

University Spin-Off: The Solution to Intellectual Property Commercialization in Universities

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Abstract

The article explores the model of spin-off businesses originating from research and training institutions as a new solution to improve the commercialization of intellectual property in universities in the country we are now. From the challenges brought by the spin-off business model, the article, with the method of analyzing and synthesizing the results from related studies, offers suggestions for useful solutions to promote the formation of the business model starting from exploiting intellectual property at universities.

Keywords

Spin-Off, University Researches, Commercialization, Industrial Production

1. Introduction

Currently, the efficiency of commercialization of intellectual property at Vietnamese universities is not high and limited. Universities are gradually shifting from the traditional role of research, teaching and knowledge dissemination to a new and more advanced role, which is promoting the creation of spinoff models and promoting business academic business. Universities and research institutes are places where research and technology development activities are concentrated and most research and invention results are kept. One of the factors that play an important role in the successful commercialization of research results is intellectual property rights. Among the models for commercializing scientific research, spin-off is one of the popular forms in universities and research institutions to commercialize intellectual property rights.

Currently, the efficiency of commercialization of intellectual property at Vietnamese universities is not high and limited. Universities are gradually moving

from the traditional role of research, teaching and knowledge dissemination to a new, more advanced role, which is to promote the creation of spin-off models and promote academic business push. Universities and research institutes are places where research and technology development activities are concentrated and most research and invention results are kept. One of the factors that play an important role in the successful commercialization of research results is intellectual property rights. Among the models serving the commercialization of intellectual property rights at universities, the spin-off model is one of the popular forms and is a useful solution to promote start-ups to exploit resources intellectual property.

2. Literature Review

There are different definitions of a spin-off business. However, in the most general sense, a spin-off is an independent legal entity established by a parent organization to exploit intellectual property. Therefore, spin-off is understood as an organization operating for profit and independent of Universities, born of at least one member of the University, or the University having shares in it.

The spin-off company model was formed at the beginning of the 19th century in developed countries such as the United States and the United Kingdom, then spread to Europe, Japan... This model is considered to be an explanatory solution. It allows inventors to retain their intellectual property while reaping economic profits, while at the same time benefiting the research establishment and the state in the long run.

In Vietnam today, the reality shows that the spin-off business model has not been interested in in-depth research and popular application. On the contrary, this model has been studied, deployed and strongly developed in developed countries for a long time. Therefore, the article uses many foreign documents when researching spin-off businesses. First, Research of [Gregorio Calderón-Hernández, Yudy Andrea Jiménez-Zapata & Héctor Mauricio Serna-Gomez \(2020\)](#) provides an analysis of the barriers to spin-off business start-ups across multiple competition. In particular, this study has also updated the difficulties of universities in developing countries when applying spin-off business models. Research by [Fini, Fu, Mathisen et al. \(2017\)](#) analyzed the factors that can determine the quantity and quality of spin-off firms. [Bigliardi, Galati, & Verbano \(2013\)](#) have researched and evaluated the activities of spin-off businesses and given lessons from the practical experiences of some countries. In particular, this study also mentioned the difficulties of universities in developing countries when applying the spin-off business model. The spin-off provides a carefully curated insight into the path that takes an academic's intellectual property from the lab, to a startup, and then onto the tech market. The author has raised the issues and what is needed, as well as shown the examples, how useful for scholars and universities embarking on commercialization of research products. Research by Luigi Fici and Michela Piccarozzi (University of Tuscia), Michela Piccarozzi Na-

tional Research University Moscow School of Economics, RU, Russia “Spin-off design as an institution: A methodological approach, has focused its analysis on the creation of spin-off models as one of the most popular ways to bring research results to market, while also representing a powerful tool in international strategy economics for universities”.

Besides, to find out the challenges that universities and researchers have to face when applying the spin-off business model in Vietnam, the author has studied a number of other documents such as: Research by [Dang Thi To Tam \(2019\)](#) Researching and transferring science technology from universities to businesses, the study has provided data and analysis on the current situation of limitations in the field of science and technology applicability and commercial exploitation of research results.

Along with that, “Research on Spin-offs in Universities in the World and Problems of Tertiary Education in Vietnam” [Dinh \(2021\)](#), research on companies spin-offs and policies to support this business development from higher education institutions in a number of countries around the world.

The study clearly states that the requirements for institutional reform and environment for business development from universities are comprehensive autonomy for universities to reorganize, encourage entrepreneurship and promote commercialization activities. An urgent problem is raised.

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In Vietnam, the legal regulations on the transfer of research results and intellectual property formed through the implementation of scientific and technological tasks using the state budget have been built in the mind, expressed passed: Law on Science and Technology 2013, Law on Asset Management and Use 2017, Law on Technology Transfer 2017; along with regulations and information instructions such as: Decree 70/2018/ND-CP dated May 15, 2018 of the Government stipulating the management and use of assets that are shaped into the implementation of the service. Department of Science and Technology using state capital, Decree No. 76/2018/ND-CP dated May 15, 2018 of the Government detailing and guiding the implementation of a number of articles of the Law on Technology Transfer; Circular No. 63/2018/TT-BTC dated July 30, 2018 of the Ministry of Finance guiding a number of articles of Decree 70/2018/ND-CP; Circular No. 10/2019/TT-BTC dated February 20, 2019 of the Minister of Finance guiding the determination of property value as a result of science and technology tasks using state capital; Circular No. 02/2020/TT-BKHCN dated August 10, 2020 of the Minister of Science and Technology guiding the implementation of Clause 1, Article 41 of Decree No. 70/2018/ND-CP... However, reality implementation has revealed many difficulties, in particular problems.

Research by [Mai Ha, Hoang Van Tuyen & Dao Thanh Truong \(2015\)](#) “From

theory to practice”, the content mentions the role of start-ups, legal institutions to support and facilitate for the formation and development of this type of business.

Collective authors Dinh Van Toan, Hoang Van Hai, Nguyen Phuong Mai, Dang Thanh Dat, Phung The Vinh, Le Thi Thao, “Business development in higher education institutions from international experience to Vietnamese practice Nam” (2019) described the theoretical framework of policies and laws on intellectual property; improve the effectiveness and efficiency of state management of intellectual property, the foundation for enterprise development in universities and higher education institutions. Research by [Nguyen Huu Xuyen \(2020\)](#), “Patent and technology management”, argues that patent and technology management is the management to promote product innovation, develop science, technology and innovation create and clearly define the tasks of perfecting policies and laws on intellectual property; effective state management of intellectual property; actively cooperate and integrate internationally on intellectual property.

3. Research Method

In the article, by means of synthesis and analysis, the authors have explored different concepts and understandings of the spin-off business model and given their views on this model. In addition, synthetic methods, analytical methods and evaluation methods are also used to study the difficulties in applying the spin-off business model in universities in Vietnam. From there, the authors make suggestions to help the spin-off business model become a useful solution for improving the commercialization of intellectual property at universities.

4. Result

4.1. Definition of Spin-Off (Spin-Off Enterprise)

Spin-off enterprises are often understood as “starting businesses” from universities (separating from universities), which are engaged in by individuals creating scientific and technological assets, enterprise management process. Research results for spin-off formation are often high-tech research results.

Because it is always associated with research institutions and universities, this model is often known as “academic spinoff” or “university spin-off”. Such calling also makes spin-offs more accessible, and helps research institutions make clearer choices. When the university, together with scientists who own patents on technology, want to build and develop their own businesses (self-starters) to commercialize scientific research results, choose the model spin-off business is reasonable.

Over the years, there have been many different concepts of spin-off businesses. For example, According to [Roberts and Malone \(1996\)](#), spin-off is established by four groups of actors: 1) technology originator: person or organization that creates technology from research basic to experimental deployment and trans-

ferable technology; 2) Parent organization: A research and development organization whose role is to support or prevent the establishment process by controlling intellectual property rights; 3) The entrepreneur or entrepreneurial team: a person who uses technology created by the parent organization and intends to establish a new business based on that technology; 4) The venture investor: provides funding for the establishment of a new business and in return for shares in the business.

According to author Vu Cao Dam, a science and technology enterprise, i.e. a spin-off enterprise, is a unit that has the function of deploying, which can start from the stage of sample making, piloting, incubation, and ultimately “manufacturing” technologies and selling (transferring) those technologies to industrial enterprises.

To be able to establish spin-off companies, the first (most important) thing is that the researcher creates research results that are applicable (for the market) and can be commercialized. And the research facility will support the commercialization through start-up investment funds (big universities around the world have such funds) and invest in researchers to form the company (of course, intellectual property patents are always registered in advance to protect intellectual products by law).

Thus, in the most general understanding, the spin-off model is an enterprise operating in the field of science and technology, originating mainly from universities, research institutes or by individuals or collectives. Researchers wish to break away from the parent organization to develop research and business on their own. The main goal of the spin-off enterprise is to become a place where scientific and technological researches of universities, research institutes and scientists are applied, developed and maximized commercial exploitation.

4.2. Difficulties in Applying the Spin-Off Business Model in Universities in Vietnam

With the very practical goal that the spin-off model brings, this model has existed with university systems in developed countries for many years now. For Vietnam, this is completely new and currently only a few schools do it. The reason is that the application of the spin-off business model is still quite difficult. In general, the challenges that universities and researchers may face when implementing the spin-off business model are:

Firstly, the applicability and commercial exploitation of research results are still limited. Given the current situation, many lecturers and researchers from universities still often carry out the research. There are not many potential research studies; a number of studies have potential applications but have not yet met the requirements of commercialization; scientists have not been active and active in commercializing research results; capacity for enterprises to innovate technology is still low; the connection environment between enterprises and inventors has had initial effects, but the effect is not high; difficulties in trade negotiations... On the other hand, university researchers lack conditions to deploy

scientific ideas, implement experiments, lack funding for implementation, lack of information on needs. Because of the needs of enterprises, research activities are not close to the needs of actual production, and have not created trust in enterprises. Moreover, there are some cases where the researchers themselves have not yet understood and grasped the development of modern science and technology, so they research and produce existing results. It can be seen that the potential to establish and develop a spin-off business depends greatly on scientific research from universities. This has become a big challenge for the current implementation and application of the spin-off model at universities in Vietnam.

Second, the law regulates technology-starting enterprises. Current reality shows that there is no direct regulation in Vietnamese law for the technology-starting business model. The first is that the provisions on protection of intellectual property rights, results of scientific and technological research in the Intellectual Property Law and guiding documents are not specific, lack of regulations on the successful implementation of the Law on Intellectual Property. Especially recently, Decree No. 13/2019/ND-CP on science and technology enterprises was officially issued and took effect from March 20, 2019, is the most remarkable document that sets forth the most important issues. Clear legal issues on the process of formation, operation and development of science and technology enterprises. Unfortunately, the above documents do not directly refer to the concept of spin-offs or start-ups, making this type of reality ambiguous. This explains why businesses formed from universities and research institutes, although established right after the development policy, do not have an appropriate and clear mechanism to operate in accordance with the original plan. This can be considered as one of the biggest barriers to the formation and development of the spin-off business model in Vietnam today.

Third, the issue of capital. Within the framework of the article, the spin-off business being analyzed is the technology startup enterprise in universities. Characterized by activities aimed at commercializing research results, most spin-off businesses will focus on exploiting new, untapped technologies in the market. These businesses face many difficulties from capital, management, production operation, to product distribution, after-sales service, and not to mention the fierce competition from the market. So, usually in addition to the contribution through patent licensing, universities will only contribute through “reputation”, and the initial support of the right to use facilities, equipment, laboratories, as well as manpower in the form of seconded for the spin-off. Public universities (including subsidized, partially autonomous and fully autonomous) will find it difficult to use money from other activities for this risky investment. Start-up businesses really need cash for all of their operations. They need other investments, be it from their own personal money, or call, raise capital to attract investor.

Fourth, management capacity when deploying the spin-off model. Spin-off enterprises are originated from universities (separate from universities), by individuals creating scientific and technological assets participating in the manage-

ment of enterprises. Scientists who own technology patents want to build and develop their own businesses to commercialize research results through a spin-off business model. To deploy and apply the spin-off model, the University and its founders must have management capacity to operate the business. It is a fact that needs to be recognized that, for the University and the founders of spin-off businesses (mainly scientists, lecturers, researchers), the operation and management of the business is also important. is one of the significant challenges. Therefore, the ability to manage spin-off businesses is also one of the factors that need to be mentioned when learning about the difficulties in applying this model in universities in Vietnam.

4.3. Solutions to Improve Efficiency When Applying the Spin-Off Business Model at Universities in Vietnam

Through the analysis above, the application of the spin-off business model in our country currently still has many difficulties. Since then, it is considered that there should be positive solutions for this model to be implemented smoothly, supporting the commercialization of intellectual property in universities, specifically as follows:

Firstly, to be able to develop this model, the first thing, of course, must come from the research of the scientists themselves: the results are applicable (for the market) and potentially commercialized. And the research facility will support commercialization through startup investment funds and investment for researchers to form a company. To do this, it is necessary for universities and researchers to engage with businesses in research and technology transfer to meet practical needs.

Secondly, the legal system on protecting intellectual property rights needs to be strict to help researchers protect their products. Currently, there have been many legal documents regulating legal issues related to science and technology enterprises in general, but technology startups or spin-off enterprises have not been mentioned yet directly and specifically. This can be considered as one of the biggest barriers to the formation and development of the spin-off business model in Vietnam today.

Third, there is a great need for start-up investment funds from the government directly to research institutions, along with a strict legal system that clearly regulates the interests of the parties (researchers, property owners, ...), and open mechanism, compact administrative procedures. In the process of starting a spin-off model, there are many difficulties. Also because spin-off businesses are often “self-made”, without foundation or parent company to support, so when investing there is a lack of capital, human resources, policy problems... Therefore, before in the immediate future, universities need to proactively come up with measures to solve the problem of investment capital for spin-off businesses as well as build an affiliate network to find investors for these models. It is necessary to review and adjust legal regulations and supporting policies to help spin-off businesses easily access capital sources, promoting the development of

this model in Vietnam.

And fourth, it is necessary for independent management (in accordance with the spin-off model) of startups in universities and research institutes in order for these companies to operate in accordance with the market mechanism.

5. Conclusion

Given that the commercialization of research results in universities is not high, there are still many difficulties and limitations that need to be overcome. It is very necessary to find solutions to improve this activity. The spin-off business is considered a relatively successful model, making a significant contribution to the commercialization of intellectual property in major universities around the world. However, this model in our country is quite new, and only a few schools implement it. The article identifies the difficulties and offers solutions to overcome the challenges that may be encountered when applying the spin-off business model in Vietnam. Through this, this model will soon be deployed and widely disseminated, contributing to promoting the commercialization of research results. In the future, the University's spin-off business model will make a great contribution to economic growth and development, and at the same time be a source of advanced technology for industries, opening up many opportunities extensive and comprehensive connection between enterprises in the university and enterprises—domestic and foreign partners, increasing product value; promote the economic development of the country.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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