

Commercialization Strategy Formulation for University Spin-Off: A Case Study

Aam Hamid Al Ghabid, Nur Atikah, Wahyudi Sutopo, Muhammad Nizam and Ida Idayu Muhamad

Abstract—In order to face the ASEAN Economic Community (AEC) in 2015, Sebelas Maret University (UNS) forming an entrepreneurship incubator housed in the Technology Innovation Centre, University of Sebelas Maret (PIT UNS). The entrepreneurship incubator in UNS cannot be said to be optimal. Implement strategy for commercialization is needed to ensure the long term success of the commercialization strategy for university spin-off, the tangible manifestation of the success of an entrepreneurial incubator. Starting from factors in successful entrepreneurship incubator, benchmarking with ICC UTM and HQ Nutraceuticals Sdn Bhd and transferred be SWOT analysis, this paper proposed to provide all services and supports of the PIT UNS to gain the success of the UNS's university spin-off, so that the commercialization policies, economic situation and commercialization culture can be developed, build the university spin-off based on the tropical climate, develop the business networking, develop the HRD aspect and build the special building to develop the business of university spin-off. This paper recommended the strategies in commercialization of UNS.

Index Terms—commercialization, commercialization strategy, entrepreneurship incubator, SWOT analysis, university spin-off.

I. INTRODUCTION

IN order to improve the competitiveness, it needs to be fostered new entrepreneurs who are resilient, creative, and professional. Indonesia needs a lot of entrepreneurs to be the leader of other nations, especially in the face of the ASEAN Economic Community (AEC) in 2015 [1]. The entrepreneurship incubator is an effective vehicle to foster the entrepreneurial spirit, ability, networking, and entrepreneurial insight [2]. Entrepreneurship incubator can be organized by universities, science and technology park (STP), the private sector, government and local government [3].

For the entrepreneurship incubator organized by

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universities, it would produce the university spin-off. University spin-off is a global phenomenon in which the world is currently interested in the translation of the universities' research results of technology towards economic development through entrepreneurship [4]. The university spin-offs can be a positive impact on the economic development of a country, among others, generate significant economic value, create jobs, increase the rate of investment in the development of higher education technology and increase local economic development. In addition, university spin-off is also a positive impact on the college, as an effective vehicle for the commercialization of the technology, an effective vehicle to support the inventor's involvement in business development, helping to achieve the mission of universities, increase the number and quality of research activities and provide education for students in entrepreneurship [4].

To foster the entrepreneurial spirit in the academic environment in particular and society in general audiences, the University of Sebelas Maret (UNS) forming an entrepreneurship incubator housed in the Technology Innovation Centre, University of Sebelas Maret (PIT UNS) [5] [6] [7]. An entrepreneurship incubator in UNS cannot be said to be optimal. The target output in 2014, about 100 bank of ideas, intellectual property along with 10 of his IPR and the university spin-offs developed [3], has not yet to be achieved, meanwhile there are some tenants who will be its first university spin-offs.

Universiti Teknologi Malaysia (UTM) as the best number eighth universities in Southeast Asia [8] has an entrepreneurship incubator were quite successful, Innovation and Commercialization Centre, Universiti Teknologi Malaysia (ICC UTM), which has spawned until 2770 IPR and 18 university spin-offs since its establishment in 2010 as a tangible manifestation of the success of an entrepreneurial incubator [9] [10].

As an incubator of entrepreneurs who are quite successful, UTM can be a lesson for the UNS to develop, produce university spin-offs as a tangible success of entrepreneurial incubator. The study and analysis that can be done to take lessons from UTM is the study or analysis of strategies used by university spin-offs that have been developed and also how the ICC UTM commercialize its university spin-offs. This is because the university spin-off is a realization of an entrepreneurial incubator successful.

Among the many UTM university spin-offs, there is a company that is successful, the HQ Nutraceuticals Sdn Bhd [11]. The company is preceded by research on high-fiber foods conducted by researchers of UTM [12]. Meanwhile, HQ Nutraceuticals Sdn Bhd is a company which has not

reached the level of maturity in the commercialization model, so that this is the closest benchmarking with tenants of PIT UNS.

Studies of commercialization strategies have been carried out. Pellikka and Malinen examined the commercialization strategies used in high-tech sectors and their role as part of a new product commercialization strategy and innovation management [13]. Meanwhile, Dmitriev, et al has examined the development of commercialization that has focused on the relationship between the elements of the value of conceptualizing and organizations that have a linear sequence in which the business model first designed and then implemented [14]. Then, Sarma, et al, has been doing research on commercialization strategies result of product innovation through optimization models for collaboration in agricultural research and development agency [15]. Then Rajkovič, et al also conducted research on the commercialization strategy in technology of polymer materials [16]. While Prawitasari and Nuariputri has conducted research on the formulation of corporate strategy by using SWOT analysis [17] [18]. In other research, Erliza, et al has formulated the strategy for promoting investment of Technopolis with the benchmarking and SWOT analysis of the methodology [19].

This paper aims to analyze the commercialization strategy of the UNS by benchmarking with UTM and its HQ Nutraceuticals Sdn Bhd by using the SWOT analysis.

II. METHODOLOGY

To analyze the commercialization strategy of the university spin-off by using SWOT analysis, it needs some steps to formulate the strategy. The first, it needs to be known the success factors of the university spin-off and the entrepreneurship incubator of the university. By doing benchmarking with other university, it would deepen the analysis. The next analyzes the strategies by doing the SWOT analysis based on the aspects [20]. After that, by using the SWOT matrix, it would be known what kind of strategy the UNS and its tenants needs to be focused on the commercialization. Finally, the strategies can be formulated as a list to suggest the UNS and its tenants to be university spin-off. The Fig. 1 shows the methodology to formulate the commercialization strategy.

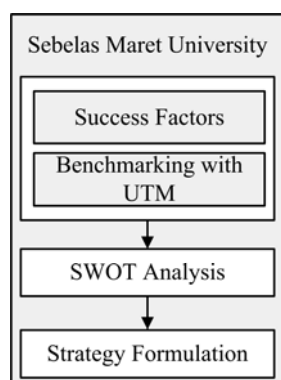


Fig. 1. The methodology to formulate the commercialization strategy.

III. SUCCESS FACTORS IN COMMERCIALIZATION, BENCHMARKING, AND SWOT ANALYSIS

There are seven factors to successful entrepreneurship incubator in commercialization [21] [22]. The factors are space, shared, service, support, skill development, seed capital, and synergy [21] [22]. Space talks about incubator provides a place to develop the business in the early stages. Shared is about incubator provides office facilities that can be used together, for example receptionist, conference room, phone system, fax, computer, and security. Services include management consulting and market issues, financial and legal aspects, trade and information technology. Support: incubator helps access to research, professional networking, technology, international, and investment. Skill development: it can be done through training to prepare a business plan, management, and other capabilities. Seed capital: it can be done through an internal revolving fund or to help small businesses access to funding sources or existing financial institutions. Synergy is about cooperation or competition among tenants and networking (network) with the universities, research institutions, private businesses, professionals and the international community [21] [22]. The seven factors can be the internal aspect of SWOT analysis. The PESTEL analysis, which are politic, economic, social, technology, environment, and legal, can be used as the external aspect for SWOT analysis [24]. There are also seven factors to successfully university spin-off [23]. The seven factors are financial resources, technological resources, knowledge, organizational resources, relational capital, human capital, and motivational factors [23].

Success factors in commercialization are used to generate an internal and external environment that affecting of commercialization. UNS and its tenants is used to be the case study, with the benchmarking with UTM and HQ Nutraceuticals Sdn Bhd. We analyzed existing conditions of the UNS and its tenants to benchmark with UTM and HQ Nutraceuticals Sdn Bhd as shown in Table 1, Table 2, and Table 3, and to generate its strengths, weaknesses, opportunities, and threats as shown in Table 4.

TABLE I
BENCHMARKING BETWEEN UNS AND UTM

Success Factors	UNS	UTM
Space	Yes, Office	Yes, Technovation Park
Shared	Yes, Office	Yes, Office
Service	Yes, Not all services	Yes, All services
Support	Yes, Not all supports	Yes, All supports
Skill Development	Yes, Training	Yes, Training
Seed Capital	Yes	Yes
Synergy	Yes, Less networking	Yes, Many networking

IV. RESULT AND DISCUSSION

From Table 4, the strengths, weaknesses, opportunities, and threats that exist in the UNS is already generated. After analyzing, the existing factors mutually forms were a SWOT matrix. The matrix was used to develop support strategies.

S-O strategies formulated by using the power of the UNS and its tenants to take advantage of existing opportunities. W-O strategy formulated by minimizing the weaknesses of the university to take advantage of the opportunities. S-T strategy formulated by using the power of the UNS and its tenants to address the threat. Whereas W-T strategy formulated by minimizing the weaknesses and avoid threats from the external environment as shown as Fig. 2.

TABLE II
BENCHMARKING BETWEEN UNS'S TENANTS
AND HQ NUTRACEUTICALS SDN BHD

Succes Factors	Tenants of UNS	HQ Nutraceuticals Sdn Bhd
Financial	Weak, Supported	Strong enough, Supported
Technology	Middle technology	High technology
Knowledge	High knowledge	High knowledge
Organization	Not structured	Structured
Relation	Less relation	Strong relation
Human Capital	Strong human capital	Strong human capital
Motivation	Weak commercialization culture	Strong commercialization culture

TABLE III
BENCHMARKING BETWEEN UNS AND UTM – PESTEL FACTORS

PESTEL Factors	UNS	UTM
Politic	Less commercialization policies	Strong commercialization policies
Economy	Dynamic economic situation	Competitive economic situation
Social	Weak commercialization culture	Strong commercialization culture
Technology	Middle technology support	High technology support
Environment	Tropical climate	Tropical climate
Legal	Hard to develop company	Easy to develop company

TABLE IV
SWOT ANALYSIS: A CASE STUDY

Factors	S	W	O	T	Explanation of Case Study
Space	√				W1-Office uses for all activity
Shared	√				W1-Office uses for all activity
Service	√				W2-Not provide all services and supports
Support		√			W2-Not provide all services and supports
Skill Development	√				S1-Provide training to develop skill
Seed Capital	√				S2-Provide funding access
Synergy		√			W3-Less networking
Financial		√			W4-Weak university spin-off's finance
Knowledge	√				S3-Supported by high knowledge
Organization		√			W5-Not structured university spin-off's organization
Relation		√			W6-Less university spin-off's relationship
Human Capital	√				S4-Strong human capital
Motivation			√		T1-Weak commercialization culture
Politic			√		O1-Less commercialization policies
Economy			√		O2-Dynamic economic situation
Social			√		T1-Weak commercialization culture
Technology		√			W7-Develop middle technology
Environment			√		O3-Tropical climate lead some business opportunities
Legal			√		T2- Hard to develop company, bureaucracy restriction

A. Push the Commercialization Policies and Develop the Economic Situation by the Success of UNS's University Spin-Off

With the condition of less policies by the government, which concern on commercialization and university spin-off existence, there are opportunities to show off the success of university spin-off. This action can stimulate the growth of the university spin-off in Indonesia, and the government will see this and make a decision to make some policies related to this problem.

Based on the economic condition which is so dynamic, the existence of university spin-off can be an answer for the problem. With the university spin-off, the technology developed by universities can be touch the market or the people itself, so it can help the economic aspect of Indonesian people.

Internal Factors	<p>STRENGTH</p> <p>S1-Provide training to develop skill S2-Provide funding access</p> <p>S3-Supported by high knowledge S4-Strong human capital</p>	<p>WEAKNESS</p> <p>W1-Office uses for all activity W2-Not provide all services and supports W3-Less networking</p> <p>W4-Weak university spin-offs finance W5-Not structured university spin-offs organization W6-Less university spin-offs relationship W7-Develop middle technology</p>
External Factors	<p>OPPORTUNITY</p> <p>O1-Less commercialization policies O2-Dynamic economic situation O3-Tropical climate lead some business opportunities</p>	<p>THREAT</p> <p>T1-Weak commercialization culture T2- Hard to develop company, bureaucracy restriction</p>
	<p>S-O Strategy</p> <p>Push the commercialization policies and develop the economic situation by the success of UNS's university spin-off (S1,S2,S3,S4-O1,O2) Build the university spin-off based on the tropical climate (S1,S2,S3,S4-O3)</p>	<p>W-O Strategy</p> <p>Develop the business networking to gain the financial resources (W3,W4,W6-O2) Develop tropical climate based technology (W7-O3)</p>
	<p>S-T Strategy</p> <p>Develop the commercialization culture with the success of UNS's university spin-off (S1,S2,S3,S4-T1) Face the bureaucracy restriction with the strong human capital (S4-T2)</p>	<p>W-T Strategy</p> <p>Build the special building to develop university spin-off business (W1-T1) Provide all services and supports to gain the success of university spin-off (W2-T1) Gain the HRD aspect, so that the human capital can face the bureaucracy restriction (W5-T2)</p>

Fig. 2. The SWOT matrix.

B. Build the University Spin-Off and Develop the Technology Based On the Tropical Climate

Develop the university spin-off based on the tropical climate, technology is just right to the countries in this tropical climate area. The technology can be developed as the high technology because of the appropriate environmental condition.

C. Develop the Business Networking to Gain the Financial Resources

To gain the financial resources, the business networking development can be used to do that. The bigger the business network, the more party we have, the more chance to gain the financial resources, because we can do some business or some deals to gain our financial resources.

D. Develop the Commercialization Culture with the Success of UNS's University Spin-Off

With the success of UNS' university spin-off, the commercialization culture in the university can be developed. The people at the university will see this success, so that they will be following this culture of commercialization.

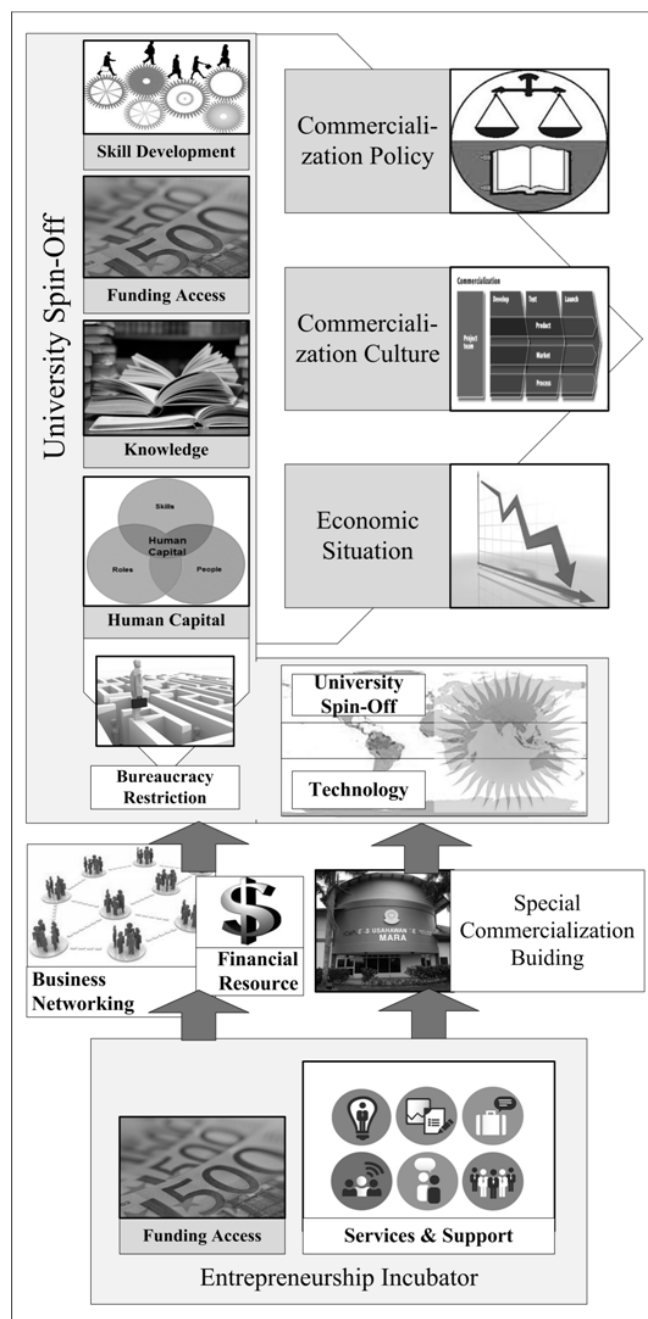


Fig. 3. The proposed scheme of commercialization strategy in UNS.

E. Face the Bureaucracy Restriction with the Strong Human Capital, by Gain the HRD Aspect

With gain the HRD aspect, the human capital will be developed and gain the qualification. By this developed human capital, the restriction of bureaucracy in building new companies (university spin-off) can be faced. This problem can restrict the existence of university spin-off, so that this could be solved by human capital development.

F. Build the Special Building to Develop University Spin-Off Business

The special building like Technovation Park of ICC UTM can be the best place to develop the business in the early stages of the university spin-off. The place can be the factory, the office, or something else can help the university

spin-off to develop their business. So that, UNS can build the special building, just like Technovation Park in UTM. This special place could help UNS' tenants to develop to university spin-off and being a successful company in the future.

G. Provide All Services and Supports to Gain the Success of University Spin-Off

The all entrepreneurship incubator services like management consulting and market issues, financial and legal aspects, trade and information technology; and support like helping with access to research, professional networking, technology, international, and investment, could be given. The services and the support of entrepreneurship incubator to its tenant or university spin-off can help them to develop their business and reach the maturity in business.

The all strategies, S-O strategies, S-T strategies, W-O strategies, and W-T strategies united in a scheme. The scheme of commercialization strategy in UNS can be formulated as shown in Fig. 3. The proposed scheme shows that the entrepreneurship incubator and the university spin-off should be cooperating to develop the success of university spin-off.

V. CONCLUSION AND FUTURE RESEARCH

The commercialization strategies suggested to UNS are to provide all services and supports of the PIT UNS to gain the success of the UNS's university spin-off, so that the commercialization policies, economic situation and commercialization culture can be developed, build the university spin-off based on the tropical climate, develop the business networking, develop the HRD aspect and build the special building to develop the business of university spin-off. The future research suggested for deepening the business area. It can include the business strategy formulation for university spin-off.

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