

Strategy for Strengthening Science Techno Park (Case Study: Solo, Sragen and South Sumatra Techno Park)

Fajrin Nurul Haq^{1*}, Siti Widharetno Mursalim²

¹Lecturer at Universitas Muhammadiyah Bandung

Email: fajrinhaq13@gmail.com

²Lecturer at Politeknik STIA LAN Bandung

Email: sitiwidharetno.mursalim@gmail.com

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ABSTRACT

Currently, various kinds of research and technology results are produced in Indonesia, but the problem is how far the results of research and technology can be adopted by the industry. In fact, with the increase in research output and technology produced, it is not proportional to the increase in the number adopted by the industry. Therefore, it is necessary to strengthen the Science Techno Park as an integrated area in developing research and technology results. The research approach used is qualitative with the aim of being able to examine strategies in strengthening the Science Techno Park. From the results of the research, it is known that the concept of BLUD and collaboration can be a strategy that is applied in Solo, Sragen and South Sumatra Techno Park.

Keyword: Strategy, Science Techno Park

INTRODUCTION

One of the economic progress of a country is influenced by the mastery of technology. Indonesia, as a country that has good economic performance, it turns out that the contribution of technology to economic growth is still small (Soenarso, 2011). There are several challenges including limited investment in the downstream sector and the unpreparedness of national technology to develop the downstream industry (Surapranata, 2019).

Basically, the problems faced by Indonesia are based on the low results of research and technology adopted by the industry. This is caused by a mismatch between needs and the technology developed so that many cannot be adopted by the community (Sujarwo, 2012). Bridging these problems, the government, in the 6th (sixth) Nawa Cita, built a number of national-scale science and techno parks, polytechnics and vocational schools with the latest infrastructure and facilities and technology (International Association of Science Parks, 2015).

The development of STP in Indonesia is regulated in Law no. 18 of 2002 concerning the National System for Research, Development, and Application of Science and Technology. Followed by Law no. 106 of 2017 concerning KST. This law encourages parties including the government to develop areas as facilities and infrastructure for the development and transfer of science and technology (Wibowo, 2017).

The development of STP seeks to integrate research and technology results to be adopted by industry and can be used by the community. The strengthening of STP is also motivated by the Global Innovation Index (GII) score in 2021 which is 27.1 (ranked 87 out of 126 countries) which has decreased by two levels from the previous two years (Rosa, 2022).

STP is an area designated for research and development of science and technology that is managed professionally through the creation and improvement of an ecosystem that supports innovation to increase the competitiveness of industries/institutions under its auspices as well as to encourage sustainable economic growth. The main feature of STP is the transfer of technology and the commercialization of innovative products (Sari & Retnaningsih, 2020). The purpose of STP is to manage the flow of knowledge and technology in universities, R&D institutions and industries in their environment, facilitating the creation and growth of innovation-based companies through business incubation, spin-offs, provision of space and other supporting facilities (Soenarso et al., 2013).

The construction of STPs which is quite massive in Indonesia, including the construction of STPs managed by local governments, should not just stop and become a trend for every region to have STPs, but it is necessary to strengthen the quality, especially in the STPs of local governments that have been formed. So far, there are 10 (ten) STPs managed by local governments, including 5 (five) STPs that I will compare, namely Cimahi Techno Park, Solo Techno Park, Sragen Techno Park, STP South Sumatra and Riau STP. On average, they are still looking for a form for the STP management and development process. What is the right institutional pattern for local government STP so that it can accelerate technological innovation through networks between educational institutions, industry and communities. Even STP can create new jobs and potential national tax revenues (Seo, 2006). Therefore, it is necessary to formulate a strategy for developing STP, especially STP managed by local governments.

METHOD

The study of Science Techno Park (STP) uses a qualitative approach because it will reveal STP development strategies managed by local governments in Indonesia. Through this research, it is expected to obtain relevant data and information. As for data collection, the author uses secondary data that examines various kinds of documents related to STP. The secondary data collected is interpreted so that meaningful (qualitative) data emerges including documents on Laws, Presidential Regulations, Regional Regulations and Regents / Mayors Regulations, other important texts as a reference to describe the comparison of STP local government development strategies.

RESULTS AND DISCUSSION

At the beginning of its establishment, Solo Techno Park was structurally part of the Technical Implementation Unit (UPT) of Bappeda Solo due to many R&D activities but in 2010 changed its status to Regional Public Service Agency (BLUD). Changes were made because the UPT's scope was less broad and its management inflexible, so the BLUD pattern was considered more flexible.

In the development of Solo Tekno Park as a part of the Solo City Government, there are several challenges in its development, namely the difficulty of establishing cooperation with industry and determining service rates. In addition, the business mindset is different from the technopark industry as part of the local government. So the desire to place a balanced position against the industrial world in the structure of the Solo Techno Park is still difficult to realize. Therefore, as a consequence of this institutional form, it offers solutions that provide direction for

the development of Solo Teknopark as a human resource service provider unit that is ready to be used by industry, especially those that have collaborated before (Nurasa et al., 2016).

Sragen Techno Park which was inaugurated in 2009 has an area of about 23 hectares. The available facilities, such as buildings, were built by the Ministry of Manpower and some of them were built using funds from the Sragen Regency Government.

There are several main programs carried out to develop Sragen Techno Park, including training programs that focus on mastering work knowledge skills that refer to work competency standards (SKKNI, Special Standards and International Standards). Another program is business incubation which focuses on technology. Sragen Techno Park has a concept with the function of One Stop Service Labor Market. Here there is an application that can be used by companies in finding and selecting the services of participants who have been educated at Sragen Techno Park. Various types of training that have been carried out at Sragen Techno Park are vocational in the automotive sector, welding mechanic technology vocational, textile industry vocational, building vocational, electrical vocational, metal mechanic vocational and trade administration vocational as well as various other programs (Bangsa, 2019).

STP South Sumatra is a revitalization of Agrotechnopark (ATP) Palembang. ATP is a science and technology area built on a technology basis that integrates various agricultural, fishery, animal husbandry and postharvest activities in an integrated manner and is managed with best management agriculture practices. This area serves as a means of accelerating the transfer of technology resulting from R&D (government, universities and industry), a pilot center for technology-based integrated agriculture, and a center for technology transfer to the community.

Prospects of technological innovation that will be facilitated by STP include genetic engineering of local livestock breeds, rumen engineering (ruminology), local resource-based feed (feed engineering), microclimate engineering technology, as well as yield management innovations (off farm) and cold supply chain management (STP South Sumatra, 2016).

However, the development of STP South Sumatra is faced with various challenges including: (1) limited national investment capacity in the downstream sector; (2) the national technology is not yet ready to support industrial growth and development. This is related to the low adoption of research results used by industry (Sari & Retnaningsih, 2020).

From the comparison of local government STPs, in general the STP concepts that need to be in place are: (1) having land, infrastructure and buildings, including sharing of equipment and strategic locations; (2) have a professional manager, know how to manage STP, be able to expand and provide a network and also be able to manage STP financially for the long term; (3) the existence of sources of knowledge, discovery and development of research results originating from universities or other research and development (R&D) institutions; (4) have prospective startups, companies, including anchor tenants based on technology and innovation in STP; (5) having a business incubator to assist tenants' innovative products so that they can be commercialized; (6) owning an industry as a tenant, angel investor or using research results (Arifin Muhammad et al., 2017). The scheme can be illustrated as follows:

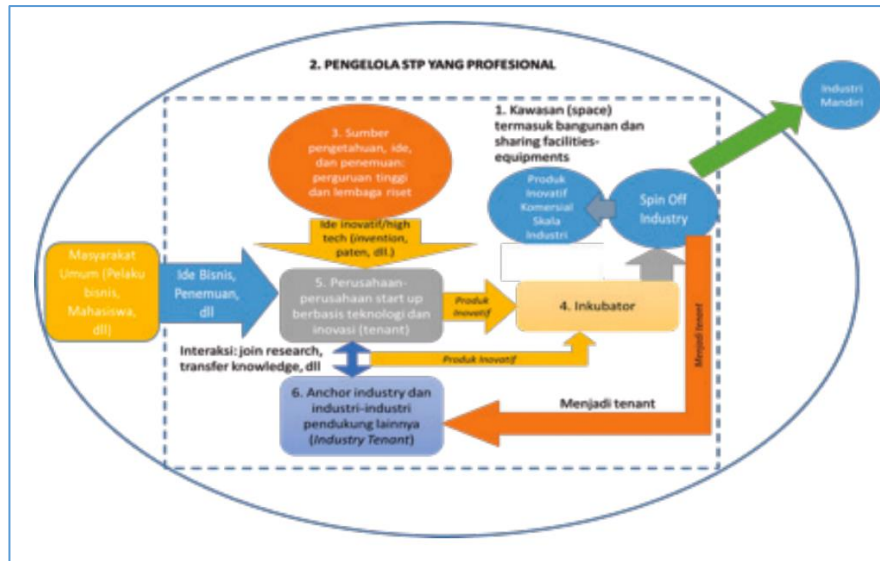


Figure 1. Interaction Between Components in STP

Source: Arifin Muhammad et al., 2017

Looking at the five STPs managed by local governments, it turns out that on average in the process they only provide guidance to SMEs or manpower training so that they do not meet all the standard components in the STP. So it is hoped that when there is an initiation to build an STP, the legality of a new STP is issued if it has fulfilled these six components, if it is not complete, it is better to remain a SME coaching institution or the like.

Apart from the components that need to be in the STP, the STP development process is often faced with financial management mechanisms, because the development of this STP cannot only rely on government funds as a central actor but requires funding from various parties, for that management strategy can try by adopting the BLUD concept.

The BLUD concept is a joint management concept between the government, the private sector, entrepreneurs, and educational institutions. Usually there are several directors who are representatives of each party who will jointly manage the area to be established, as happened in Solo Techno Park. This concept tries to provide an alternative to every management problem that is left entirely to the government or the private sector. The advantages of implementing this concept are able to cover two obstacles, namely, the complicated government bureaucracy that causes business opportunities and opportunities for development in the education sector to fail and the inability of the private sector to finance regional development. Through the BLUD management mechanism, the BLUD is able to cover these two shortcomings, thereby encouraging collaboration between different actors to jointly develop the region.

The pattern of cooperation that occurs between each actor in this concept is related to the financing system carried out by each party involved. The parties involved work together to find local funding opportunities in which business elements must be developed. However, BLUDs should not only seek profit, but must be independent and create operational cost efficiencies.

In the implementation of cooperation between parties, usually BLUDs have several challenges in their application, namely the challenge of combining common interests between the parties involved which of course before collaborating have different work mechanisms and administrative systems such as management carried out by the government and the private sector. In addition, the funds available from the APBD are generally not able to cover routine costs such as employee salaries.

The next strategy to develop local government STP is to collaborate with the actors involved. This can be seen from the downstream process, the source of knowledge is still very minimal in the five government-owned STPs that the authors observe. In fact, if you look at the initial function of the establishment of the Science Techno Park (STP), namely as a vehicle for conducting sustainable research and development collaboration between the central government, regional governments, universities, research and development institutions and industry. However, the synergies of the functions and roles of universities and research institutions have not been established. The current function is only limited to efforts to support the implementation of activities organized by elements of the regional apparatus in the local government environment, while the purpose of establishing the STP is to create synergies and a conducive environment for the ongoing research, development and technology business activities so that they are sustainable. (Cimahi City Region, 2018). In line with the IASP, UNESCO states that STP should be able to stimulate and manage the flow of knowledge and technology between universities, R&D institutions, companies and markets. Even the American Association of University Research Parks suggests that STP must have a contractual, formal or operational relationship with one or more science/research and higher education institutions and can help promote research, transfer technology which in turn can improve the welfare of society based on technological excellence.

For this reason, local government STPs need to facilitate the incubation and spin-off process for startup companies, a vehicle for R&D collaboration between universities, research and development and industry as well as providing other technology services by attracting industry into the area (Kemenristekdikti, 2015).

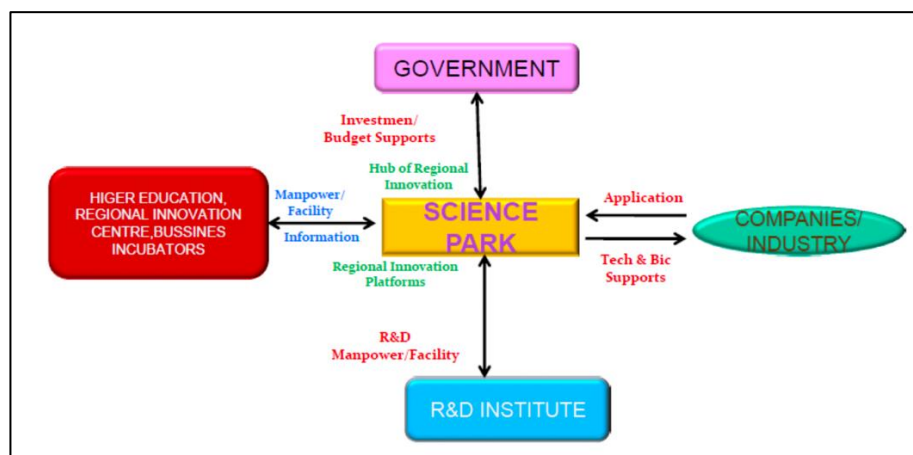


Figure 2. Triple Helix STP Model

Source: Prof. Deog-Seong, Oh, 2013 in Wisnu Sardjono Soenarso (Soenarso, 2015).

In the initial conception, the pattern of relations between actors is described through a triple helix model in which the local government plays a role in providing a place as a means of developing the resources of each actor in accordance with the goals of the government. Educational institutions and research centers seek to create benefits by transferring knowledge and technology and optimizing their resources. As well as industries that play a role in increasing competitiveness in strengthening networks.

From this triple helix conception, it is necessary to include elements of the media and society so that the conception turns into a pentahelix. In this case, the community through the community can play a role in mobilizing and accelerating the community involved in STP, while the media can play a role in promoting STP and its innovative products.

For this reason, STP needs to establish an effective collaboration pattern which includes: (1) clear division of tasks and coordination; (2) there is an agreement between actors connecting various aspects of the project, such as company prospects, development of installations and facilities, coordination, and promotion; (3) coordination and collaboration mechanisms should be established to promote trust between actors; (4) There is a body formed to settle disputes between the actors involved; (5) policy makers may not be involved in associations in which the association will form a board of directors, partners, economic, financial and academic actors who are included in the association (body) of the relevant organization; (6) after the association/body is formed, it can recruit managers who have the ability to develop STP in which managers must be able to accommodate public and private interests, which are often conflicting interests (Plan and Manage Science Park in the Mediterranean, 2010).

CONCLUSION

The development of Science Techno Park (STP) is an area related to the downstreaming of research and technology results created from a collaborative process between interested actors consisting of Academia, Business, Government, Community and the media. The development of STPs managed by local governments basically has great potential benefits for the development of innovation in the regions. It's just that there needs to be a development strategy that refers to clear and integrated institutional, financial and collaboration mechanisms. This mechanism needs to be developed considering that regional government STP development cannot only involve the government as a central actor, pentahelix involvement of actors needs to be well formulated and regulatory mechanisms between public and business interests must be aligned and regulated in provisions between actors involved in STP development, especially those managed local government.

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