

Technopark: A Strategy to Build Partnership in Educational Institutions and Industrial Using Concept of Collaborative Knowledge Creation

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Abstract. Purpose of the study: the premise of this paper was to analyze the implementation of the policy of the Minister of Education and Culture regarding independent learning in an independent campus. Referring to the Politeknik Negeri Jakarta, and BIRN strategic plans regarding the direction of research, it is necessary to research innovations that have economic value through collaborative knowledge creation as a strategy in increasing organizational competitiveness, innovation, and the formation of Technoparks. **The problem** in this research is the partnership strategy carried out by educational institutions and industry using the concept of collaborative knowledge creation? This research was conducted at Bandung Techno Park and Jakarta State Polytechnic. **The research method** used soft system methodology approach with collection of data used interviews, observations, study literature, and documentation. The organizations involved are Bandung Techno Park. **Main findings:** Bandung Techno Park is a business-oriented organization, building networks and partnerships with industry, companies, and educational institutions. PNJ has built partnerships with companies, institutions and the concept of collaborative knowledge creation has been implemented to improve organizational competitiveness

Index Terms: Technopark, collaborative knowledge creation, SSM

I. INTRODUCTION

The speed of information technology has provided opportunities and threats to the strategy and pattern of Polytechnic education in responding to the needs of graduates in the business and industrial world. One of the speedy changes in the development of digital technology based on IoT and impacts the performance capabilities of human resources in the company. Changes and developments in IoT provide automation opportunities for work that industry must respond quickly. One of the impacts of changes in information technology in the implementation of education at Polytechnics is how the learning process provided can answer the challenges and needs of the industry so that the graduates produced are competent and professional, also capable of entrepreneurship and creating jobs. Techno Park, which has become the government flagship program, both central and local governments, is projected to bridge education, industry, companies, and the community to create mutually beneficial collaborations and synergies. The purpose of this study is to analyze the synergies and collaborations of higher education and industry, whether they provide mutual benefits and have an impact on the existence of business patterns that can be adopted by higher education.

II. LITERATURE STUDY

The changing technology in disruption era, making collaboration and building relationships between universities, government and industry are now changing; the problem has exerted enormous resource burdens on universities to seek connections with firms to remain at the leading edge in all subject areas [1]. Based on research before that mounting societal pressure on universities as engines for economic growth, and more minor less as fulfilling the broader social such as educational systems and how knowledge become general for they have had in the past [2, 3]. These pressures on both parties have led to an increasing stimulus for developing UICs that aim to enhance innovation and economic competitiveness at institutional levels. Referring to the International Society of Science Park and Technopark [4] the concept that must know has the following characteristics, namely: (a) created to initiate a business based on knowledge and technology, (b) the existence of operational activities between universities and universities or other educational institutions, (c) the establishment of a management structure involved in technology transfer and the creation of conditions for entrepreneurs in running and streamlining their business activities, and (d) the existence of large companies or start-ups as commercial actors in responding to customer needs.

Research on university and industry collaboration (UIC) has been carried out for a long time, the results show that cooperation between education and industry has involved

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increasing knowledge and technology [5]. The impact of university-industry collaboration is the pressure that appears not only on the industry but also on faster technological changes, shorter product cycles, and radically changing competition that arises from the external environment. As for higher education (universities), collaboration with industry has impacted the formation of innovation and synergy of knowledge and skills taught to students to meet industry needs [6, 7]. Collaboration and the role of universities and research and development institutions have resulted in innovative products ready to be commercialized because they have a high technology readiness level and impact the economy. Innovative products produced and developed can be carried out by universities, R&D, communities, and companies so that the business incubation process occurs and results in the commercialization of innovative products that have a high selling value in the community [8]. The CKC concept refers to a situation where two or more people come and work together to create new information and knowledge to be used for innovation and knowledge development in organization. Refers to [9] described in collaborative knowledge creation (CKC) there are four stages implemented in learning organization, such as: (a) externalizing and sharing, (b) interpreting and analyzing, (c) negotiating and revising, and (d) combining and creating. According to [10] in collaboration between universities and industry and companies have three basic schemes, such as: (1) companies request and hire the services of academics from universities to conduct research, (2) research results conducted by academics will provide added value to the company operations in developing its products, and (3) companies and universities jointly have ideas or concepts and become embryos in the form of offerings of ordered products collaboration between higher education and companies and industry is a complementary phenomenon and shown by the emergence of innovation in knowledge and technology used by both parties.

III. RESEARCH APPROACH

In this research, the system approach used system methodology refer to [11] and data collection techniques use interviews with Head of Bandung Techno Park, observations, literature studies, and documentation. The organizations involved are Bandung Techno Park dan Politeknik Negeri Jakarta. The study has conducted the implementation of Technopark as a form of collaboration and synergy between universities and industry to produce products and services that are mutually beneficial to both parties. Triangulation is carried out by checking the validity of the PNJ collaboration process with the industry through the CATWOE concept (whose the customers, whose the actors, how of process transformation, how implication of weltanschauung, whose the owner, and how environmental constraints come up) so that the results can be measured, accepted, and trusted for validity.

Techniques in SSM are carried out in the first to fifth stages, the sixth stage in SSM is the result of the analysis of the discussion of this research, and the seventh stage which is the last stage in SSM (soft system methodology) as the implementation stage of how the collaborative knowledge creation concept (CKC). The seventh stage can be fully implemented if the polytechnic organization has actually adopted the concept of an independent campus in its entirety in the learning system. The results of this research analyzed used (1) considered problematic, (2) problem situation expressed, (3) root definition of relevant purposeful activity systems, (4) conceptual models of the systems (holons) named in the root definition, (5) comparison of models and the real world, (6) changes systematically desirable culturally feasible, and (7) action to improve the problem.

IV. DISCUSS AND ANALYSIS

The Indonesian government has encouraged the establishment of science and Technopark (STP) as one of the flagship programs that involve partnerships and collaborations between five elements, namely: government, institutions, companies/industry, communities, and associations developed by the current government [12, 13]. The synergy and collaboration will be realized in organizations that adhere to the concept of a learning organization where all members of the organization are given the opportunity to develop and empower themselves through sources of knowledge. One of the activities carried out by Tekno Park is the form of cooperation and collaboration between business partners, the government, institutions, and the community in developing the business sector to increase business income. For institutions, Techno Park is a bridge for the realization of business incubation for start-ups from universities (Polytechnics) in implementing the theory obtained on campus with the real world in business. Theories and practical experiences that practitioners share with students have made the business incubation program successful in producing new aspiring entrepreneurs today and in the future [9, 14, 15, 16, 17]. The results of this study indicate that understanding collaboration and synergies that are beneficial between parties will determine the quality of business (companies and industry) and increase knowledge that is of high value for educational institutions and R&D.

The results of research on the collaboration of Technoparks and universities can refer to the soft system methodology (SSM) which is explained as follows:

Step 1: Problem situation considered problematic

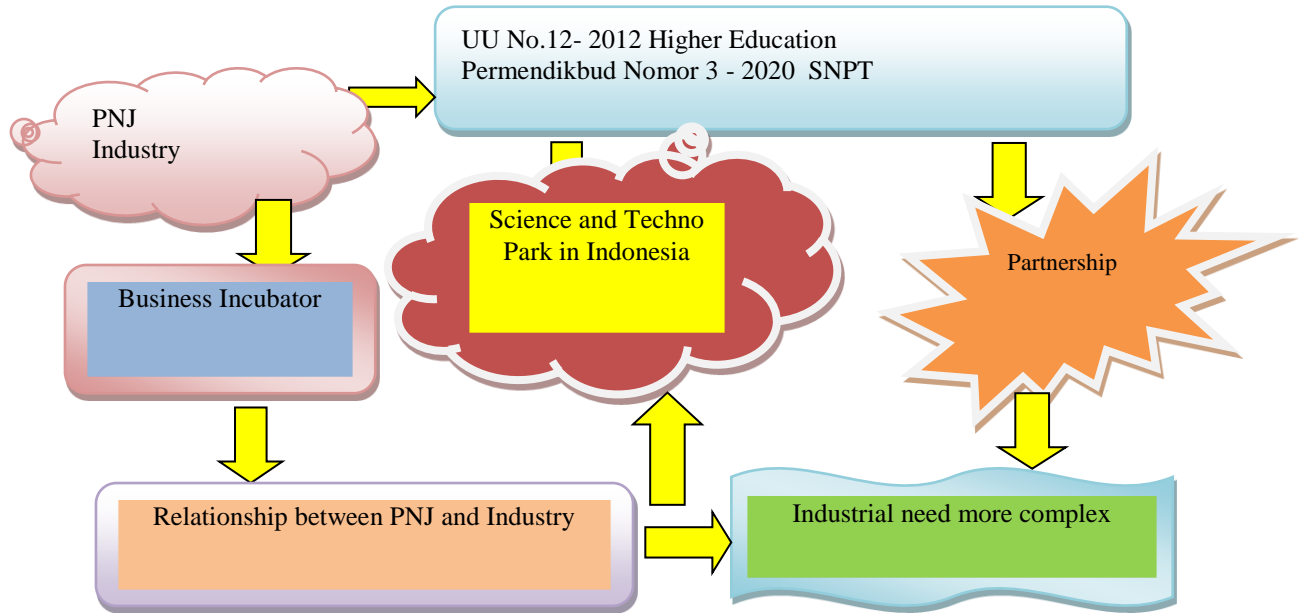
It is at this stage that the process of applying real-world situations that are considered problematic where policy and decision-makers at the Jakarta State Polytechnic take action to change the technopark concept, which is implemented in the form of cooperation with industry through business incubation and the existence of products and services offered by institutions to companies as a result of lecturer research.

Step 2: Problem situation expressed

In this second step, it explains the problem situation that is considered problematic in a certain form of presentation and is realized with a rich picture. The rich

picture describes analysis one, analysis two, and analysis three [11] on industrial collaboration with higher education.

Figure-1. Rich Picture Industry Collaboration with Universities



Resource: primary data, 2021

Step 3: Root Definition

Table 2 Root Definition (RD) for Industrial Relationship

ROOT DEFINITION	PROCES	SYSTEM
RD	The policy formulation process is in the form of establishing collaborative collaboration between polytechnics with industry and companies in realizing collaborative knowledge creation (CKC) as a manifestation of the existence of Techno Park.	In this system owned and operated by Bandung Techno Park and Politeknik Negeri Jakarta (P) through improved interaction and communication at the externalizing and sharing in the organizations (Q) to make collaborative knowledge creation can be implemented as a policy formulation process of Bandung Techno Park and Politeknik Negeri Jakarta.

Source: primary data, 2021

Referring to the root definition above, it can be explained that the Polytechnic is in an effort to answer the needs and changes in today's increasingly fast industrial world. The following is an explanation of CATWOE and 3E

[11]), which are relevant to the problem of collaboration of institutional knowledge in increasing organizational competitiveness in Polytechnics can be seen in the following table:

Steps 4: Conceptual Models

CONCEPTS	ACTIVITIES
Customers	Director, Assistant to Director for Academic Affairs, Assistant to Director of Cooperation and Industrial Relations
Actors	Director, Assistant to Director for Academic Affairs, Assistant to Director of Cooperation and Industrial Relations
Transformasi	Business start up in Bandung Techno Park and Politeknik Negeri Jakarta overcoming the challenges of building entrepreneurship
Weltanschauung	Building strategy for strengthening the dynamic capabilities of start up of business

Owner	Board of Director Bandung Techno Park (BTP) and Directors of Cooperation and Industrial Relations of Politeknik Negeri Jakarta (PNJ)
Environment	Limited time and budget in developing business incubation as a form of implementation of Techno Park
E-Efikasi	Collaborative knowledge used externalizing and sharing to overcome the challenges of information asymmetry in BTP and PNJ for cooperation networks
E-Efisiensi	Optimizing available resources and equipment in the development of cooperation with industry/companies
E-Efektif	The realization of the Techno Park concept as an effort to establish institutional collaboration with external Polytechnic parties.

Source of data: primary data, 2021

Steps 5 (Comparison of models and the real)

Referring to one of the goals of the establishment of Tekno Park, the creation of synergy and collaboration between the government, industry, and institutions, the role of the Politeknik Negeri Jakarta and Bandung Techno Park has responded and implemented the goal of Tekno Park with business incubation starting with the collaboration of SMEs, entrepreneurs, the government to engage in student activities oriented towards business and entrepreneurship. These results same with opinions from research before [8, 16].

Steps 6 (Changes systematically desirable culturally feasible):

There has been a change in mindset for the pattern of education in Politeknik Negeri Jakarta, such as graduates who are ready to work and have an entrepreneurial spirit.

Step (7) action to improve the problem not running yet, and can be implementing on the next research.

V. CONCLUSION

Science and Teknopark are one of the government programs in developing science and Techno Park, which aims to build collaboration between government, industry, companies, communities, and educational institutions. The concept of science and Techno Park where business incubation was born has been adopted by Politeknik Negeri Jakarta by providing management, organization, and business-based courses as well as entrepreneurship to students, creating a learning climate based on problem-based learning, student and lecturer internships in industry, lecturer research and industry involving students.

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