

**THE COMMERCIALISATION OF RESEARCH BY PUBLIC-  
FUNDED RESEARCH INSTITUTES (PRIs) IN MALAYSIA**

By

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## DECLARATION

I declare that the thesis is my own account of my research and contains as its main content work, which has not previously been submitted for a degree at any tertiary education institution.

.....

Ramraini Ali Hassan

## **DEDICATION**

I dedicate this thesis to my beloved husband Syed Azizi Wafa, my son Syahmi and both my daughters Anisa and Sonia for their love and support; and for being the source of strength and inspiration towards the completion of this thesis. Without their continuous love and support this work would not have been possible.

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I would also like to extend my gratitude to the people and government of Malaysia particularly all public universities and research institutes, which have contributed so much during my data collection process.

Last but not least, my sincere thanks also go to all my respondents who have participated in this study, without their inputs, it would be difficult for me to complete my PhD thesis.

## **ABSTRACT**

The main focus of this research is to examine both the practices of research commercialisation by Public-funded Research Institutes (PRIs) in Malaysia, and to determine the key factors that influence the success of research commercialisation. PRIs in Malaysia consist of public research institutions and public universities. Previous research has identified several factors that are considered to be the key determinants of the success of research commercialisation. Factors assumed to contribute to the research commercialisation success include intellectual property ownership which covers both joint and individual ownership, entrepreneurial culture, motivation and skill, researcher compensation, early stage financing, financial incentives, commercialisation culture, rewards and promotion systems, relationship between PRIs and industry, nature of commercialisation policies, type of commercialisation method determined by institution, researcher involvement and the existence of a commercialisation unit. However, prior research has not examined the full set of factors in one comprehensive study. Previous research has individually identified success factors in the context of PRIs with no attempts being made to combine all factors together. This study aimed to address this gap in the literature.

This research was considered exploratory, and used a mixed methods research approach to identify those salient factors, which influenced commercialisation practices in PRIs. The data was collected in two phases. In phase one, qualitative data was collected using a semi-structured interview to identify factors considered to influence the success of

commercialisation from the researcher point of view. In phase two, quantitative data was gathered using a survey to include a larger group of researchers to address the same research question. The total population of this study were researchers in 38 PRIs in Malaysia including public universities and public research institutes.

Results from the combined studies identified that the number of research commercialised by PRIs in Malaysia was relatively low. Key determinants impacting the success of commercialisation were identified as research ownership, researcher compensation and the presence of a commercialisation unit within PRIs. These three factors identified were consistent with previous research conducted on PRIs, but in combination are presented as the most salient to commercialisation success within the Malaysian context. The study has implications for research and practice. From a practical point of view, attention to these factors by the Ministry of Science, Technology and Innovation need to be considered particularly during the allocation of future research grants, to further increase the percentage of successful research commercialisation by PRIs in Malaysia.

This thesis through its research and findings, have contributed theoretically to the existing literature on commercialisation and fill up the gap in the commercialisation literature. The listing of all key variables as carried out in this research is very crucial since most previous research focuses only on investigating one key success factor at a time in researching the key variables in the research commercialisation success. The three factors found to be significant predictors of commercialisation success suggest the need to examine factors that are unique to each institution and also to establish a common set

of factors that can determine the research commercialisation success in any setting. The use of PRIs in this study also provides insights from the perspective of both universities and research institutions. This has led to a greater understanding of commercialisation process in both institutions and that future researchers need to address these factors to confirm the validity of these factors in determining the success of research commercialisation.

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## LIST OF ACRONYMS

|        |   |
|--------|---|
| PRIs   | Public-funded Research Institutes       |
| UiTM   | Universiti Teknologi MARA               |
| UKM    | Universiti Kebangsaan Malaysia          |
| UM     | Universiti Malaya                       |
| UPM    | Universiti Putra Malaysia               |
| USM    | Universiti Sains Malaysia               |
| UTM    | Universiti Teknologi Malaysia           |
| UUM    | Universiti Utara Malaysia               |
| UIAM   | Universiti Islam Antarabangsa Malaysia  |
| UNIMAS | Universiti Malaysia Sarawak             |
| UMS    | Universiti Malaysia Sabah               |
| UPSI   | Universiti Perguruan Sultan Idris       |
| UMT    | Universiti Malaysia Terengganu          |
| UTHM   | Universiti Tun Hussein Malaysia         |
| UTeM   | Universiti Teknikal Malaysia            |
| UniMAP | Universiti Malaysia Perlis              |
| UMP    | Universiti Malaysia Pahang              |
| USIM   | Universiti Sains Islam Malaysia         |
| UDM    | Universiti Darul Iman Malaysia          |
| UPNM   | Universiti Pertahanan Nasional Malaysia |
| UMK    | Universiti Malaysia Kelantan            |



|        |   |
|--------|---|
| MACRES | Malaysian Centre for Remote Sensing                 |
| TPM    | Technology Park Malaysia Corporation Sdn. Bhd.      |
| IPP    | Institut Penyelidikan Perikanan                     |
| VRI    | Veterinary Research Institute                       |
| MARDI  | Malaysian Agricultural Research & Development       |
| NAHRIM | National Hydraulic Research Institute of Malaysia   |
| FRIM   | Forest Research Institute of Malaysia               |
| MPOB   | Malaysian Palm Oil Board                            |
| LGM    | Lembaga Getah Malaysia                              |
| LKM    | Lembaga Koko Malaysia                               |
| NIH    | National Institute of Health                        |
| STRIDE | Science & Technology Research Institute for Defence |
| PBM    | Perbadanan Bioteknologi Melaka                      |
| SBC    | Sarawak Biodiversity Centre                         |
| IKRAM  | Kumpulan IKRAM Sdn. Bhd.                            |