and forms – petrol, diesel and liquefied natural gas (LNG). Thus, downstream activities are the activities which related of preparing and producing the ready products for satisfying market demands – both local and international markets.

Humankind in this globalization era sets technology as the need, no longer as a want in continuing their life. Internet, as an instance. Nowadays, everyone use Internet in daily life and a country's economy condition would able to collapse if there is no internet connection there, even for a minute. Technology; the application of scientific knowledge for practical purposes, especially in industry (Oxford Dictionaries, 2013). The human species' use of technology began with the conversion of natural resources into simple tools. In recent technology developments, Internet and telephone have reduced physical barriers to communication and allowed humans to interact freely in global scale.

Technology has affected community and its environments in many ways. For some communities in certain developed and developing countries, technology has helped develop more advanced economies and has allowed the rise of a leisure class. A variety of technology implementations of technology influence the values of a community and a new technology often raises new ethical questions apart from developing a better economic condition of a nation.

However, in negative side, the development of weapons of ever-increasing destructive power has progressed throughout history. This is happening when the

technology has not been used for right and appropriate purposes. Apart from that, many technological processes produce unwanted by-products (i.e. Pollution) and deplete natural resources, to the detriments of Mother Nature's environment. In business and managerial perspective, Erik and Ben (1997) demonstrated that; "this broad definition of „technology“ as something soft as well as hard, and as including important aspects of management and organisation, guides the scope of the company capabilities and the policies we have considered." This sentence illustrates that „technology“ in management scope could be anything which able to lead a company's capability in order to keep growing and survive in nowadays business challenging world.

According to Essential Project website (2013), "Technology Capabilities are Conceptual View elements that define WHAT technology can do." Usually, technology capability are defined in abstract names but the important thing about technology capability is that those names are not imply any particular class of technology or products or in other words, technology capability terms can be defined at any perspective. Thus, in order to decide which name is the most suitable one is depending on the technology component (s) that may be related with that particular technology capability. Jorg Meyer-Stamer stated that there are four pillars of technology capability as the basic components where according to him, "We define technological capability as the capacity to gain an overview of the technological components on the market, assess their value, select which specific technology is needed, use it, adapt and improve it and finally develop technologies oneself." Both direct producers and decision-makers may possess this skill. „Technology“ term do have integrated relationship of organization and know-how, and a country's own independent technological efforts which also includes technology transfer in order to complement each other – not as an alternative option.

The discovery of oil in Sarawak in 1910 provided the bedrock for the development of Malaysia's present day oil and gas industry (Malaysia Petroleum Resources Corporation, 2013). Lots of oil and gas international companies put in their investment in the upstream and downstream sectors which also enhance the Malaysia economic states due to provided employment offers apart from technology and knowledge transfers in this huge industry. Malaysia has some 28.35 billion

barrels of oil reserves and production rate of 730,000 barrels per day of crude oil products. In protecting these precious natural resources, the Government of Malaysia contributes towards policies and macro-economic planning to secure a sustainable and long-term success of the oil and gas industry. Thus, in the year of 1974, the Government of Malaysia proposed the creation of a national oil company to safeguard Malaysia's oil and gas resources. Petroliam Nasional Berhad (PETRONAS) was formed under the ambit of the Petroleum Development Act (PDA) with the responsibility of safeguarding all Malaysia's petroleum resources. Apart from that, PETRONAS also need to develop as a business entity according to commercial requirements while taking into consideration the socio-economic needs of the country. Besides PETRONAS, there are a lot more of oil and gas players, international oil and gas companies, local and international oil and gas fabrication companies, local and international oil and gas service companies in Malaysia oil and gas industry such as SHELL, Exxon Mobil, Talisman and Sapura Kencana Petroleum.

## 1.2 Problem Statement

According to Ir. Razmahwata bin Mohamad Razalli (2005), "Local contractors and suppliers who wish to do business with PETRONAS are first required to register with its Licensing and Registration Department." This illustrates, there is some growth of Malaysian-owned business, and opened up opportunities to expand outside national borders. But, by looking at the current situation in Malaysian oil and gas fabrication industry, the main or major players of this industry were coming from international giant players whom acquired or merged with local companies in order to have the tenders and projects. This matter of fact can be changed if the capability and performance of a hundred percent of Malaysian local players – major, medium or minor are in the same level with the international ones, by having the same capabilities.

The measurement of Malaysian local players' capability in this industry need to be done in order to identify what are the factors which enhancing that capability so

that the local players able to have the same percentage of chance in bidding and getting a tender of a project apart from internationalizing Malaysian fabricators and Malaysian oil and gas industry itself.

### **1.3 Research Question**

In Malaysian oil and gas industry, PETRONAS is the only national major company which safeguarding all the petroleum resources – usually offshore. But, in the fabrication side, there are many companies which involved in doing fabrication of oil offshore rigs, oil offshore platforms and underwater crude oil and gas pipelines.

Those players comprised both local and international players and they are being categorized into three classes – minor, medium and major fabricators depending on their own capabilities. In the efforts of improving nation economic situation, all local players should and need to be at the same level with the international players so that the fabrication projects in Malaysia could be handover to the local ones. By internationalizing most of the local players, Malaysian fabricators would able to get the chance of handling international fabrication projects in future.

Thus, to be on the same level with international competitors, Malaysian local players need to enhance their technology capability since technology is one of the crucial aspects in oil and gas fabrication industry where all the required equipment and instruments must be the updated ones so that the fabrication activities can be done easily at the most effective costing.

Constructed research questions are as follows:

- 1.3.1 What are the components which able to enhance the technology capability of each local players in Malaysian oil and gas fabrication industry?

1.3.2 Which one of the components is the main component that able to enhance the technology capability of local players in Malaysian oil and gas fabrication industry?

#### **1.4 Research Objective**

The objective of this research is to find out how to overcome the research questions which are the root problems of this issue.

The research objectives are:

To study components which able to enhance the technology capability of Malaysian local players in oil and gas fabrication industry.

To identify which one of the components is the main component that able to enhance the technology capability of local players in Malaysian oil and gas fabrication industry.

#### **1.5 Scope of Research**

The scope of this research is mainly about studying some components which able to enhance the technology capability of Malaysian local players in oil and gas fabrication industry apart identifying which one of the components is the main component that able to enhance the technology capability of local players in Malaysian oil and gas fabrication industry so that all Malaysian local players able to

be at the same line with international players by being internationalized using related factors.

All of this research survey questionnaire's respondents are all levels of executives from local players who know the real situations of this industry.

## **1.6 Limitation of Research**

There is limitation in a research study. This research will be covered in Malaysian oil and gas fabrication only and local players are involved. The researcher would take the results of the surveys made by respondents from related companies or agencies are honest and non-bias so that the analysis of those gathered data will be a good one.

## **1.7 Importance of Research**

This research project will give the best benefits to the both; the Government of Malaysia and local players as the results of this research will able to help both parties. The Government of Malaysia will able provide the best solutions after knowing the challenges faced by major local players in competing among each other and with international players while for major local players, this research will able to help them to know what are the factors which able to enhance their technology capability in order to be competitive and ready enough to face the international tough competition. Apart from that, the nation economic state would be changed to the better one.

## **1.8 Conclusion**

Malaysian local players have the capability of being internationalized by knowing the correct factors that may enhance their capability in all aspects, especially the technology aspect in overcoming any challenge in this industry. As Malaysia is strategically located in the South East Asia, right in the crossroad of the East-West routes and ranks high in safety, with a stable political environment and free from most natural disaster, further study on this topic will help Malaysian oil and gas industry becomes stronger and have a competitive environment.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

This second chapter discussed the overview of oil and gas industry, technology capability in oil and gas industry, technology transfer in oil and gas industry, government and policies apart from knowing how the technology transfer able to enhance the capability of players in this industry.

#### 2.2 Importance of technology financial funding for a profit-basis organization.

A business without a funding source will flounder under the weight of its own debt. Funding is the fuel on which a business runs (K.A. Francis, Demand Media) as reported in Hearst Newspaper LLC, 2014. This statement indicates that financial funding is very crucial plus important for an organization – regardless a profit-basis or non-profit basis organization because everything needs money in order to be done in a right manner. Financial funding may come in various types of form and source. A business able to take different avenues to attain funding, and more than one option can be used. There are lots of choices for an organization to have a financial funding, for instance, debt finance, equity finance, mezzanine finance,