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Opportunities and Challenges of the Technology Business Incubator in Vocational Education at the Faculty of Engineering

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Abstract*: This study aims to: 1) determine the condition of the Technology Business Incubator at the UNM Engineering Faculty; 2) What are the opportunities and challenges in Building a Technology-based Start-Up Business. Analysis of the opportunities and challenges of implementing the Technology Business Incubator at the Faculty of Engineering UNM for the field of Information Technology-Based Start UP in order to foster entrepreneurial competence in students, so that references can be obtained regarding effective and efficient business incubator best practices. The method used in this research is qualitative method. In addition, the method used in this study is a descriptive method. The goal is to obtain facts that describe the actual picture so that they can be analyzed. For data collection techniques in this study, namely by conducting surveys/observations, Focus Group Discussions (FGD) and in-depth interviews. The Faculty of Engineering UNM has the carrying capacity of human resources, technology, services and others so that it has a high opportunity to build a business incubator through the Creative Industry Incubator Model by utilizing various sectors in the study program. This incubator is not only to develop entrepreneurship within the FT UNM internally, but can also be a bridge for the growth of the business community around the FT UNM and the business world at large. The assisted villages can be utilized in a balanced way for the development of science and technology and economic development. Based on the results of a survey on the implementation of the Technology business incubator involving students majoring in Electronic engineering, Electrical engineering, computer engineering, Vocational Mechatronics, and Informatics Engineering. It was found that the desire, courage, interest, perseverance in learning Start-Up learning obtained an average rating of Good. The management of the business incubator must be autonomous so that the INWUB Institution that has existed before at UNM needs to be more flexible and free from bureaucratic ineffective procedural barriers and in accordance with changes in the environment at Makassar State University as a place for business incubators. The position of a business incubator in the organizational structure of a higher education institution (Makassar State University) is expected to be able to provide a role as an entity from its parent.

***Keywords*: Technology Business Incubator, Technopreneur, Vocational Education.**

I. INTRODUCTION

It is almost certain that later all State Universities will turn into autonomous institutions or State-Owned Legal Entities. In this new form, universities will independently manage education administration funds. For this reason, it is necessary to immediately anticipate with efforts to find alternative potential business models in universities. Therefore, universities must immediately look for sustainable models to increase their role and existence as an embryo driving the improvement of the quality of life and the lives of students and graduates. [1].

The reality of the large number of unemployed and prospects for UNM graduates has received a lot of attention from several elements of UNM, such as those carried out by lecturers and students, including institutionally driven by government programs, as well as UNM institutional initiatives to provide additional provisions in developing an entrepreneurial culture, especially visions and missions based on entrepreneurship. [2]. Most of UNM graduates are more job seekers than job creators. This could be due to the academic and learning system, as well as the curriculum applied in universities today, which do not prepare graduates who are ready to create jobs. [3].

The Higher Education Business Incubator (INBIS) based on empirical studies has succeeded in answering the problems mentioned above. The business incubator is designed to help students as business people in realizing their business, especially during difficult times in the early years of business. This assistance can take the form of various activities, ranging from consulting business management and techniques, developing business networks to providing information technology facilities. The Business Incubator concept developed in universities is a vehicle for the commercialization of research and the creation of new jobs, which in the end creates a chain of employment opportunities, which is expected to create a business process that has added value, is able to create jobs and establish cooperation. relationship between university-industry-society-government. This series of processes will be able to turn new inventions into innovations, resulting in a value creation process that will have a positive impact on the emergence of technology commercialization that is able to encourage the creation and improvement of people's welfare.

In terms of the problems above, it is necessary to conduct an analysis of the opportunity for implementing a Technology Business Incubator at the Faculty of Engineering, UNM in order to build an Information Technology-based Start UP Business Opportunity to foster entrepreneurial competence in students, so that references can be obtained regarding effective and efficient business incubator

best practices Start-up acceleration will increase the innovation capacity and application of technology among students which will have an impact on improving product quality, competitiveness, technology, and productivity in creating new jobs in the community

II. RESEARCH METHODS

The method used in this research is qualitative method. In addition, the method used in this study is a descriptive method. The goal is to obtain facts that describe the actual picture so that they can be analyzed. For data collection techniques in this study, namely by conducting surveys/observations, Focus Group Discussions (FGD) and in-depth interviews. In addition, data collection techniques were also carried out by distributing questionnaires and library research. In addition, secondary data was also collected.

III. RESULTS AND DISCUSSION

Business incubators in universities were initially started from the new entrepreneurial incubator program (Inwub) which was developed in a number of universities [4]. The objectives in the form of a business incubator at UNM based on inwub are: (1) creating independent SMEs based on science and technology to strengthen the National Economic Structure, (2) creating new jobs so as to increase the standard of living of the economically weak, (3) helping transfer technology from technology conventional technology to the latest appropriate technology, including technology produced by large industrial cycles, universities, or research institutions, (4) accelerating the development of entrepreneurship in Indonesia to achieve sustainable development of economic resilience in the face of free trade.

Meanwhile, the University in carrying out its role is still bound by the tridharma of higher education, which focuses on education, research and community service within the framework of scientific development. Although in recent years entrepreneurship development has been carried out, it has not received a positive response for business development. The development of higher education into PTNBH was also responded to by an increase in the cost of increasing education for students which of course raised the issue of "rejection" of PTNBH by some groups. Thus, so that the entrepreneurial culture that has started can be implemented properly at the University, a business incubator is needed at the Faculty of Engineering..

The technology business incubator provides incubation program services in conducting entrepreneurship which is designed to accelerate the success of the business development of the incubation participants, in this case the Vocational Engineering Faculty students through a series of coaching, mentoring and development activities that have organizational and financial management according to good company management standards, and become a sustainable and profitable company, until finally it has a positive impact on the wider community, namely the opening of job opportunities. Hendarman [5] stated that the Student Entrepreneurship Development Program can open students' insights, abilities and attitudes in entrepreneurship, as well as create job opportunities for the community.

In this industrial era 4.0, which is marked by various activities connected to the internet network (internet of things) where various human activities have been replaced by automated and integrated technology systems that aim to increase efficiency, productivity and effectiveness of a business process. One of them that is felt today is e-commerce technology, which is a technology system where transactions and buying and selling services can be done virtually or online using electronics via the internet network, so that business processes become easier and cheaper with unlimited information and services. 24 hour transaction.

Several strategies that can be developed by technology business incubators in vocational education include: (1) access to technology expertise and facilities, (2) comprehensive business plans, (3) quality entrepreneurs, (4) stakeholder support, (5) incubator facilities, (6) capacity building programs, (7) availability of funds, (8) university policy support, (9) competent and motivated management, (10) financial sustainability, (11) networking, and (12) graduation and facilities after graduating from incubation program.

SWOT analysis is a step used and can increase competitiveness at the Faculty of Engineering UNM. If you are unable to compete in the market due to failure to analyze strengths and weaknesses as well as external threats and opportunities because you do not recognize the impact of SWOT Analysis on competitiveness. There is a need to identify environmental conditions through SWOT analysis to help improve the competitiveness of the Faculty of Engineering UNM because some leaders who underestimate the contribution of SWOT analysis in their operations tend to be left behind [6].

Table 1. Technology Business Incubator Swot Analysis

	Strength (S)	Weakness (W)
Internal factors	1. The concept of a technology business incubator is more effective than other mentoring concepts in terms of entrepreneurship 2. The possibility of cooperation between elements of academia, companies, and the government in the downstreaming of invention results to the industrial world/community 3. Many Innovations in Study Programs at the Faculty of Engineering 4. FT UNM human resources who are qualified in various fields of technology	1. Unavailability of infrastructure and technology business incubator management 3. Students are not familiar with the Technology Business Incubator, so Business Mentality still needs to grow 4. The network is still lacking
	Opportunity (O)	**Threat (T)**
External factor	1. Faculty leadership awareness of the importance of mentoring through technology business incubators 2. The average Alumni do entrepreneurship after graduation 3. The number of MSMEs in the community is increasing 4. Technology Business Incubator Grant which is budgeted annually by the government in this case DRPM Dikti 5. Application of the Model in accordance with the needs of FT UNM	1. There is no legal umbrella at the University 2. Stakeholder and partner support is still weak 3. There have been many Technology Business Incubators established by other universities with various innovations

Based on the SWOT analysis above, there are several opportunities and challenges faced by the Faculty of Engineering UNM in developing a Technology business incubator. The problem faced by Vocational Education FT UNM to apply the Technological Business Incubator at this time is that there is no understanding of the Business Incubator. Therefore, to develop a Technology Business Incubator model, especially for Vocational education, it is necessary to have a mechanism for the growth and development of an ideal Business Incubator. The Technology Business Incubator is a place for business incubation that is expected to be able to grow the existing business of the Faculty of Engineering, in the form of facilities and preparation of business units that lead as profit centers. The incubation in question includes the following activities: (1) selection of research results and technological innovations that are commercially viable; (2) socialization of research and innovation results to industry or those in need; and (3) initiation and access to the marketing network for products originating from each study program within the scope of the Faculty of Engineering.

Based on the results of observations, obtained obstacles in the development of business incubators at the Faculty of Engineering UNM. These constraints include: 1. Net work constraints, this network is a network between internal resources and external resources of the Faculty of Engineering. Internal resources are students, the academic community, and campus organizations. External resources are SMEs, banking, strong entrepreneurs and alumni. It is important to strengthen the network between incubators to share knowledge on best practices, and be supported by the government to gain competitive and comparative advantages. Incubator resources, with commitment, mentoring competence, and various intangible factors will be as important as the completeness of incubator facilities and infrastructure [7] [8]; 2. Marketing Constraints, Marketing in the business incubator at the Faculty of Engineering is still a significant obstacle. In terms of marketing, a business incubator can be compared to a company. Marketing can be interpreted as a company activity that is very basic in nature, so it cannot be considered as a function in itself. Marketing is a way of looking at the whole company from the end result, that is, from the customer's point of view. The success of a business is not determined by its customers. From this statement, the following conclusions can be drawn. a). First, that marketing is an inseparable part of the business world of a company; b). Second, that marketing must be aware of its existence and function by every party in the company; c). Third, that marketing involves parties within the company; d). Fourth, marketing emphasizes on customers determining the continuity and existence of the company. 3. Bureaucratic Obstacles In general, the bureaucracy in Indonesia still does not have a good role. Bureaucracy remains one of the biggest problems facing Asia, although considerable reforms have taken place in the countries worst hit by the 1998 financial crisis. 4. Entrepreneurial Mental Constraints Not all students have the required personal qualities. - need to be a successful entrepreneur. The following (Fig.1) is the result of a survey on the implementation of the Technology business Incubator involving students majoring in Electronic engineering, Electrical engineering, computer engineering, Vocational Mechatronics, and Informatics Engineering.

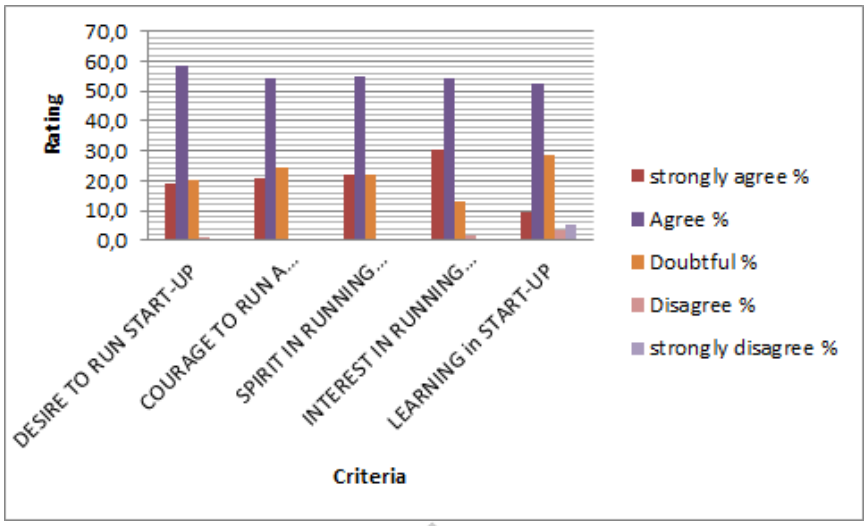

Fig.1 Overview of FT UNM Students' Attitudes towards the Implementation of Start Up

From the data obtained the average that the desire to run start-up aspect obtained an assessment of 19.1% very wanted, 58.7% wanted, 20.4% was hesitant, 1.3% did not want, and really did not want by 0.4%. Aspects of courage to run a start-up business obtained an assessment of 20.7% very brave, 54.1% brave, 24.4% doubtful, 0.7%. Furthermore, the spirit in running start-up aspect obtained an assessment of 22.2% very enthusiastic, 55.0% enthusiastic, 22.2% doubtful, and 0.6 0% less enthusiastic. The interest in running start-up aspect obtained an assessment of 30.6% very interested, 54.4% interested, 13.3% doubtful, and 1.7% less interested. Furthermore, the learning in start-up aspect obtained an assessment of 9.4% very successful, 52.8% successful, 28.9% doing nothing, 3.3% less successful, and 5.6% unsuccessful.

The survey conducted shows that personal quality is closely related to successful entrepreneurship. The characteristics or nature of entrepreneurship are as follows

Tabel 2. Characteristic Of Successful Entrepreneurship

NO	CHARACTERISTIC FEATURES	PROPERTIES
1	Confidence	Confidence, independence, individualism, optimism
2	Task and result oriented	The need for profit-oriented achievement, perseverance and fortitude, determination to work hard, have a strong drive, energetic and initiative
3	Risk taking	bility to risk, likes challenges
	Leadership	• Behave as a leader • Can get along with other people • Respond to suggestions and criticism
4	Originality	• Innovative and creative • Flexible • All-round • Know many things (universal)
5	Future Oriented	Broad view to the future

The table above (Table 2) includes the qualities one should have and develop if one becomes an entrepreneur. The more traits you have, the greater the chance of becoming a successful entrepreneur. It's hard to find entrepreneurs who score high on all of these traits, but it's possible to find entrepreneurs who score high on the self-confidence trait. Ability to take risks, flexibility, desire to achieve something and desire not to depend on others. The last one is 5. Legal Constraints. The legality aspect of a technology business incubator greatly determines the performance of a business incubator. This aspect is highly dependent on the status of UNM as a university. The legality of a business incubator institution must be clear, both at the university status level and in relation to local government organizations. This legality in addition to providing clarity on the status and role of the business incubator in UNM, it will also relate to the sustainability of the incubator. [9]. The legal aspect is one of the keywords for business incubators in overcoming various obstacles berbagai.

Application of the Creative Industry Incubator Model at the Faculty of Engineering UNM

One of the studies in the SWOT analysis is the opportunity to apply a technology business incubator model that can be applied and in accordance with the needs of the engineering faculty, for that the Creative Industry Incubator Model is used. Innovation and creativity are very important words in technopreneurship, especially in the world of education, research to create something new that is useful for society is very significant. The Faculty of Engineering realizes how much research has been carried out by lecturers and

students so that it requires a forum so that the results of the research carried out can have a selling value, can be promoted more for financial benefits, and the lack of access for lecturers to technology-based facilities [10].

Faculty of Engineering UNM as one of the drivers of vocational education. The creative industry sector is one of the concerns to encourage growth, because it is able to encourage creativity and economic growth. The Faculty of Engineering, when viewed from the opportunity to develop by establishing an incubator for Creative Industries/ICT, there are 14 sectors that can be developed and facilitated as follows:

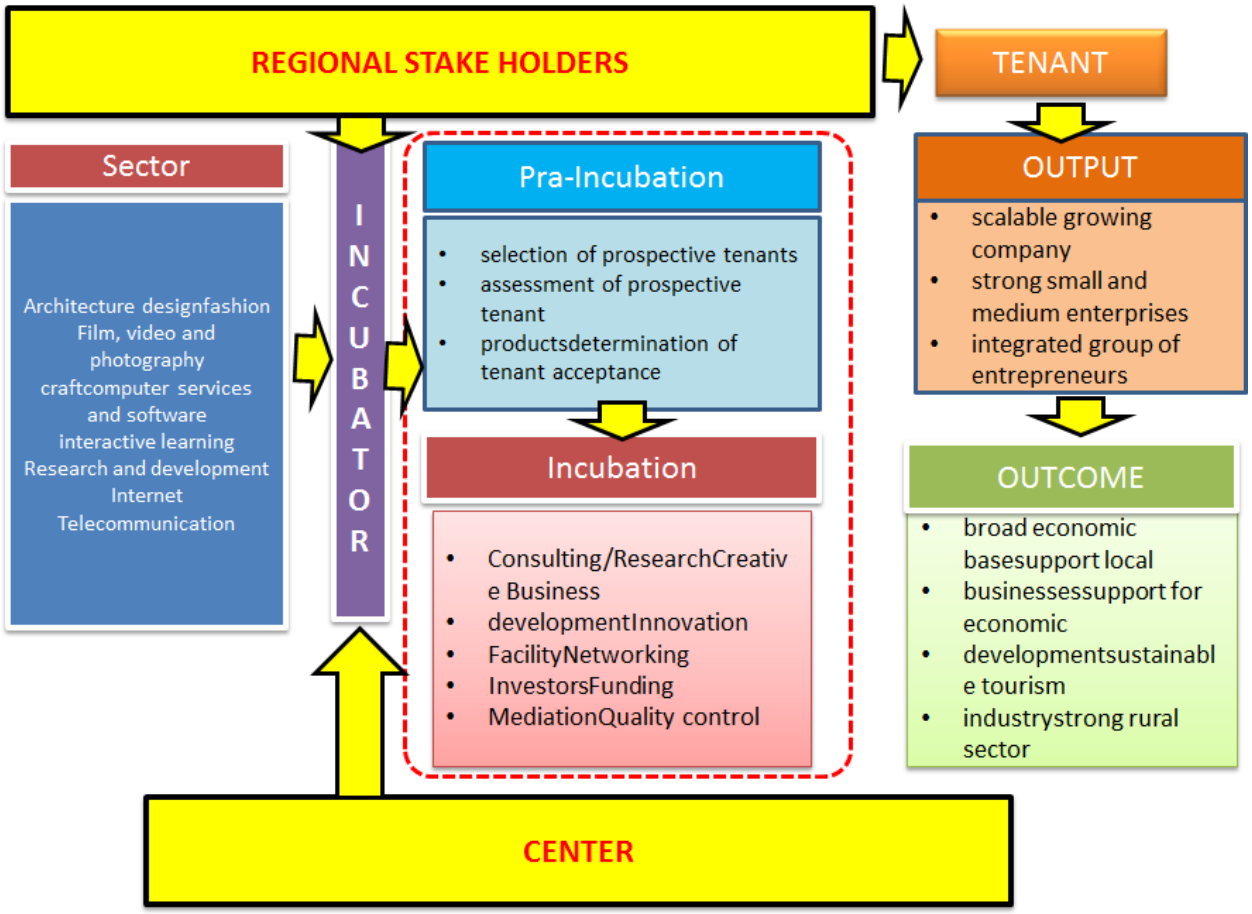

Fig 2. Creative Industry Incubator Model (Potential sectors that can be developed and facilitated) [11]

Higher education support, in this case the Central UNM, is needed, especially in supporting infrastructure such as equipment, including expert support. FT UNM can develop an incubator by selecting several sectors according to the support of human resources, infrastructure and supporting networks that are owned and controlled. Furthermore, the incubator can foster and develop tenants through the incubation process starting from pre-incubation, incubation and post-incubation with emphasis as the flow above. The desired output is to make tenants a new business/company that is innovative and ethical and strong and forms an integrated business group. Furthermore, it can become a strong economic base, support local businesses and tourism and be able to encourage economic growth in the rural sector. In addition, the opportunity for the establishment of a technology incubator business is through entrepreneurial practices carried out by FT UNM students through the Entrepreneurial Student Program, PKM-Entrepreneurship, PKM-Service, Lecture Tasks, and entrepreneurial learning (Information Technology-based Start UP Business).

IV. CONCLUSION

The Faculty of Engineering UNM has the carrying capacity of human resources, technology, services and others so that it has a high opportunity to build a business incubator through the Creative Industry Incubator Model by utilizing various sectors in the study program. This incubator is not only to develop entrepreneurship within the FT UNM internally, but can also be a bridge for the growth of the business community around the FT UNM and the business world at large. The assisted villages can be utilized in a balanced way for the development of science and technology and economic development.

The implication of the results of the study is that the establishment of a technology-based incubator at the Faculty of Engineering is beneficial in realizing a supportive learning process increasing the competence and competitiveness of graduates to become technopreneurship actors. Thus, graduates are expected to become young and educated technopreneurs who will act as one of the drivers of the economy through the creation of new jobs.

Based on the results of a survey on the implementation of the Technology business incubator involving students majoring in Electronic engineering, Electrical engineering, computer engineering, Vocational Mechatronics, and Informatics Engineering. It was found that the desire, courage, interest, perseverance in learning Start-Up learning obtained an average rating of Good.

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