IMPLEMENTATION MODEL OF “TECHNOLOGY & KNOWLEDGE TRANSFER FOR ENTREPRENEURSHIP” BASED SCIENCE AND TECHNOLOGY FOR ENTREPRENEURSHIP OF PRIVATE HIGHER EDUCATION

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ABSTRACT

Science and Technology for Entrepreneurship (IbK- Iptek bagi Kewirausahaan) program is a program conducted to grow and develop entrepreneurship motivation of students, guide students to be creative, create new entrepreneur from students and alumnus circle, guide students to build business enterprise, and create networking between fund contributor of Corporate Social Responsibility (CSR) with Science and Technology for Entrepreneurship (IbK)-Private Higher Education. Implementation method to this Science and Technology for Entrepreneurship (IbK) program performed in many steps: preparation and socialization step, recruitment and selection step, training and coaching step, and implementation step towards Science and Technology for Entrepreneurship (IbK) program. The result of implementation towards Science and Technology for Entrepreneurship (IbK) program as follows: (1) Business and Technology Incubator (INKUBITEK) activity of business enterprise is Business and Technology Incubator for members of Science and Technology for Entrepreneurship (IbK) program in order to build the establishment of business enterprise. In this method, it focuses on establishing business enterprise owned by member of Science and Technology for Entrepreneurship (IbK) program; (2) Business and Technology Incubator (INKUBITEK) of business development is entrepreneur coaching for member of Science and Technology for Entrepreneurship (IbK) program-Private Higher Education. In this method, it focuses on marketing, networking, and capital development as well as technology improvement to the member of Science and Technology for Entrepreneurship (IbK) program-Private Higher Education; and (3) Business and Technology Incubator (INKUBITEK) of business growth is incubation to the member of Science and Technology for Entrepreneurship (IbK) program-Private Higher Education (students in the post program of Entrepreneurship Student Creativity Program [PKM-K] and Entrepreneur Student Program [PMW]). Activities of Science and Technology for Entrepreneurship (IbK) program-Private Higher Education results...
in many activities support the realization of new entrepreneurs come from Higher Education level as follow: (a) Institution of Science and Technology for Entrepreneurship (IbK) program; (b) promotion and exhibition activities where students of Private Higher Education and exhibition visitors will be able to know about Science and Technology for Entrepreneurship (IbK) program in Private Higher Education; and (c) Training activity, business meeting, and entrepreneurship apprentice. The established business unit of Science and Technology for Entrepreneurship (IbK) program is Business Unit from tenants.

Keywords: Entrepreneurship, New Entrepreneur, Higher Education Role

INTRODUCTION

One of important role from higher education, today, is how to develop entrepreneurship culture. Private higher education has responsibility to contribute in improving entrepreneurship quantity and quality through student recruitment in order to develop new entrepreneurs comes from higher education circle. Entrepreneurship values inculcated to students and alumnus which realized in Three Principles of Higher Education (Tri-Dharma Perguruan Tinggi) consist of education, research, and contribution to society. Private higher education has large potential sources to create entrepreneurship. Besides that, Private higher education has facilities to support entrepreneurship program such as Business and Technology Incubator (INKUBITEK), computer laboratory, shops, and so forth in order to implement entrepreneurship spirit. Science and Technology for Entrepreneurship (IbK) program is one activity which conducted by entrepreneurship development center of business incubator aims to improve entrepreneurship motivation of students and alumnus, develop skills and ability of students and alumnus in order to understand and master about management, business strategy, and business environment management, as well as to conduct mentoring or coaching about how to start business. Implementation method of Science and Technology for Entrepreneurship (IbK) program performed in many steps: preparation and socialization step, recruitment and selection step, training and coaching step, as well as implementation step towards Science and Technology for Entrepreneurship (IbK) program. Implementation step in this program is apprentice step conducted in 2 (two) locations, INKUBITEK and company partner. Entrepreneurship model of higher education presents in Figure 1.
Entrepreneurship development model above operationally conducted by using program name that more interesting for students and alumnus, which is “Education Entrepreneurship Program” where the program will be held annually. This entrepreneurship program expected to create partnership or cooperation with Business and Technology Incubator (INKUBITEK) as higher education institution that intentionally focused for various entrepreneurshi.

Figure 1. Entrepreneurship Model

THEORETICAL FRAMEWORK AND PROPOSITION

Theoretical Framework

Entrepreneurship, according to Sunarya, PO; Abas, et al., (2010) is science discipline learns about value and ability of one’s behavior in facing life challenges in order to get opportunity with many risks that may be faced. In the business context, according to Thomas, W; Zimmerer (1996) in Sunarya, PO; Abas, et al., stated that entrepreneurship is result from a discipline and systematic process towards the implementation of creativity and innovation in order to fulfill needs and opportunities in market. According to Eka Jati Bambang; Murdaka, et al., (2015), entrepreneurship is an effort to use chance or opportunity in order to achieve benefit of materials (money or valuable goods) or non materials (praise and popularity). Entrepreneurship actor called as entrepreneur and the activity is entrepreneurship. Then, they added that entrepreneur means stand on the own feet or stand on the own ability.

Entrepreneurship implementation, according to Siswo Wiranto in Department of National Education (2010), stated that implementation of entrepreneurship education program related to entrepreneurship as follows: (1)
entrepreneurship as subject in the secondary education level and as course in the higher education level; and (2) entrepreneurship as skill refers to the competence standard.

Altbach, et al., (2007) stated that the important key factor to the entrepreneurship development in Higher Education is reinforcement of leadership, integration of entrepreneurship culture, basic enlargement/capital sources, development enlargement to the marginal areas in higher education, and stimulation to the education as the heart of higher education. The other approach from Altbach and Knight in Journal of International Education, Vol. 11 No.3/4, Fali/Winter, 2007 stated that paradigm towards the change of higher education role includes many factors: (a) the change of higher education role due to globalization effect; (b) the scarcity of sources in order to respond to the change immediately; (c) science and technology development which accelerated rapidly; and (d) the development of entrepreneurship culture.

According to Laudon & Laudon (1998), E-Commerce is process of purchasing and selling products electronically by consumers and from company to company by using computer as business transaction medium.

E-Commerce, according to Kalakota and Whinston (1997), can be seen from 4 perspectives as follow: (1) from communication perspective, E-Commerce is goods, service, information, or payment delivery through computer network or through other electronic tools; (2) from business process perspective, E-Commerce is application of technology leads to the automatization of business transaction and work flow; (3) from service perspective, E-Commerce is an instrument meets company, consumer, and management desire in order to reduce service cost by improving goods quality and improving the speed of delivery service; and (4) from online perspective, Ecommerce provides ability to purchase and sell goods or information through internet and other online facilities.

Research Proposition

Proposition in this research as follows: (a) Hypothesis of Science and Technology for Entrepreneurship (IbK) program is motivation development to be entrepreneur for students; (b) there is a shift or change towards new paradigm to be new entrepreneur in student and alumnus circle through the guidance to students in order to create business enterprise, networking between fund contributor of CSR with Science and Technology for Entrepreneurship (IbK) program-Private Higher Education; and (c) the establishment of technology and knowledge transfer culture towards Science and Technology for Entrepreneurship (IbK) program in the higher education to grow and develop new entrepreneur through mechanism of preparation, socialization, recruitment, selection, training, coaching, and implementation of activity program in the private higher education.

Research Method

The research method was qualitative method, which was study literature, observation, and in-depth
interview to the related parties about Higher Education strategies. This research method used observation method in which the informant target came from private higher education circle accompanied with additional data through questionnaire distribution to students.

Data Collection Method

Data collection method in this research started from: (1) library research, which was relevant literature, documentation, and textbooks to this research; and (2) file research to the related parties and analysis to the strategy in order to achieve high qualified Higher Education. While, this data collection technique refers to the instrument with observation, interview, and Focus Group Discussion (FGD) technique. This technique implemented to the research respondents in order to study readiness and problems faced by private higher education, particularly related to the expected shift or change, which is improving entrepreneur growth from private higher education circle.

Data Collection Technique

Method that used in this step started from findings through the collected data and analyzed as well as made by its conclusion from the finding implication (Yin, 1989:138). Model in this step described by a framework including three analysis step series: (1) data reduction; (2) data display; and (3) conclusion drawing and verification. That model of interactive data analysis includes data collection, data reduction, data display, and conclusion (drawing/verifying). Data analysis process in this research as follows: (1) data reduction; (2) data display; (3) conclusion drawing; and (4) data analysis and discussion.

DATA ANALYSIS AND DISCUSSION

Keywords to support planning and implementation of Science and Technology for Entrepreneurship (IbK) program, in its realization of implementation, includes many science disciplines, synergy, has assessed target/output, clear and detail methodology, adjusted to the program vision and mission, and giving complete, meaningful, and sustainable solution to the problems of business partnership. Based on the keywords above, the steps of optimal program implementation should be conducted by college or university as follows:

Implementation Step: Entrepreneurship Capacity Building

The implementation of Science and Technology for Entrepreneurship (IbK) program is for getting
tenant as selected participant from students and alumnus. This Science and Technology for Entrepreneurship (IbK) program named by “Darmajaya Entrepreneurship”. Before the implementation of tenant recruitment, it is conducted by many preparations by coordinating with related parties such as coordination with Chief of Student Affairs Department in order to obtain data of proposers of Student Creativity Program / Entrepreneurship Student Creativity Program (PKM/PKM-K) in the last three years and other candidates recruited from each faculty through Student Creativity Program / Entrepreneurship Student Creativity Program (PKM/PKM-K). In addition, socialization to this Science and Technology for Entrepreneurship (IbK) program is socialization step to the related stakeholders, conducting meeting to the Student Affairs Department and Business Incubator related to the Science and Technology for Entrepreneurship (IbK) program. Socialization to this Science and Technology for Entrepreneurship (IbK) program performed to Rectorate Level (Rector and Vice Rectors), Deans, and Chief of Department, as well as students and alumnus about entrepreneurship program in private higher education. The next step is opening registration for students and alumnus to follow recruitment test as early step to take course of entrepreneur: (a) Completion and supply of instruments to the Science and Technology for Entrepreneurship (IbK) program activities; and (b) Tenant recruitment and selection.

Implementation Step: Lecturing of Entrepreneurship Capacity Building (Tecpreneurship)

In the first step, students given by provision of knowledge about: (1) basic concepts of entrepreneurship; (2) motivation and leadership, business principles and law; (3) opportunity and chance theory and business dynamic along local and global economic history; (4) marketing; and (5) business plan. In the second step, learning activity focuses on the efforts to improve understanding about business reality through case studies in the business world. Those cases related to operational, managerial, and business moral ethics aspect that become topic of discussion today. The learning emphasized on the effort to understand problems and alternative solutions contributed by entrepreneurs in order to participate in the business world, either in local, regional, national, or in global scale.

Training and Coaching Step

Training and coaching step to participants who passed the selection of interview and presentation conducted by giving training materials packaged as with the goal of Science and Technology for Entrepreneurship (IbK) program. While, informants in this research were experts and practitioners as well as involving partners of Science and Technology for Entrepreneurship (IbK) program with training materials contained about success stories in the business world.

Entrepreneurship Capacity
Education and Training to the Group of RM Putri Minang Wirasaha/Entrepreneurship Student program is targeted to students with the best score with 1st-20th ranking in entrepreneurship course and have been experienced in running business or already started a new business. They will be projected to follow education and training of entrepreneur capacity focuses on proposal arrangement of business plan which expected to be able in winning entrepreneurship grant program held by: (1) entrepreneurship program; and (2) government entrepreneurship student program or fund sources from other institutions.

**Entrepreneurship Apprentice**

Entrepreneurship apprentice provided for students with range of best scores in entrepreneurship course. Entrepreneurship apprentice from Science and Technology for Entrepreneurship (IbK) program followed by 5 students and alumnus related to printing digital field and related to business field of craft industries, restaurant, culinary, and online ticketing service.

**Entrepreneurship Incubator**

Entrepreneurship incubator is an entrepreneurship activity realized in Science and Technology for Entrepreneurship (IbK) program in order to accommodate entrepreneurship activities with profit oriented in private higher education as well as to be a place to develop students who still do not have appropriate entrepreneurship qualification to be new professional entrepreneurs who able to compete in business community independently. Business segment and entrepreneurship incubator including: (1) Internet cafe and hand phone pulse; (2) Photocopy and printing; (3) General commerce business; (4) Culinary business; (5) Electronic service; and (6) Education/learning guidance/skill course service about information and technology and international language, especially English.

**Long Term Stage Plan**

Long term plan of Science and Technology for Entrepreneurship (IbK) program as follows: (a) advance training; (b) apprentice program in the partner company; (c) mentoring in capital field; (d) step of following Expo nationally; (e) step of creating business incubator for higher education; and (f) step of monitoring and evaluation (monev)

**Business Establishment and Monitoring and Evaluation (Monev)**

Start-up Busines. Students of entrepreneurship program participant that already own appropriate
business plan substance can start their business activities (run their business) outside the higher education independently (out-wall business), under the supervision of implementer team of Science and Technology for Entrepreneurship (IbK) program. Business activities can be conducted individually or in group with maximum member of 3 people as with the implemented business field.

Unit Development Plan of Science and Technology for Entrepreneurship (IbK) program

The next plan of step is creating business incubator, which is unit of Science and Technology for Entrepreneurship (IbK) program. That unit will be accommodation/service unit for students and alumnus who already becomes new entrepreneur in order to consult and share their opinions about problems that they face. This unit also expected to be able in assisting to be or as media for students and institution of private higher education.

Findings from Data Analysis and Research Discussion

Science and Technology for Entrepreneurship (IbK) program is one grant program which held by the government in order to build entrepreneurship capacity in Higher Education and as anticipative response to the higher number of unemployment and low job opportunity. Higher Education that emphasized on knowledge and technology provision proven empirically to emerge ability of business penetration for higher education alumnus. Academic lecturing based Semester Credit System (SKS) has restricted students to ideal world in which it only will create ego and science and technology arrogance. Student tenant, which is new entrepreneurs, is running their business with category business field of student and alumnus tenant category of Science and Technology for Entrepreneurship (IbK) program which labeled as “start up business”. In order to improve their business, tenant of Science and Technology for Entrepreneurship (IbK) program implementation given by science and technology assistance to improve tenant commodity competitiveness. Ideal type of science and technology assistance is technology and knowledge transfer for entrepreneurship through technology which in line to be implemented towards tenant products such as: (1) Marketing technology; (2) Packaging technology; (3) Advertising technology; and (4) Funding or financing. Marketing, packaging, and advertising technology integrally given in entrepreneurship course and training and education of entrepreneurship. Marketing technology that transformed to Science and Technology for Entrepreneurship (IbK) students is direct selling strategy and ordering system. Student business condition before they became tenant of Science and Technology for Entrepreneurship (IbK) program had many obstacles in production due to less science and technology touch as well as in marketing due to less ability in market penetration. Entrepreneurship Student Creativity Program (PKMK) products, initially, only reach students in faculty in order to get guidance and supervision in the program in which it is expected to directly get science and technology creation touch either in production, packaging, or marketing. Harmonic technology of tenant products attempted to encourage
significant selling progress acceleration that previously affiliated in Science and Technology for Entrepreneurship (IbK) program. It is expected tenants that developed and supervised by Science and Technology for Entrepreneurship (IbK) program able to independently run the business. However, in order to maintain the independency, it needs structured guiding and monitoring from Science and Technology for Entrepreneurship (IbK) program to guarantee and conduct business progress in the future, thus it will be run sustainably.

Implementation Planning Model of Entrepreneurship Education Curriculum

Planning model of entrepreneurship education curriculum is unique characteristic for each higher education. Curriculum planning implemented in the entrepreneurship course period since early to the end semester. This curriculum concept directed to a life cycle. Through this curriculum concept, it is expected that activities in all units will be integrated both its knowledge and skills. Final target to this approach is to produce graduates who able to create work field or job opportunity, not only to be job seeker. Realization of the expected result is focus of private higher education to regulate policy in Student Affairs Department to require all students to have their own business. In order to reach the goal, then higher education creates schedule by arranging curriculum with character of one day entrepreneurship learning with the emphasizes on experience learning such as selling strategy where it can be one key of success in entrepreneurship. The model of entrepreneurship education system as presented below:
Figure 5.8. Development Model of Entrepreneurship Education Curriculum

Derivation model concept of curriculum design to be implemented in the research
Entrepreneurship Curriculum in Private Higher Education
Design of Quality Target Indicator in Entrepreneurship Field

Implication of Science and Technology for Entrepreneurship (I3K) program to the target in entrepreneurship field becomes standard basic to encourage entrepreneurship education activities in private higher education, thus the number of entrepreneur will be increase. Group of Student Affairs Department becomes target of student competence to be entrepreneur from higher education in which it needs advance education for higher education management. The result of this research was indicator formulation as standard reference of higher education competitiveness. Findings as result in the research of Student Affairs field needs standardization through components of entrepreneurship education as well as can be implemented and monitored in the end of semester by referring to competitiveness target indicator.

The Result of Achievement Based Target Field Indicator

From the report of quality assessment in private higher education before and after the implementation of quality policy such mentioned in the recapitulation of student and alumnus quality indicator achievement towards ideal and general target field, it can be seen that there is an improvement of quality target achievement from the result of policy implementation. The following is target indicators present that students is group of effective quality target to be conducted in private higher education in order to encourage the increase of new entrepreneur:

<table>
<thead>
<tr>
<th>No</th>
<th>Quality Target Indicator</th>
<th>Baseline</th>
<th>Mid-Point</th>
<th>End-Point</th>
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<tbody>
<tr>
<td>1</td>
<td>Percentage of graduates creating jobs (entrepreneurs); Average of Graduates length of study (months);</td>
<td>5%</td>
<td>10%</td>
<td>15%</td>
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<td></td>
<td></td>
<td>52.45</td>
<td>48.00</td>
<td>55%</td>
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<td>2</td>
<td>Average of Graduates first job salary (x IDR.1.000);</td>
<td>$400.00</td>
<td>$500.00</td>
<td>$50.00</td>
</tr>
<tr>
<td>3</td>
<td>Development</td>
<td>NA</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Training facilities to improve student and alumnus creativity in using Information and Communication Technology with the supports or based IT, which is Information and Communication Technology of private higher education</td>
<td></td>
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<tr>
<td>4</td>
<td>Model Establishment</td>
<td>NA</td>
<td>10</td>
<td>15</td>
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<td></td>
<td>The establishment of career development and placement center</td>
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Creating System
Creating intensive system for research (lecturers and students) based competence in entrepreneurship field of private higher education

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<tbody>
<tr>
<td>6</td>
<td>Creating System</td>
<td>NA</td>
</tr>
</tbody>
</table>

**Source: Processed Data**

In order to improve quality, Student Affairs Department of higher education demanded to have high commitment to recruitment process of target group as follows: (a) entrepreneur candidate selection from new student conducted through the stages of Academic Potential Test (TPA) and interview selection. For TPA selection, it includes Indonesian language, English, general science, and basic science about the selected study by using test system based computer conducted online; (b) interview selection conducted between student and selection team (one to one); (c) success or fail determined by score from both selections; and (d) Entrepreneurship Aptitude Test. While, other quality target is target to the graduates. Graduate’s score and satisfaction become important indicator. Therefore, this graduate’s score and satisfaction recorded in tracer study which necessary to be conducted by higher education. In addition, alumnus given by questionnaire. Questionnaire result will be academic evaluation material of implementation process of “Three Principles of Higher Education”. Although, it should be admitted that alumnus tracking still has difficulties due to it is not appropriately programmed despite less response from many utilized instruments.

**CONCLUSION, IMPLICATION, SUGGESTIONS, AND LIMITATIONS**

**Conclusion**

This activity is quite giving motivation to students who start to run their business in order to improve business management, develop business, and increase business turnover. Activities in Science and Technology for Entrepreneurship (IbK) program gives advantage for students in encouraging the development of new entrepreneurs from academic circle.

After conducted by evaluation to the implementation of Science and Technology for Entrepreneurship (IbK) program towards student and alumnus tenant, it showed that supervising and guidance model are really necessary either in financial, marketing, production, promotion, human resource, and business legality aspect.

The students and alumnus of Private Higher Education found that Science and Technology for Entrepreneurship (IbK) program called “Darmajaya Entrepreneurship” Program is quite interesting. It can be seen from student participation in the program. Thus, it can be concluded that: The program activities provide positive motivation for students and alumni who early develop their business to improve good governance, develop creative effort, and increase their business turnover. Program activities provide many benefits for students and alumnus such as to encourage the development of new entrepreneur from
Implication

Subject/course, either in secondary or higher education level is different. However, in essence, it has the same meaning, which is in Vocational High School (SMK), entrepreneurship commonly called as “production unit”. The same meaning in this area implied to the entrepreneurship model in the higher education level which called as “Business Incubator” as the realization of business incubator development that can be made as model, which is business incubator of university, particularly private higher education.

Suggestions

In order to maintain sustainability of Science and Technology for Entrepreneurship (IkK) program, it is necessary to conduct supervising activities continually, thus tenant business will be more developed. It needs reinforcement of cooperation or partnership networking between business incubator entrepreneurship development center of private higher education and tenant. With the result of this Science and Technology for Entrepreneurship (IkK) program, it represents expectations from the government or other Departments as well as banking institutions that always support any types of activity, thus the new entrepreneur always grows in higher number.

Totally, Science and Technology for Entrepreneurship (IkK) program is program to grow and develop entrepreneurship motivation of students, guide creative students, create new entrepreneurs from student and alumnus circle. This condition can be made as model when the chief of Department wants to realize professional performance of higher education managers in determining the appropriate model about entrepreneurship education, entrepreneur recruitment from academic circle, and work motivation of human resource.

Mentoring activities need to be conducted continuously so that the program participants continue to grow. In addition, there is a need to broaden the business cooperation network, between Business and Technology Incubator (INKUBITEK) of Private Higher Education with external parties such as financial institutions, department of trade and industry, and business partners.

Limitations

Limitation to the most recent research relevance today is entrepreneurship gap, while part of study literature still not functioned to build knowledge about entrepreneurship education field. While, trick of contribution towards higher education, business world, and community in general that try and develop the efforts related to the problems faced by community in general, higher education, and
entrepreneurs generally is still not optimum.

REFERENCES