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A Study on the Technology Transfer Barriers of Malaysian Composite Industry

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A STUDY ON THE TECHNOLOGY TRANSFER BARRIERS OF MALAYSIAN
COMPOSITE INDUSTRY

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Report Submitted in Fulfillment of the Requirements for the Bachelor Technology
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DECLARATION OF ORIGINAL WORK

I, NURHAZIRAH BINTI MOHD AZEKS

“I hereby declare that the work of this exercise is mine except for the quotations and summaries that have been duly acknowledged.”

Signature :

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Date :

DEDICATION

This Research Paper is dedicated

To my beloved family who have been my constant source of inspiration.

*They have given me the drive and discipline to tackle any task with enthusiasm and
determination.*

Without their love and support this project would not have been made possible.

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ABSTRACT

This research is a study on technology transfer barriers is affecting the growth of Malaysian composite industry. The scope of the research is at the composite industry companies located in Malacca and Selangor. Fundamentally, the researcher defines on the perception of technology transfer of Malaysian composite industry. In the second place, the researcher is investigating the barriers factor that hinder the technology transfers of Malaysian composite industry companies which are technology ware, human ware, information ware and organization ware. Hence, the findings of the research will upshot the most dominant barrier of technology transfers. The technology transfer barriers are the key determinant to the successful of practicing technology transfer of Malaysian composite industry. Next, the method use by the researcher in this research is survey by distributing the questionnaire to the 100 employees who are working in the composite industry companies. The respondents for this distribution is involving a number of respondents that being calculated using non probability sampling method. Several analyses that involved are descriptive analysis, reliability analysis, Pearson's correlation analysis and multiple regression analysis. The value of correlation of each questions have been used to prove that Human ware, Technology ware, Information ware and Organization ware are the factors that hinder the technology transfer to occur. Multiple Regression Analysis (MRA) result shows there were positive relationship between three independent variables which are Human ware, Information ware and Organization ware and dependent variable; Technology transfer barriers. But the Technology ware factor indicates no significant relationship to dependent variable; Technology transfer barriers.

ABSTRAK

Kajian ini adalah mengenai sekatan pemindahan teknologi mempengaruhi pertumbuhan industri komposit Malaysia. Skop kajian adalah di syarikat-syarikat industri komposit terletak di Melaka dan Selangor. Pada dasarnya, penyelidik mentakrifkan terhadap persepsi mengenai pemindahan teknologi industri komposit Malaysia. Di tempat kedua, penyelidik sedang menyiasat faktor halangan yang menghalang pemindahan teknologi syarikat industri komposit Malaysia yang merupakan ware teknologi, ware manusia, ware maklumat dan organisasi ware. Oleh itu, hasil kajian akan menentukan yang paling dominan pemindahan teknologi. Halangan pemindahan teknologi adalah penentu utama kepada kejayaan mengamalkan pemindahan teknologi industri komposit Malaysia. Seterusnya, kaedah yang digunakan oleh penyelidik dalam kajian ini merupakan kajian dengan mengedarkan soal selidik kepada 100 pekerja yang bekerja di syarikat-syarikat industri komposit. Responden bagi taburan ini adalah melibatkan beberapa responden menggunakan kaedah bukan kebarangkalian persampelan. Beberapa analisis yang terlibat adalah analisis deskriptif, analisis kebolehppercayaan, analisis korelasi Pearson dan analisis regresi berganda. Nilai korelasi setiap soalan telah digunakan untuk membuktikan bahawa ware Manusia, Teknologi ware, ware Maklumat dan Pertubuhan ware adalah faktor-faktor yang menghalang pemindahan teknologi berlaku. Keputusan Analisis Regresi Berganda (MRA) menunjukkan terdapat hubungan yang positif antara tiga pembolehubah bebas yang ware Manusia, ware Maklumat dan Pertubuhan ware dan pembolehubah bersandar; Teknologi halangan pemindahan. Tetapi faktor ware Technology menunjukkan hubungan yang signifikan dengan pembolehubah bersandar; Teknologi halangan pemindahan.

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CHAPTER 1

INTRODUCTION

1.1 Background of the study

The main purpose of this research is to review on the technology transfer barriers as part of the growth of composite industries in Malaysia. In this study, researcher will discuss on the technology transfer barriers and the factor that hinder the composite industry to practice the technology transfer widely. The researcher will discuss on the importance of the technology transfer and the existence barriers in different kind of condition as well as to prove technology transfer is a crucial element for the development of composite industry all over the world.

As from the reviews, it notes that the necessities of the technology transfer barriers stimulating the growth of an industry. The aim of the research is to revise the role of technology transfer in evolving the growth composite industry by referring to the theory the researcher will study for this research. The researcher intends to investigate the barriers, the perceptions of the barriers and the needs of the importance to know the barriers technology transfer in order to improve the relationship towards the growth of Malaysian composite industry.

Some studies are argued that technology barriers are comes from the complicated processes of technology transfer. The factors like knowledge, know-how, science and technology (S&T) and management have become crucial in technological development. The issue of technology transfer in Malaysia has been on main agenda in almost all local technological conferences by both the private and public sectors. However, not much has been accomplished and there is not much time left to incorporate technological changes in the light of globalizations. (Farizah; Shashazrina, 2012)

The researcher can investigate the essential to boost economic strength of our country is to capitalize on advance technology. This state of affairs related to the growth of composite industry in Malaysia that crucial on the importance of technology transfer. Slow in technology transfer affecting to the growth of composite industry. This research on the relationship is needed to investigate the existence barriers of technology transfer. The adoptability and applicability of new technology determine the degree of success of technology transfer. The researcher determined a few factors that affect the acceptance of applicability for technology transfer:

- ✓ Sharing of values and goals
- ✓ Method of introduction of new technology
- ✓ Philosophy in which the system expected to operate

The importance of technology transfer is to eliminate the factors that can hinder the organization, firm, country, industry or department to adopt a new technology. Readiness in term of different situation in the research can be observed.

1.2 Problem statement

The researcher has discovered the issues on barriers of technology transfer are the problem that generated to the slow technology transfer. The researcher aims to investigate what the factor that hinder the industry to practice the technology transfer widely. The researcher observe the use of composite technology is in the same level as advance technology which becoming the Malaysian growth engine.

According to (Aerospace Manufacturing Attractiveness Rankings, 2015) Malaysia are in the ranks of; 20th, 141th, 27th and 15th respectively as the criteria are; costs (taxes, manufacturing wages, productivity), industry size (number of existing suppliers), nrastructure/stability/talent (including quality of electrical and transportation infrastructure, regulatory/ legal/corruption rankings and enrollments in, and quality of Engineering programs), overall ranked.

According to Blueprint 2030, The plan:

1. MRO – capture at least 5% of global market share.
2. Aero-manufacturing – become no.1 for aerospace parts & component sourcing by targeting to be large sub-assembly Tier 1 and RSP (risk sharing partner)
3. System integration – self-reliant (at least 70% of local content) in integration and upgrading strategic assets.
4. Engineering & Design system – capture at least 3.5% of global market share.
5. Education and training – no.1 in South East Asia in supplying competent workforce

1.3 Research question

Referring to problem statement, researcher creates three research questions regarding on the barriers of the technology transfer. The research questions are the keys activities for this research progress.

- 1) What are the categories of technology transfer in Malaysian composite industry?
- 2) What are the barriers to successful technology transfer process in Malaysian composite industry?
- 3) What is the dominant barrier to successful technology transfer process in Malaysian composite industry?

1.4 Research objectives

The criteria of the research objectives gain from the research question constructed by the researcher as based on the problem statement. Hence, the research objectives is aim to answer the research question from this research.

- 1) To investigate the categories of technology transfer in Malaysian composite industry.
- 2) To identify the barriers to success technology transfer process in Malaysian composite industry.
- 3) To determine dominant barriers to success technology transfer process in Malaysian composite industry.

1.5 Scope and limitation

The scope for this research the survey is conducted at the composite industry companies that located in Melaka and Selangor. These companies are chose because of suitability type of industry these companies are belongs to. The research in relation to barriers of technology transfer in composite industry as the researcher might obtain and collect the data from the companies. The researcher conducts survey by distributing questionnaires to the number of respondents.

As for the limitations for the research, the time and cost are the limitation endured by researcher. Since the scope of this research is required for different state of location, the cost and time is various. Instead, the biasness of respondent's feedback on the questionnaires in term of knowledge and experience possess is the limitation the researcher perceives from the view for composite industry companies.

1.6 Key assumptions

The researcher assumes respondents will honestly answer the questionnaire. Moreover, the researcher assumes a good cooperation from the respondents during the distribution of questionnaires. In addition, the researcher assumes this research is feasible and useful for all companies of Malaysian composite industry.

1.7 Significance/importance of study

Technology transfer is a very important to improve development of organization. As the growth of Malaysian composite industry is a significant changes in country economy; technology transfers is the factor affecting the growth. Malaysian composite industry is still in the growing stage and factors that influence is technology transfer process and how fast the technology transfer is adopted. Thus, the researcher stress on the importance of identifying the barriers that hinder the technology transfer as the main proposed of this research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

In literature review section, the researcher determines the flows of how the previous research is arranged to prove the use of theoretical framework. The model framework in this study is determine to be used for the research based on the fundamental theory of technology, and how the theory of managing of technology on technology transfers, and the researcher manage to gain types of barriers of technology transfer theoretically to be related to the advanced technology; in the issues regarding growth of Malaysian composite industry.

Venn diagram below shows how the theories are related to each other in this study to perform result for proposed research created by the researcher.

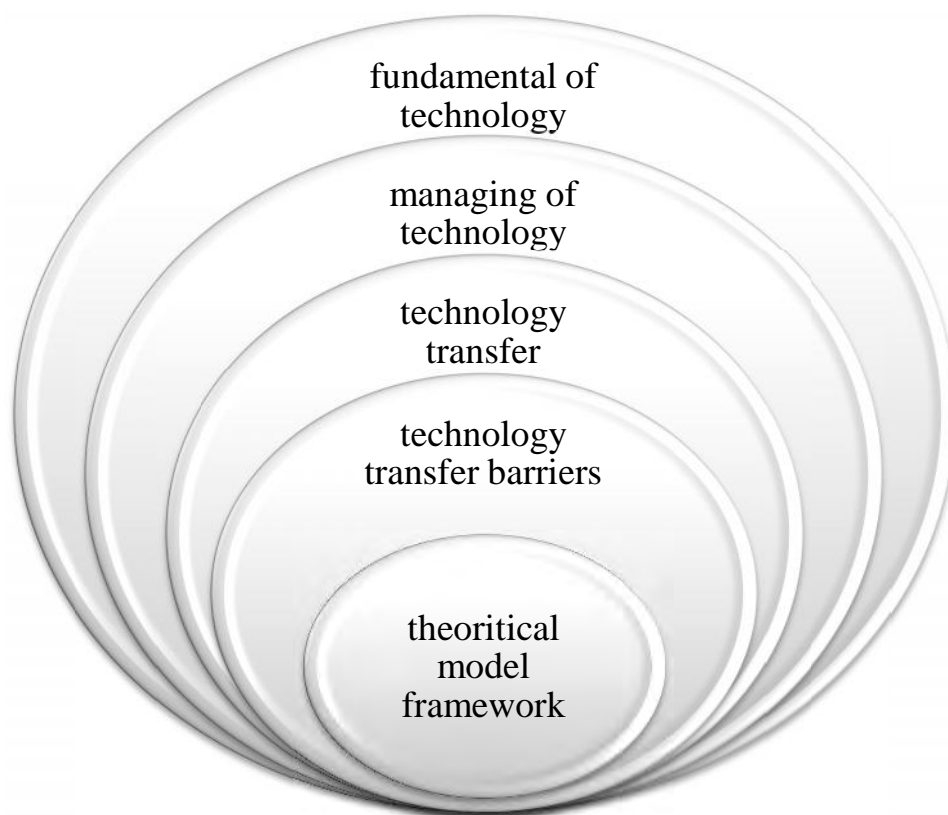


Figure 2.1 Venn diagram of Literature review

2.2 Fundamental of technology

Technology can be categorized into tangible and intangible things. Technology is a theoretical and practical knowledge, skills and artifacts that can be used to develop products and services as well as their production and delivery systems. Technology can be embodied in people, materials, cognitive and physical processes, plant, equipment and tools.

The impact of technology is not focusing on positive effect on individuals firms but in negative impact too. The researcher finds that technology comes in the interaction of society and technology in terms of pushing and pulling. In addition, technology is defined as the practical implementation of learning and knowledge by individuals and organizations to aid human endeavor. (Bruton and White 2010)

Fundamentally, technology is defined in variety of ways and perspectives. Several definition show how technology is identified in process and application:

- ✓ Processes used to change inputs into outputs
- ✓ The application of knowledge to perform work
- ✓ Theoretical and practical knowledge, skills and artifacts
- ✓ The technical means people use to improve their surroundings
- ✓ The application of science, especially to industrial or commercial objectives; the entire body of methods and materials used to achieve such objectives.

2.2.1 Advanced technology

As for the growth in composite industry, researcher found that one of the issues of a company in composite industry; Aerospace Industry is recognized as a new engine of economic growth for the country) MRO - Malaysia aims to capture 5% of the global market share and is expected to undergo accelerated growth under the Economic Transformation Program (ETP) MRO - The sub-sector is quiet well developed, more focus on enhancing local capability in components MRO. (Malaysian Aerospace Industry Blueprint 2030, 2015)

Malaysia External Trade Development Corporation (MATRADE) is set to push Malaysian aerospace industry, particularly in the Maintenance, Repair and Overhaul (MRO) sector, to greater heights with the opening of the Kuala Lumpur International Aerospace Business Convention 2015 (KLIABC 2015). KLIABC 2015 aims to showcase the capabilities of Malaysian companies in the aerospace sector to international players. Jointly organized by MATRADE and French-based ABE Aerospace France, this event will open up business opportunities for local companies to collaborate with international brands seeking outsourcing partners in South East Asia, in the MRO, engineering & design services, aerospace parts & components manufacturing as well as systems integration & maintenance.(MATRADE, 2015)