

COLLABORATION BETWEEN ACADEMIC AND INDUSTRY PARTNER FOR A SUCCESSFUL RESEARCH PRODUCTS COMMERCIALISATION IN MALAYSIA

Norain Ismail¹ Safiah Sidek², Mohd Jailani Mohd Nor³

¹Universiti Teknikal Malaysia Melaka

Email: norain@utem.edu.my, safiahsidek@utem.edu.my, jai@utem.edu.my

Corresponding e-mail: norain@utem.edu.my

ABSTRACT: *Research products commercialisation is a national agenda that acts as a catalyst for wealth generation. Thus, university should focus on creating products that have commercial value from the beginning of their research product commercialisation endeavours. Much emphasis and strategies have been put forward to support academics to commercialise their research products. However, research products commercialisation strategies, especially the collaboration between academics and industry partner, has been largely ignored. This paper aims to discuss strategies for effective collaboration between academics and industry partner in research products commercialisation. For this purpose, interviews have been conducted with four key academic researchers who have successfully commercialised their research products in Malaysia. Thematic approach analysis was used to analyse the interview data. The findings suggested that there are strategies for effective collaboration between both academic researchers and industry partner for a successful research product commercialisation. These strategies provide valuable insights for both academic researchers and industry partner to collaborate successfully for sustainable commercialisation activities.*

Key words: *Academics Researcher, Industry Partner, University, Commercialisation, Research Products*

1.0 INTRODUCTION

Research products commercialisation has been considered as an essential element in an innovation process. Academic setting is no longer limited to researching and developing creation in the laboratory; instead, it involves developing and commercialising products that have potential market values. Generally, the function of research products commercialisation is viewed as products that address industrial needs and relevant to private sector [1,2,3] and they help to boost economic activities [4] and create new jobs [5,6]. Thus, the success of the research project is determined by its potential market value of the research product rather than the novelty of the research product *per se*. This is also in line with the aspiration of a country, including Malaysia that focuses on the creation of a research product that can generate income for the universities and the nation in general.

The trend for commercialising research product started in 1980s and it was pioneered by the United States. The United States has introduced the US Bayh-Dole Act 1980, which was designed to promote the rapid diffusion of technologies from universities to private firms [7]. This Act also acts as the main catalyst for the significant change in the intellectual property and technological commercialisation that allows universities and research institutions to own all of their inventions created under federal funding [8,9]. The European counterparts have taken a similar step to commercialise their research and development (R&D) products through the establishment of the Organisation of Economic Development (OECD) [7]. As the marketplace becomes more competitive, Malaysia' aspiration is to encourage product commercialisation through technological innovation. Under the Tenth Malaysian Plan, the Ministry of Higher Education addressed the development of commercialisation and innovation as "Niche 1" that implies the importance of the development of the nation [10].

Universities play significant roles in accelerating innovation. Recognising commercialisation as part of the innovation

process, universities now are finding ways to ensure effective management of R&D products commercialisation, as they are now becoming less dependent on government funding. Thus, universities should focus on producing products that have market value at the beginning of their research endeavours. Since then, universities are now increasingly focusing on commercialising their research products as they view this practice as avenues for wealth creation [11].

Many claimed that commercialisation of research products is not a straightforward process, as it involves complex and uncertain processes. Many technology innovations failed to enter a market place successfully, and they face the syndrome of the "valley of death" [12]. Some admitted that only a small percentage of the research products has been commercialised from the university due that lack of business acumen among academic researchers, a skill which is necessary for a success of commercialisation journey [13,14]. It has also been highlighted that the the way resaerch is conducted should focus on addressing the needs of solving the problems in the market to ensure that the product has significant market value [15].

University, government and public organisational bodies have worked together to provide supports for the commercialisation activities. Nonetheless the success rate of commercialising of research academic products is still not satisfactory. Considering the recent emphasis of research products commercialisation, an understanding of the strategy for a successful collaboration between academic and industry partner is timely and necessary. Related literatures have found that many commercialisation activities tend to focus on proposing best practices and strategies for research products commercialisation [11,10,16,17,18,19]. However, there is still limited discussion emphasising the strategies for effective collaboration between academic and industry partner. Thus, this paper aims to discuss the relevant strategy for effective collaboration between academics and industry for their research products commercialisation.

This paper is organised in four sections, beginning with the introduction section. It is then followed by the research methodology using interviews to capture the rich data for data analysis. Findings and discussion are presented in the third section. Finally, this chapter summarises and recommends for an effective strategy towards a successful collaboration between academics and industry partner.

2.0 RESEARCH METHODOLOGY

This research employs a qualitative research method. Semi-structured face-to-face interviews with purposely selected respondents were utilised for the collection of rich data. By conducting interviews, this study aims to discover rich information drawn from insights and experiences from four academic researchers who have successfully commercialised their research products. For this purpose, four prominent key academic scientists and technologists who have successfully commercialised their research products have been interviewed. They were male professors with engineering and communication technology background. All of them have the experience of working at a public university in Malaysia. They were also selected because they have been involved in inventing research products for more than ten years and have experienced in commercialising their research products. They also have received recognition nationally and internationally for their involvements and achievements in research commercialisation. For the purpose of anonymity, the four professors are identified as Professor J, F, H and K.

In order to capture the real experience, expectations, opinions and feelings of the respondents, semi-structured interview questions have been designed [20] concerning research products commercialisation. Further, face-to-face interview with four professors have been conducted at different context and time, and each interview lasted for an approximately one hour. For the purpose of transcription, the interviews were conducted and recorded by the researchers. After each session, the interviews were transcribed manually. The transcriptions were then summarised and re-written in the form of stories which were then sent to the respective respondents for the purpose of cross-checking and validation of the data. These follow-up checks from the respondents ensure that researcher's subjectivity did not dominate the interpretations of the data [21].

A thematic approach to the organisation and interpretation of the data was employed in which the data were cut and arranged under meaningful units of interpretation [21]. To allow possible themes to emerge from the data, they were organised and analysed inductively by looking for key phrases, terms and practice within the data. These themes were further analysed and matched with the existing themes identified from the literature review.

3.0 FINDINGS AND DISCUSSION

This study identified that the two main strategies for an effective and successful collaboration in commercialising research products are finding the right business partner and nurturing a healthy relationship with industry partner. The rest of this section discusses the two findings.

3.1 Finding the Right Business Partner

All of the professors admitted that finding a right industry partner is critical especially to secure for a commercialisation grant. It is important to emphasise the gaps between the academics and industry partner, which sometimes can lead to conflicting priorities and understanding between the academic world of the researcher and the business world of the business partner. Although the academics and the industry partner have different background, they need to bridge the gaps of the two world for a successful collaboration. Figure 1 shows the differences between the world of the academics and the industry partner.

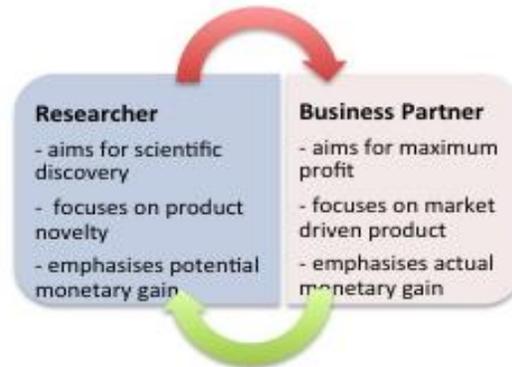


Figure 1. The differences between academics and industry partner

The differences between academics and industry partner have been emphasised by all of the four professors, which are related to their aim, focus and interest. Generally, the researchers focus on deriving the novelty of the products, while the business partner aims for maximising profits. Thus, trust between the two parties need to be built at the early stage of the commercialisation endeavour. Both parties must find ways to avoid conflicts and differences as these instances may disrupt their commercialisation activities. This is because not all industry partners can be worthy partners for researchers. This is supported by Prof J who said that:

[Researchers] need to have a good industry partner. [To do this], they need to have a method of filtering what is good, what is not good. So, right now we do not have that system. We simply do not know. ... [we] never know how to filter who [we] want to work with ...do they meet the criteria? What criteria? [We] must have a system for selecting the best partner for [us. Otherwise, we will be wasting of time. ... So, the skill is to find who to work with, it is simply not just anybody.

It is suggested that for industry partner to have basic technical knowledge in the area that the researcher is working on, it is sufficient for them to appreciate their roles with researchers. Professor J has pointed this and stated that:

the business partner must have some appreciations on the science and technological knowledge in your area – not to become expert, but enough knowledge for you to be able to communicate with them.

For an effective collaboration between academic researchers and industry partner, finding a suitable and the right industry partner is significant. This is important as Professor J has highlighted that “we really need to know who are we dealing with, in and out. Otherwise, you will face plenty of unpleasant surprises”.

All of the four professors agreed that it is not an easy task to find a right industry partner. One of strategies for effective collaboration is finding a suitable industry partner to achieve a common goal for a sustainable business endeavour. Professor H had to abandon a research project when he discovered that his industry partner did not have the same interest in commercialising his research product.

All professors interviewed in this study shared their own individual strategy when selecting a right industry partner. Professor J has adopted an objective approach by creating a checklist, and asking several questions before making the decision in choosing his business partner. The questions he asked are:

- Does the business partner know the technology?
- Who will use the technology?;
- Does the business partner know what it takes to go from the initial idea to manufacture and market acceptance;
- What are their brands now?; and
- Does the business partner have whatever researcher do not have?

On the other hand, Professor H applied a subjective approach by relying on his own inner-senses and experiences, and he reminded that in selecting a suitable business partner a careful consideration must be made as he said that “*they are people who may take advantage or control you*”. He further stated that researchers should spend time engaging in immersing for commercialising activities and should mingle with their potential industry partner. Analysing company profile and talking to people in the related area to one’s expertise is also need to be considered before making any decision related to selecting the suitable industry partner.

Building network with the business partner has also been advised by all professors as the platform to find a potential industry partner. Academic should consult prominent people in the industry and those with positions, or key players in the industry, as emphasised by Professor F,

I have many friends from all over the world. Normally, I seek advice from them. I have a good friend who is the CEO of a company, a few more are Vice Presidents of overseas companies as well as some are those top researchers in my area.

Business partners are also introduced by friends and colleagues. This was highlighted by Professor H that in most cases his business partner are introduced by his circle of friends. Professor F and H emphasised that it is importance of building of good rapport with friends or colleagues since they can become the introducers. For beginners, they should focus on making contacts with small or medium sized entrepreneurs, rather than large size companies, as suggested by Professor F. This is because, big-sized companies are rarely able to entertain small-scaled R&D products developed by researchers.

There are certain selection criteria for business partner. They should be competent in sales and marketing and should have a direct contact with end-users. Furthermore, they should be able to identify the competitive advantage if the products, and they should be well-versed of the customer’s needs and demands. They also should have some basic

technical knowledge and be able to provide financial support if necessary.

3.2 Nurturing Healthy Relationship

The need for a healthy relationship has been emphasised by all respondents for commercialising their research products in the university. Drawn from experiences and insights of the four professors, this study found several qualities for academics and industry partner to take into consideration to foster a healthy relationship, they are (i) trust and respect; (ii) transparency and fairness; (iii) being patient, understanding and empathetic’ ((iv) practising good rapport; (v) being adaptable and (vi) knowing your rights and responsibilities. In recognising the dynamism of this kind of relationship, Professor J has highlighted that academic researchers need to manoeuvre and steer the relationship with industry partner.

There are several qualities which should be maintain to nurture relationship between academics and industry partner. Building a good relationship is not an overnight tasks and it should be developed on trust and respect. Professor J clarified that a healthy relationship requires equal commitment from academic researchers and industry partner:

If it is based on trust, there should not be anything that you cannot disclose with your partner. You must disclose, then that is the only way to progress in a healthy relationship”.

Good rapport with each other can help both parties to have a comfortable work environment. Any decision must be made with transparent and fairness, and especially related to profit sharing decisions. Meetings are to discuss any arising issues. Thus, to avoid problems occur in the future, everything must be documented and clearly defined, as warned by Professor J:

If you have any problem, any crack at the initial stage, that small crack, will become big over time. So, you need to avoid any small crack during the initial stage. Thus, in the initial stage of the pre-commercialisation endeavour, you must work on the details. Know the thought, the responsibility, the profit sharing and all that must be defined clearly... .

Good rapport and establishing trust is important in which academic researchers need to impress the business partner through the business track record of the companies. However, difficulty to secure a business partner exists when both parties do not have common interest. A business partner is usually interested in products that offer solution for problems in the real world, whereas academic researchers tend to focus on the technical aspects of the products as their scientific discovery. In commenting to this, Professor K stated that:

Business partners usually want to know how you solve their problems and at what cost. What benefits can they gain from your product? At what cost do they have to pay for your products? It is always the cost and benefit analysis.

Both academic researchers and business partners should understand each other’s interests and be emphatic with each other’s problems and limitations. Professor H emphasised this by saying that:

we create rapport with the industry people and investigate what their needs and problems are. Then, we offer our expertise and seek for future collaboration. ... Do not seek for money at the beginning, definitely, they are not going to give the money... .

Considering that researchers and their business partners have to work together, it is important for them to work in a team, gain trust and adopt strategies which are discussed above. In this regard, they should set common goals and interests for an effective collaboration towards the success of research products commercialisation.

4.0 CONCLUSION

This study discusses that effective collaboration between both parties academic researcher and business partner is important to ensure that research commercialisation is successfully done. It is also found that academic researchers should acquire skills beyond technical and scientific knowledge in order for them to select a suitable and right business partner and to sustain a healthy relationship with their business partner. Business partner should also appreciate the technical and scientific knowledge, and manage to do market analysis for academic researchers. Overall, both parties should bridge the two worlds, namely the world of academic and the world of business for a productive collaboration.

ACKNOWLEDGEMENT

We acknowledge the financial support from the Ministry of Higher Education, Malaysia and the Universiti Teknikal Malaysia, Melaka for their assistance in this research.

REFERENCES

- [1] J. Powers and P. McDougall, University start up formation and technology licensing with firms that go public: A resource based view of academic entrepreneurship, *Journal of Business Venturing*, 20: 291-311, 2005.
- [2] A. Agrawal and R. Henderson, Putting patents in context: Exploring knowledge transfer from MIT, *Management Sci*, 48: 4-57, 2002.
- [3] N. Nicolaou and S. Birley, Academic networks in a trichotomous categorization of university spinouts, *Journal of Business Venturing*, 18: 333-359, 2003.
- [4] J.S. Dietz and B. Boseman, Academic careers, patents and productivity: Industry experience as scientific and technical human capital, *Research Policy*, 34: 349-367, 2005.
- [5] D. Di Gregorio and S. Shane, Why do some universities generate more start-ups than others? *Research Policy*, 32: 209-227, 2003.
- [6] M. Perez and A.M. Sanchez, The development of university spin-offs: Early dynamics of technology transfer and networking, *Technovation*, 23: 823-831, 2003.
- [7] G.D. Markman et al., Research and technology commercialization, *Journal of Management Studies*, 45:8, 1401-1423, 2008.
- [8] A.F. Christie et al., Analysis of the legal framework for patent ownership in publicly funded research institutions, Report on the Evaluation Programme of the Department of Education, Science and Training, Australia, 2003.
- [9] J. Payumo et al., Managing intellectual property and technology commercialization: Comparison and analysis of practices, success stories and lessons learned from public research universities in developing Asia, *Innovation Management, Policy and Practice*, Vol. 1, issues (4): 478-494, 2012.
- [10] K. Abd Aziz K, H. Harris and M. Norhashim, University research, development and commercialisation management: A Malaysian best practice case study, *World Review of Business Research*, Vol. 1, No.2, 179-192, 2011.
- [11] D.J. Miller and J. Zoltan, Technology commercialisation of university spin-offs: Early dynamics of technology transfer and networking, *Technovation*, 23: 823-831, 2003.
- [12] G.S. Ford, T.M. Koutsky and L.J. Spiwak, A discussion paper A valley of death in the innovation sequence: An economic investigation, Prepared for the Commerce Department, Technology Administration, Phoenix Centre for Advanced Legal and Economic Public Policy Studies, 2007.
- [13] K. Abd Aziz, A. Mohd Yusof and M.F. Mohd Idris, Research, development and commercialisation ecosystem: Dynamics for commercialisation of university research in Malaysia, ICER, 2010 proceedings, 4118-4127.
- [14] H.H. Low, M.R. Amran and A.S. Aslan, Knowledge determinant in university commercialisation: A case study of Malaysia Public University, Asia Pacific Business Innovation and Technology Management, Pattaya, Thailand, Procedia-Social and Behavioural Sciences, 40: 251-257, 2012.
- [15] N. Ismail, S. Sidek, M.J. Mohd Nor. Market-driven research approach for successful research product commercialisation, *Sci. Int. (Lahore)*, 26(4), pp 1595-1599, 2014.
- [16] G.Harman, Australian university research commercialisation: Perception of technology transfer specialists and science and technology academics, *Journal of Higher Education Policy and Management*, 32 (1), pp 69 – 83, 2010.
- [17] C. Govindaraju, Commercialization challenges for developing countries: The case of Malaysia, *Technology Monitor*, Nov-Dec, 25, 2010.
- [18] M. J. Mohd Nor, N. Ismail, S. Sidek. *Wealth creation from commercialisation of R&D products: Real life experiences of Malaysian researchers*, Melaka: UTeM Publisher, 2015.
- [19] N. Ismail, M.J. Mohd Nor, S. Sidek, A Framework for a successful research products commercialisation: A case study of Malaysian academic researchers, *Procedia-Social Science and Behavioral Sciences*, 195, pp.283-292, 2015.
- [20] M.Q. Patton, *Qualitative research and evaluation methods*, Thousand Oaks, California: Sage, 2002.
- [21] N. King and C. Horrocks, *Interviews in qualitative research*, London: Sage, 2010.