

A STUDY ON CHALLENGES FOR
COMMERCIALISATION OF RESEARCH INNOVATION IN
THE PUBLIC RESEARCH UNIVERSITY IN MALAYSIA

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This report is submitted in fulfillment of the requirements for the award
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I declare that this report is the result of my own research
except as cited in the references

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DEDICATION

This research paper is dedicated to my loving mother and father who always motivate in completing this project. Thank you for your unconditional support with my studies especially when conducting this project. I will always remember your words of encouragement and push for tenacity until this research project is complete.

Ab Rahman Bin Abu & Hazilah Binti Saidinah Hamzah

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ABSTRAK

Universiti telah dikenalpasti sebagai satu platform kerjasama penyelidikan dengan industri untuk pengkomersilan inovasi. Terdapat banyak sokongan yang menggalakkan aktiviti seperti ini. Malangnya, tidak semua produk kajian berjaya dikomersialkan ke pasaran. Terdapat cabaran dan kekangan di universiti awam di Malaysia. Oleh itu, kajian ini mengenalpasti cabaran-cabaran dalam mengkomersilkan produk kajian di universiti penyelidikan awam dan mencadangkan satu garis panduan untuk meningkatkan pengkomersialan dalam produk kajian di Malaysia. Kajian ini menerima pakai kualitatif metodologi dengan menggunakan wawancara separa berstruktur. Temu ramah dilaksanakan dengan menemu ramah dua kategori responden di universiti penyelidikan awam iaitu Pegawai Pemanduan Teknologi (TTO) dan penyelidik akademik di universiti. Daripada proses mengumpul, menganalisis dan pemerhatian data, keputusan menunjukkan bahawa cabaran yang paling dihadapi oleh universiti penyelidikan awam ialah produk penyelidikan. Produk yang tidak memenuhi keperluan pasaran menyebabkan permintaan pasaran yang rendah dan kegagalan dalam mendapatkan dana. Terdapat juga cabaran lain termasuk industri kurang mempercayai produk kajian universiti, tiada pengurusan dana yang sistematik, pelajar sebagai pasukan sokongan, meyakinkan pengurusan atasan, tema penyelidikan yang tidak sesuai dan skill keusahawanan dalam pengkomersilan. Jika dilihat, untuk mencapai pengkomersialan yang berjaya, hubungan antara penyelidik akademik, pengurusan akademik dan industri perlu dibina.

ABSTRACT

University has been identified as a platform in research collaboration with industry for commercialisation. There are much supports to encourage for such activities. Unfortunately, not all research product are successfully commercialised to the market. There are challenges that face by the public university in Malaysia. Thus, this research identifies the challenges in commercializing research product in the public research university and suggests a guideline for improvement in commercialisation research product in Malaysia. This study adopts qualitative methodology using semi-structured interview. The interviews were conducted with two categories of respondent in the public research university; which are Technology Transfer Officers (TTOs) and academic researcher in the university. The results shows that the public research university faced challenges mostly in the research product. The product does not meet the market requirements thus cause low demand and failure in getting fund. There are also other challenges including, industry have low trust in university research product, no proper fund management in university, student as support team, convincing top management, suitable research theme and entrepreneurial skills in commercialisation. Looking ahead, in achieving successful commercialisation, an interrelated relation between academic researcher, university and industry have to be built.

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LIST OF ABBREVIATIONS

ABBREVIATIONS	MEANING
CCI	Centre for Collaborative Innovation
ICC	Innovation and Commercialisation Centre
IP	Intellectual Property
IPR	Intellectual Property Rights
MOSTI	Ministry of Science, Technology and Innovation
MTDC	Malaysian Technology Development Corporation
R&D	Research and Development
RMC	Research Management Centre
SMEs	Small and Medium Enterprise
TTO	Technology Transfer Office/Officer

CHAPTER 1

INTRODUCTION

1.1 Introduction

The Ministry of Science, Technology and Innovation (MOSTI) anticipates the rate of commercialisation of research and development (R&D) based products to go up to 10%-15% in 2014, from 8% currently through intensive MOSTI Commercialisation Year 2014 Programme (MCY2014) (*All Business Daily, The Malaysian Reserve, January 24, 2014*). To achieve their target, government placed huge responsibilities to the shoulder of university as a role of making development in research product. The best solution for the problems in industries is built creativity and innovative ideas with the academic researcher in university.

Role of university has changed from the basic of education, creation and transfer of new knowledge to the public into the combination of intellectual property and technology transfer management such as research contracts, licensing and increase collaboration with the industry. Most university cultivates entrepreneur skills and promoting their researchers and students with the opportunity of creating a research for commercialisation purpose. Research by Urabe (1988) defines that commercialisation process of university research refers as a producing a new idea and implementing it on a

new product, process or service which results in increasing growth of the nation economy and high in employment rate and the net profit.

University in Malaysia begins to establish new departments of Technology Transfer Office (TTO) with specific and specialized functions and roles such as a mediators or coordinators through the process of collaboration and commercialisation. Through this development, the university will have stable structure in commercialisation process of research product commercialisation as TTOs plays an important role as coordinator and create the commercialisation strategy. Other than that, university also develop new strategy to overcome their problems in terms of getting funding, collaboration and others. Lack of funding problems might cause failure in commercialisation as the academic researcher cannot do any improvement. In achieving research commercialisation the process of technology transfer must include with the technology, skills or knowledge develop during research activities and is applied and used in another place.

1.2 Background of Study

In commercialising research product commercialisation in public university, some circumstances need to be identified and overcome. The encouragement in creating research product is getting decreased as most of academic researchers are failed to commercialise to the market. This research main focus is on identify the main challenges in commercializing research product in the public research university.

Universiti Kebangsaan Malaysia (UKM) and Universiti Teknologi Malaysia (UTM) were chose to complete the research and collect the data. Both universities are categorized under the top five public research university in Malaysia that successful in commercialise their technology. Method used in collecting data of research is qualitative, by using semi-structured interview. Through this method, a richer data was collected and

theoretical perspective from the experience of the interviewee could help in analyzing and engaging all the information. Interview was conducted with the person from the Technology Transfer Office (TTO) and academic researchers.

Guideline of the issues of commercialisation develop based on the interview data and literature review from the journals and academic articles. The guideline focuses on the challenges in commercialisation of research product and at the end of this research, discussion on the results of challenges faced by public research university, followed by conclusion and suggestion of guideline for improving the process of commercialisation.

1.3 Problem Statement

Currently, Malaysia begins on focusing research product commercialisation in university for development of nations as they believe that university will produce a research that can give additional profit to the nation. Thus, university plays huge role of sharing research and collaborating with industry and government for research product commercialisation. Most public university in Malaysia developed a department of Technology Transfer Office (TTO) or Research Management Centre (RMC) to encourage academic researcher to develop a research product. The TTO is dedicated in the commercialisation as a coordinator and mediators. They develop a commercialisation strategy that guide the academic researcher or themselves in the process of commercialise product. Besides that, as a mediators, TTO builds up a collaboration between university and industry by matching the industry needs with what they have. The skills and capabilities by the TTO officers and academic researcher can turn the research laboratory into high profit.

Unfortunately, most of the research product was not successfully commercialise to the market because the research is lack of needs and requirements of market and industry and does not show the commercial value in market. There are challenges in

commercialise research product to the industry and market. Challenges that have been identified are university-industry linkage, university policy, incentives and rewards and the Technology Transfer Office (TTO). To overcome this issues, research and analysis were developed to find the best solution that successfully commercialised the research product into market.

1.3.1 Research Questions

1. What are the challenges to commercialise research product commercialisation in the public research university?
2. What are the main challenges in affecting commercialisation research of innovation in the public research university?
3. What improvement can be made to effectively assist in research product commercialisation in the public research university?

1.4 Research Objectives

The objectives of this study are:

1. To identify the challenges faced by the public research university in commercializing the research product.
2. To study the main challenges in affecting commercialisation research of innovation.
3. To suggest the guideline to effectively assist in commercialisation of research product in public research university.

1.5 Scope and Limitation of Study

This study focuses on identifying the challenges in the process of research product commercialisation. Through the process of identifying, the main challenge is discussed. A recommendation will be made to improve the process of commercialisation in public university. Two out of five public research universities are chosen to collect the data which are Universiti Kebangsaan Malaysia (UKM) and Universiti Teknologi Malaysia (UTM).

UKM are moving fast towards commercialisation of high-technology research by adopting a strategy to engage with the Malaysia Technology Development Corporation (MTDC). UTM is implementing a different approach in commercializing their research and development (R&D) innovations by engaging with industries at the earliest stage possible rather than approached them after the research is done with the R&D process (The Star Online: Business News, 2013). Therefore, through the above statement a study is develop to understand deeply about the commercialisation of research product in both universities.

From each universities, academic researcher and the TTO officers are chose as a respondent. The respondent have full experienced and knowledge in this study of technology transfer or research commercialisation. It is believed that the respondent can respond with the research question from the researcher. Besides that, with the information from these two respondent, there will be two perspective of challenges faced in commercialise research product.

1.6 Importance of the Study

This study helps the academic researcher to successfully commercialise their research product by understand the challenges and avoid the causes that can contributed with the loss of opportunities in commercialisation. For the university, this research gives opportunities of gaining profit through the Intellectual Property Rights (IPR) and commercialisation and this is vice versa with the industry. In addition, the university also can develop a collaboration or build strong linkage with the industries earlier and so forth enhance the commercialisation process between university and industry. The development of nation in the future as the research commercialisation becomes primary especially in relation with the university and industry.

1.7 Summary

This research discusses the challenges faced in the university to commercialise research product as mostly not all researches are successfully commercialise to the market. The study will be conducted only in two universities, UKM and UTM. The aim is to study the challenges in commercialise research product and identify their main challenges thus suggest a guideline in improving the issues. There are two categories of respondents have been selected they are from the technology transfer officer and academic researcher in the universities. Through their experienced and information given, a suggestion of guideline in develop and overcome the issues of commercialisation, will be made in this study.

CHAPTER 2

LITERATURE REVIEW

2.1 Background of University

According to Kamarulzaman et al. (2013), the Ministry of Higher Education (MOHE) reported the research commercialisation achievement by the Malaysian public universities up till August 2008 (Table 1). The report stated, the 16 public universities in Malaysia had only managed to commercialise 58 products out of the 313 identified with commercial potential. From the list, UTM and UKM has the most total R&D with potential for commercialised products. This shows that, these universities have higher potential in commercialisation thus be a role model and examples to study the commercialisation activity.

Universiti Teknologi Malaysia (UTM) was the first university in Malaysia that establish a technology transfer company, Unitechnologies. Its core values is focusing the innovation thus led to winning the National Intellectual Property Award of organization category in three times. In managing their research activity, a Research Management Centre (RMC) developed in 1982. Their main responsibility is to galvanize research in the university and act as 'cleaning house' for all application and management of research grant. In UTM, there is Innovation and Commercialisation Centre (ICC) established in June 2010 that helps researcher protects and commercialise their inventions.

These department was focuses on three main activities which are:

- i. Helps UTM researcher to commercialise IP raising from their research.
- ii. Manages UTM technology consultation which assist UTM researchers.
- iii. Provide consulting expertise and advice in technology transfer and innovation management.

In Universiti Kebangsaan Malaysia (UKM), a Centre for Collaborative Innovation (CCI) was develop to facilitate pre-commercialisation process which is the technology evaluation and screening by industry partners. Besides that, the ICC provide innovation fund or last-mile prototyping and assisting researcher in securing fund and commercialisation grants from Malaysian Technology Development Corporation (MTDC). UKM implement new strategy by collaborating with the MTDC to guide their commercialisation and marketed the technology.

In this study, these two public research universities was chosen to identify challenges that they might face in the process of commercialise research product commercialisation.