

University-led Intellectual Property Commercialization: Cases of Malaysian Universities

SM. Sharif, A. Isa, A.Y.M. Noor, A.Z. Samsudin, M.A.M Nizah
and M.S.A. Azzis

Abstract--- *Universities are the centre place of innovation, which has recently given greater importance due to its potentially sustainable innovation creation. The process through which innovation comes from the universities to industries, which is also called Intellectual Property (IP) commercialization process, tends to be affected by various factors and contexts. The broad objective of this study to explain the current status of the IP commercialization in Malaysian universities. This study is undertaken to explain the intensity of IP commercialization, its processes and factors affecting IP commercialization in selected Malaysian universities. University Sains Malaysia (USM) and Universiti Teknikal Malaysia Melaka (UTeM) are the two universities selected at convenience and three layers of officials; top, middle and low levels, at the research offices of these universities were interviewed using semi-structured depth interview protocol. The findings indicate that intensity of IP commercialization depends on experience, industry linkage, properly planned area of re-searches and active researchers researching different research institutes. This research will contribute to the existing understating of the IP commercialization in the Malaysian con-text, along with necessary measures to be taken at the policy, industry and university levels to foster innovation for socio-economic development of the country.*

Keywords--- *Intellectual Property, Commercialization, University, Innovation.*

I. INTRODUCTION

Intellectual property (IP) is society's recognition of intellectual efforts. Commercialization of intellectual property is one of the challenging tasks for effective innovation management at universities (Sharif et al., 2018). Malaysian public universities and technology-based universities still do not have a sufficient framework to promote timely commercialization of the university-led innovations (Hamzah, 2006).

The care of critical and strategic information and its constant regeneration in the new knowledge economy make it possible for the corporate portion to add targeted advantages (Alias et al., 2018). Ironically, its essential role recognized only when an organization's accountability method such as mismanagement, or worse collapse happened (Mat Isa, 2009).

The initiatives taken and models applied are all for the ease of IP commercialization, so that the value of innovation comes to the door of users and making sure that creativity does not die at the doorstep (Wong, Ho et al.

*SM. Sharif, Faculty of Technology Management and Technopreneurship, Universiti Teknikal Malaysia Melaka (UTeM), Melaka, Malaysia.
A. Isa, Universiti Teknologi MARA (UiTM), Malaysia.
A.Y.M Noor, Universiti Kebangsaan Malaysia (UKM), Malaysia.
A.Z. Samsudin, Universiti Teknologi MARA (UiTM), Malaysia.
M.A.M. Nizah, Universiti Sains Islam Malaysia (USIM), Malaysia.
M.S.A. Azzis, Universiti Malaya (UM), Malaysia.*

2007). In sharing their current understanding with others, it is the action of people (Isa et al., 2016). Overall, the study will highlight how we create innovation in universities and how we market them.

II. INTELLECTUAL PROPERTY COMMERCIALIZATION

As described in Article 2 of the World Intellectual Property Organization Convention, WIPO (1967), the term "Intellectual Property" means "all rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields. Intellectual property commercialization involves various steps or activities which may either be transactional or developmental concerning IP (Sharif et al., 2018).

Steps in IP Commercialization

The commercialization of the IP process is concerned with the five essential elements (Jaiya, 2008). The five elements are creation, protection, management formation, exploitation and due diligence or evaluation. Protection is vital to prevent the loss of the IP or its value. Infringement may be in the form of unauthorized disclosure, use, distribution, exploitation. Ideally, it is advisable to protect an IP from the moment we create (Hamzah, 2006). Management of IP involves various steps such as the identification of the IP, to collate and record the IP and to design and implement a database to manage all available IP (Whittaker, 2003). Exploitation means to utilize the IP in such a manner to bring revenue to the enterprise. There are various methods of exploitation such as licensing, assignment, capitalization, collateralization and securitization (Woodward, 2004).

University Intellectual Property

Universities are the sources of innovation and extant works of literature on IP commercialization is now concentrating on university-led innovations and how these innovations transferred into entrepreneurship and other value-adding activities (Braunerhjelm, 2007).. Most recently, to ease the pressure of commercialization, many universities have started a Technology Transfer Office (TTO) or Technology Licensing Officer (TLO) in many countries. Government has also taken necessary initiatives to foster university-led research (Rasmussen, 2008).

Proposition 1: Since IP is an economic tool for government, university and the industry, it is therefore of prime importance to observe the status of size and the possible economic benefits from Malaysian university-led IP industry.

IP Commercialization is about effectively transferring the intellectual properties to greater use by the industry. Therefore, in a generic sense, a large number of industries (as the demand side) and institutions (supply side) will be involved in the process and a wide variety of factors relating to every stakeholder will be affecting the success of IP Commercialization (Feldman, Feller et al. 2002; Debackere and Veugelers 2005; Braunerhjelm 2007). The objective of this study is to explain and understand the challenges and factors affecting IP Commercialization of university-lead innovations in a Malaysian context. Therefore, the primary concern of this study is to identify factors related to mainly three stakeholders: the universities, industries and the government.

Proposition 2: Emerging countries have various challenges to successful IP commercialization. For a Malaysian context, this study wants to explain the IP commercialization process starting for innovation creation in the universities to innovation diffusion in the industries.

The major part of IP literature highlighted legal issues, especially on the role of government policies and laws enacted, towards IP commercialization. Instead of working as the primary manipulator, the government is now working as the facilitator for both the industries and for the universities (Rasmussen 2008). Governments have a significant role to play in arranging financial mechanism and other non-financial instruments. Those are unique to industries (such as biotechnology) and cultures (Chang, Chen et al. 2005). So, the role of government is now mostly to influence the factors related to industries and universities, to facilitate effective IP commercialization and to evaluate country-wide development.

Proposition 3.1: The governmental issues such as the IP laws and initiatives taken up by the government of Malaysia have an essential role in IP commercialization of the Malaysian Universities.

Innovation diffusion theory (Rogers 1962) captures the demand side of the IP, meaning how innovation transmitted through different customer groups in the industry. The success of IP commercialization is affected by competitiveness in the industry (Bhaduri nee Chakraborty and Mathew 2003), governance of the IP mechanism in public-funded research (Geuna and Muscio 2009) and to the least, creating support mechanisms for venturing entrepreneurship activities (Hearn, Cunningham et al. 2004). Government has a two-sided impact since it is working as a supplier of fund for the universities and also creates a policy environment for the industries in fostering commercialization.

Proposition 3.2: Industry works as the demand side of the innovation, which plays a vital role in deciding what to innovate and what not. This study proposes that there are various industry related factors that can influence the IP commercialization in Malaysia.

Finally, we have institutional infrastructures, especially in terms of university research infrastructure, policies and organizational standards (Argyres and Liebeskind 1998), productive technology transfer offices set up at the universities (Debackere and Veugelers 2005), faculty entrepreneurship and interdisciplinary cooperation (Fakheri and Fazel 2006). Those are among the essential factors affecting university IP commercialization.

Proposition 3.3: University is considered to be the source of innovation. Most of the IPs' are now university-led. Better university infrastructure and environment would foster innovation; therefore, IP commercialization. As highlighted above, there are university-related factors that can affect IP commercialization in Malaysia.

Over the last twenty-five years, the massive initiative has been undertaken by universities, industries and governments to facilitate proper creation and dissemination of innovation to the social and economic causes (Fakheri and Fazel 2006). Demand for innovations from the industries and a policy tool for the government has mainly been affecting much of the innovation efforts (Bhaduri nee Chakraborty and Mathew 2003; Borg 2001; Chang et al. 2005; Debackere and Veugelers 2005; Feldman et al. 2002).

Geuna and Muscio (2009) pointed out that IP commercialization of university-led innovation to be successful; it requires an integrated plan of the government, university and industry. These two forces of influences from the government both at the supply and the demand sides are assumed to have some interconnections since the government will have a long term holistic economic planning and IP is a part of it. Finally, effective management of

the university research infrastructure and the industry competitiveness will foster IP commercialization, which is being affected by government policies.

III. CONCLUSION

In conclusion, higher dependency on the government, lack of grown-up industry demands and lack in university research infrastructure mainly contribute to this semi-structured process. However, since the contribution of the government is much higher in the existing procedure, more policy implication at the national level is expected, which is found to be evolving similar to both U.S. and non-U.S. style (Furman, Porter, and Stern, 2002).

Comparison of two universities reveals the similar issues of the profile of the universities. It has opened up a solution for enterprises by changing the organization through a mix of innovation, technology, training and demonstrable skills (Masbuqin, 2019). UTeM and USM are different because of their approach, research expertise, the scope of research and experience research work. If the university scope matched with a national innovation strategy, there are more possibilities of getting accessible grants and can innovate more. These are some of the benefits enjoyed by USM compared to UTeM.

ACKNOWLEDGEMENT

The author would like to thank Universiti Teknikal Malaysia Melaka (UTeM) and Centre for Technopreneurship Development (CTED) for their support in obtaining materials for this study and research.

REFERENCES

- [1] Abdullah, H., Nizah, M.A.M. and Baharun, H., 2012. Promoting thinking skills: an evaluation of the effectiveness of invention project. *Elixir Social Studies*, 44.
- [2] Alias, N.K., Mansor, A.N., Rahman, A.A., Ahmad, A.R., & Samsudin, A.Z.H., 2018. The Impact of Knowledge Management towards Employee's Job Satisfaction. *International Journal of Academic Research in Business and Social Sciences*, 8(9), 245–265.
- [3] Borg, Erik A., 2001. Knowledge, information and intellectual property: implications for marketing relationships. *Technovation* 21 (8):515-524.
- [4] Debackere, K., and R. Veugelers. 2005. The role of academic technology transfer organizations in improving industry science links. *Research Policy* 34 (3):321-342.
- [5] Feldman, M., I. Feller, J. Bercovitz, and R. Burton. 2002. Equity and the technology transfer strategies of American research universities. *Management Science* 48 (1):105-121.
- [6] Furman, J.L., M.E. Porter, and S. Stern. 2002. The determinants of national innovative capacity. *Research Policy* 31 (6):899-933.
- [7] Geuna, A., and A. Muscio. 2009. The governance of university knowledge transfer: A critical review of the literature. *Minerva* 47 (1):93-114.
- [8] Goldfarb, B., and M. Henrekson. 2003. Bottom-up versus top-down policies towards the commercialization of university intellectual property. *Research Policy* 32 (4):639-658.
- [9] Hamzah, Zaid. 2006. *Intellectual Property Law and Strategy* Sweet and Maxwell Asia.
- [10] Isa, A., Jemal, N., Nordin, N., 2016, "Knowledge Sharing Behaviour In Libraries: A Case Study Of Raja Tun Uda, Selangor, Malaysia", *Knowledge Management International Conference (Kmic)*.
- [11] Jaiya, G.S., 2008. Intellectual property management and commercialization of new products. WIPO.
- [12] Masbuqin, I., Sharif, S., 2019. A study of the Effectiveness of E-Commerce Platform among Small-Medium Enterprise (SME) in postnatal care services industry.
- [13] Mat Isa, A., 2009. Records management and the accountability of governance (Doctoral dissertation, University of Glasgow).

- [14] Sharif, S., Ahamat, A., Abdullah, M., Jabar, J. And Bakri, M., 2018. University Intellectual Property Commercialization: A Critical Review of Literature. *Turkish Online Journal of Design Art and Communication*, 8(Sept), Pp.874-886.
- [15] Sharif, S., Nizam, N., Rashid, N., Masrom, N. And Bakri, M., 2018. Role of Values and Competencies in University Intellectual Property Commercialization: A Critical Review. *Turkish Online Journal of Design Art and Communication*, 8(Sept), Pp.887-904.
- [16] Siegel, D.S., D.A., Waldman, L.E. Atwater, and A.N. Link. 2004. Toward a model of the effective transfer of scientific knowledge from academicians to practitioners: qualitative evidence from the commercialization of university technologies *Journal of Engineering and Technology Management* 21 (2004):115-142.
- [17] Whittaker, J.B., 2003. Strategy and Performance Management in the Government: A White Paper. *Pilot Software*.
- [18] WIPO. 1967. World Intellectual Property Organization Convention. In *Article 2*, edited by WIPO. Stockholm: WIPO.
- [19] Woodward, C. *Valuation of Intellectual property*. PricewaterhouseCoopers 2004. Available from http://matthewgream.net/Professional/IntellectualProperty/review_trademark-valuation-01-2004.pdf [January 2004].