

FACTORS AFFECTING TECHNOLOGY TRANSFER SUCCESS FROM PUBLIC
RESEARCH INSTITUTE TO SME

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This thesis is submitted in partial fulfillment of the requirements for the award of
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DECLARATION

I hereby declare that the work of this research is mine except for the quotations
summaries that have been duly acknowledged“

Signature :

Name :

Date :

DEDICATION

I would like to appreciate the dedication of my beloved families who educated me and motivate me to learn until this level, my father, Mohamad Amaran bin Mohamad Nor, my mother, Siti Rodziah binti Latiff and my siblings Nurul Aini, Nurul Fahima, Nurul Atikah and Nur Farhana Atirah. Then, a big appreciation to the lecturers and friends who give me support and advice throughout the research. Without their blessing and encouragement, this research is impossible to complete in short period of time.

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ABSTRACT

Technology transfer is defined as the process of transferring the know-how required from one nation to another nation to successfully utilize a particular technology. This proposition study are about to find the factors that affecting technology transfer success from public research institute to SMEs. The objectives of this research are to uncover the technology transfer success factors from public research institute to SMEs and to analyse the correlation among the success factors. There are two important organizations in this research which are Malaysian Agriculture Research and Development Institute (MARDI) and Small Medium Enterprise (SME). This study will focus on one government which is Malaysian Agriculture Research and Development Institute (MARDI). SMEs consist of food industry, manufacturing industry and other. The core businesses of MARDI are research, transfer and commercialisation of technology and MARDI also as a leader in agro technology. Besides, SMEs have played an important role in the development of their business all countries. SMEs in developed countries contribute substantially to those countries' growth processes. Then, 114 respondents that choose from entrepreneurs are guided by MARDI which are using of MARDI's technology. They have answered a set of questions in questionnaires which is provided by the researcher. Data are collected had been analyse by using Pearson's Correlation Coefficient analysis to identify the relationship among technology transfer success factors from public research institute to SMEs. The result of analysis shown there is a relationship among technology transfer success factors from public research institute to SMEs which are technology support, infrastructure support, knowledge, financial resources, skills from technology provider and strategic alliances.

ABSTRAK

Pemindahan teknologi ditakrifkan sebagai proses memindahkan pengetahuan yang diperlukan dari satu negara ke negara lain untuk memastikan penggunaan teknologi tersebut berjaya. Kajian cadangan ini adalah untuk mencari faktor-faktor yang mempengaruhi kejayaan pemindahan teknologi daripada Institut Penyelidikan Awam kepada PKS. Objektif kajian ini adalah untuk mendedahkan faktor-faktor kejayaan pemindahan teknologi dari Institut Penyelidikan Awam kepada PKS dan untuk menganalisis kolerasi antara faktor-faktor kejayaan pemindahan teknologi. Terdapat dua organisasi penting dalam penyelidikan ini iaitu Institut Penyelidikan dan Kemajuan Pertanian Malaysia (MARDI) dan Perusahaan Kecil dan Sederhana (PKS). Kajian ini akan memberi tumpuan kepada satu agensi kerajaan iaitu Institut Penyelidikan dan Kemajuan Pertanian Malaysia (MARDI). PKS terdiri daripada industri makanan, industri pembuatan dan lain-lain. Teras utama MARDI adalah penyelidikan, pemindahan dan pengkomersilan teknologi dan MARDI juga sebagai pemimpin dalam teknologi pertanian. Selain itu, PKS telah memainkan peranan penting dalam pembangunan perniagaan mereka. PKS di negara maju merupakan penyumbang yang besar dan ketara kepada proses pertumbuhan negara. Kemudian, 114 responden telah dipilih daripada usahawan bimbingan MARDI yang mana mereka menggunakan teknologi MARDI. Mereka telah menjawab soalan soal selidik yang disediakan oleh pengkaji. Data dikumpul telah dianalisis dengan menggunakan analisis Pearson's Correlation Coefficient untuk mengenal pasti hubungan antara faktor-faktor kejayaan pemindahan teknologi dari Institut Penyelidikan Awam kepada PKS. Keputusan analisis menunjukkan terdapat hubungan antara faktor-faktor kejayaan pemindahan teknologi dari Institut Penyelidikan Awam kepada PKS iaitu faktor-faktornya terdiri daripada sokongan teknologi, sokongan infrastruktur, pengetahuan, sumber kewangan, kemahiran daripada pembekal teknologi dan perikatan strategik.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter will discuss about some of Small Medium Enterprise industry (SMEs), public research institute in Malaysia and technology transfer success. The overall objective of this chapter is to identify the background of study, problem statement, research questions, research objectives, scope of study and significant of study.

1.2 Background of Study

Increasing the number of entrepreneurs in Malaysia in thrust by technology aspect, it is because the technology is an important tool in the development of the business and other. Technology is one of importance tool in advancing SMEs to become more productive and more efficiency. Therefore, there are many element needs to be deciding before to adapt or apply the technology in the business operation. However, the process of transferring the technology is not easy. Cooperation between two parties or more are importance when technology transfer is happens. It is because there are a lot of barriers need to be faced by both parties before technology transfer is happen.

Technology transfer is one of platform that government uses for transfer their technology to Small Medium Enterprise (SMEs). Technology transfer can be defining as the process of transferring skills, knowledge, and technologies from one person to another person or from one company to another company. Technology Transfer also known as the process of commercialization or of delivers the technologies into the marketplace. Definition of technology transfer by adopt a working perspective is about deliver the new knowledge, process or product from one organisation to another organisation which is for in the interest of business by In addition, other authors states about the important of analyses the techniques and skills the technology which is managerial skills needed to exploit it. Besides, it also concerns the important of user education by supplier of the technology and transfer support (Filatotchev, Buck, & Wright, 2009) . There are many kinds of methods that government used for transfer the technology to entrepreneurs. In technology transfer, the entrepreneur can improve and develop their business regarding the technology are provided by government. Technology transfer is the best way for SMEs which is to improve their level of business. Basically, technology transfer is about knowledge transfer. Transfer is not only signifying movement or delivery but transfer it can only happen if technology has already been used.

There are many categories of technology transfer includes international, regional, cross industry or cross sector, inter-firm and intra-firm. The meaning of transfer regarding international is across national boundaries, for example from industrialised country to developing country. Transferring from one region to another of a country is called as regional like from Florida to Alaska. Besides, cross industry or cross sector is about transferring of technology from one industry sector to another, for example from industry to commercial. Furthermore, inter-firm is about the technology can be transfer from one firm to another firm like from CAD to CAM and manufacturing to production. But, it is different for intra-firm because the technology is transfer by inside of the firm which is from one location to another location, for example from New Delhi to Bangalore. Mechanisms are involved when technology transfer happen are licensing, joint venture and patenting. It is the most model used by industry or business in accepting technology from technology provider like government technology to SMEs entrepreneurs.

According to the Small Medium Enterprise Corporation (SME Corp. Malaysia) is the nation's lead organization for the development of progressive SMEs to improve the wealth of creation and social well-being of the nation. Besides, various efforts undertaken by SME Corp Malaysia to empower critical group of SMEs with efficient processes, robust business models, access to financial resources, partnerships, market-entry strategy and sustainable growth solutions, through a variety of platforms and development programs to fulfill the mission of encourage the development of innovative, globally competitive and resilient SMEs through effective coordination and provision of business support. Basically, SMEs from the point of view economic development and the broad policy purposes for which the definition by the World Bank has identified over 60 definitions of SMEs used in 75 countries surveyed (Cyril et al., 2014). The next section discuss on problems occurred in the process of transferring technology.

1.3 Problem Statement

In previous section discuss on important of technology transfer. SMEs industries need to face any challenges regarding on process technology transfer by (Jabar & Soosay, 2011). It is related with the successful on transferring the technology from technology provider. Furthermore, government agency is one of important part as technology provider to SMEs entrepreneurs. Based on that process can see whether the technology transfer is success or not. A successful technology transfer can occur with the cooperation between both parties.

In addition, SMEs consists of entrepreneur development which is in process to build-up their business to become more effective and efficiency. It is also to increase company's profit for equivalent to large companies. In addition, to compete with other company in the world market which many challenge needs to be faced by SME's in Malaysia likes lack of knowledge, lack of resources, lack of technical manpower and lack of technology assessment mechanism by (North & Vickers, 2001). According to (Roepaga, 2011), (Okpara, 2011) and (Khaliq, Abdul, Shaari, & Ageel, 2011) notes that SMEs are lack of management skills or poor knowledge of business and inadequate capital. Besides that, (Kim, 2015) also explained about the lack of technologies and management skills.

SMEs are leaking of factors of technology transfer success. Information and knowledge leakages caused the company to lose its competitive edge in their respective fields by (K. H. Tan, Wong, & Chung, 2015). Generally, SMEs each SME entrepreneurs want success in any business conducted by them. Through technology transfer is one way for SMEs to get success in their business. However, there are many more that technology transfer is not successful nowadays. In addition, there are also entrepreneurs who use the technology for which they take technology than others to acquire and make use of technology licensing to others. Based on the following situation, what are the factors that should be considered by SME to ensure effective technology transfer successfully?