

Enhancing Innovation in Quadruple Helix Perspective: The Case of the Business Incubators in Indonesia

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Abstract: Triple helix concept has already been known and used widely in innovation research. In many countries the concept of triple helix has been applied with the different emphasis. In the Triple Helix Model, universities add new roles for economic development to their traditional mission of education and research. In the other hand, the concept of quadruple helix has been discussing as a discourse and has not been recognized wider yet than the triple helix concept. The added helices in this concept is still has a wide range of conceptions or approaches and difference perspective in some scholars. The fourth added helices here could be a group of innovation actors that can be considered as the initiative helices that contribute an integrated innovation system. This study aims is to explore and examine the characteristics and roles of each helices in the quadruple helix perspective. The community or society as the addition helices gives the prominent contribution in the innovation of ICT development and it is based on a case study of the business incubators which is located in Bandung, West Java Indonesia. The role-play of each helix in the quadruple helix perspective of each business incubators has a difference portion. In the Creative Community Association (CCA) government and community is as the dominant helices whether in the Community Development Centre (CDC) the industry is as the dominant one.

Key words: Quadruple helix concept, business incubator, innovation, group, CCA

INTRODUCTION

Triple helix concept has already been known and used widely in innovation research. The outcome of the research in this concept mainly was about innovation policy and determining of collaboration among government, academia and industry in developing new knowledge. In this model, each helices supposed to play their own role to make a higher degree of collaboration in enhancing the innovation or creating innovation. In the first issues of Triple Helix Model, Etzkowitz and Leydesdorff (1995) examined the dimensions that emerge this concept. That dimensions were about the internal transformation in each helices, the influence among helices, the creation of new connection upon their interaction among them and a recursive effect of their different configuration.

The academia usually plays a prominent role in this model because they have dual goal research (in theoretical and practical) that focused in the applied and commercial interest. The government stimulate the knowledge creation by formulate the policies to support the enhancement of technology development and the industry has a strategy alliance by marketing the product and developing the process innovation.

In many countries, the concept of TH has been applied with the different emphasis for example, the US

has the Centre for Advanced Technology (CAT) that is supported by New York State for the financial conductivity by giving research grant to the state university, afterward the CAT research program became the source of several company which is located at long high technology incubator. In the other hand when the US emphasized on the relation between government and university, the Europe focused on the relation between government and Industry. The European Union conducts the framework program for their research hand in hand with industry and university in doing some specified projects. In the other part of the world, Brazil has different approach in this concept as the developing country Brazilian government through their minister of science and technology focused on the extension of the business incubator. The government supported the funding at all level (national, state and local) for this business incubator that is hosted by the university and assisted by industry association. Their collaboration emphasized in the contribution of research in job creation and social wealth. (Etzkowitz and Leydesdorff, 2000).

In the TH Model, Universities add new roles for economic development to their traditional mission of education and research. Some of them established university incubator to challenge the collaboration with the government and industry in developing and creating the innovation. In the recent year, many scholars have

recognized the other added helix such as community or society or public sector that formulates the other concept called quadruple helix. The added helix of the quadruple helix is representing to the other actors that occupy a strategic position and has prominent role in expressing their needs and demand in the social group (Lindberg *et al.*, 2012). Some researcher has suggest different content in the fourth helix such as MacGregor *et al.* (2010), Maldonado *et al.* (2009), Carayannis and Campbell (2009), Arnkil *et al.* (2010) and Fuzi (2013). Mac Gregor and Maldonando suggested adding civil society as the fourth helix, the civil society here was defined as citizen groups, association, NGOs, not for profit research institutes and independent think tank. Carayannis and Campbel (2009) proposed their concept on quintuple helix that involved the environment and social ecology as the fourth helix to analyze sustainable development. Their concept on quintuple helix also embedded the triple helix and quadruple helix concept.

The study aims is to explore and examine the characteristics and roles of each helices in the quadruple helix perspective. The community or society as the addition helices gives the prominent contribution in the innovation of ICT development on each business incubator.

Literature review

Quadruple helix concept and innovation cluster: The concept of quadruple helix has been discussing as a discourse and has not been recognized wider yet than the triple helix concept. Furthermore, defining its concept also becomes pondering and it is still pointed as an advanced of the previous concept. The added helices in this concept is still has a wide range of conceptions or approaches and difference perspective in some scholars.

In some research, the triple helix model focused on the relations of government, academia and industry (Leydesdorff and Meyer, 2006). The interaction among that helices entail a dynamic action among them and the role play of each helices would be encourage from their contribution on the each proper role (Farinha and Ferreira, 2013). Its dynamic will impact to the process of innovation and the outcome of the innovation. However, the implementation of the TH Model in the different country such as the Asian country will be difference with the previous study which has been discussed and researched in USA and Europe (Lu, 2008). Furthermore, the quadruple helix as the extended concept of TH can be seen differently according to the various context of the TH implementation with a range background of its.

Innovation cluster defined as a high degree collaboration of industrial circumstance and it is emerged by the private sector or public private company that is supported by the government in the policy conductivity. In the context of triple helix concept, the collaboration among government-academia and industry has discovered or created the new knowledge, technology, product or service.

Quadruple helix innovation theory: Quadruple Helix Innovation Theory (QHIT) has been discussed relate with the economic growth in the region level and national level. It postulated that an economic growth could be encouraged by the interconnection of four sectors; industry or private sectors, government, academia and civil society or public sectors. It all sectors are the important helices of economics structure in fostering innovation by clustered the aptitude and creative people. (Afonso *et al.*, 2010).

The fourth added helices here could be a group of innovation actors that can be considered as the initiative helices that contribute an integrated innovation system. (Fuzi, 2013). The discussion about the adding helices here has constructed the 4 different actors and its role play in contributing the innovation ecosystem. Thus according to the research of Arnkil *et al.* (2010) there are 4 different types of QH Models that has been developed:

- The “TH+Users Model” this model is relatively same with the traditional TH Model whereas the adding helix is in a user position. The foremost initiators actors of its models are still on the three helices (academia, government and industry) and the adding helix is just a user or consumer that give the idea and information for the product/service that are needed and just give the feedback for the continuous improvement of its products or services
- The “Firm-Centred Living Lab Model” this model focusing on the industry or private sectors as the holder of the innovation process. The adding helix is society or user that gives the participation on the development of the new knowledge. However, the main initiators are still in the traditional helices
- The “Public Sector-Centred Living Lab Model” the center of attention of its model is on the improvement of public service. The adding helix in this model is public organization and it also become the initiator and the owner of the innovation process in producing he better products or services to the society

- The “Citizen-Centred Model” this last models is intended to the enhancement of the innovation relate with the society or community. The adding helix in this model is the community or society. They play a main role for the initiating of the innovation for their own shake

MATERIALS AND METHODS

This research has been conducted into 2 steps; first step is theoretical-conceptual analysis this step is an exploration phase on literature review and the second step is an empirical case analysis this step identified the comparison between conceptual and empirical case in business incubator in Indonesia. Indonesia has several business incubators and there were just 2 business incubators which was identified they involve the fourth helices in their innovation process. There are Creative Community Association (CCA) and Community Development Centre (CDC) PT. Telkom. In gathering the information about the case analysis, I conducted in depth interview with the director of both incubators.

RESULTS AND DISCUSSION

Quadruple helix into practice in indonesia

CCA (Creative Community Association): CCA has been declared at 28 October 2009 by the chief of Cimahi residence. In the beginning of this establishment, CCA is a product of the top-down policy of the local government (Cimahi residence). CCA is formed by local government to facilitate the creative industry community in enhancing their innovation and become the coordination institution for the community. The dominant role play of the CCA is in Government and community. The Local government has built a specified building for the centre of all CCA’s activities; the building is called Baros Information Technology Centre (BITC). BITC has been known as the community centre that is utilized as an intermediary institution to introduce the world of information and technology to the public, trade as well as the research and development field of telematics industry. The facilities provided are a studio space for R&D of informatics and telecommunications, computer rooms to access the technological development, class rooms for IT training and space for the IT experts and the community of CCA. The board committees of CCA itself are from IT professionals. The role play of each helix in this case is as Fig. 1. According to in-depth interview with the leader of its community association there are some interesting facts about the role play of its helices:

- The initiator of the innovation process is the community. They played the foremost role as the owner of the whole innovation process

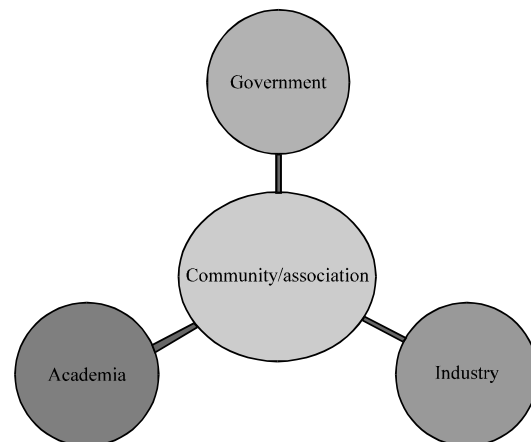


Fig. 1: The Community Centered Model of CCA

- The main goal of their innovation activity is in providing the talented and productive people an innovation ecosystem in producing the new products especially in the ICT. They conduct many programs to enhance the capacity of its member such as advance training for the ICT products, fostering the start-up for the ICT business that is made by the member, providing managerial training for the advance start-up business and many more
- The type of their innovation is the incremental innovation relate with the need of their user or client
- The industry role play is as the user or the client of its association. Their contribution in the innovation process is just on the giving information and having feedback for the continuous improvement
- The academia in this model is not come from the university but they are the researchers that come from BPPT. The association have not has an intensive interconnection with the university around them yet. The role play of the researcher that provide by the government is just as the evaluator of their process of innovation because the fund source of their research are from government
- The government in this model relate with local government. The local government played the helpful role by giving full support in the infrastructure, promotion and the policy. They provide the building and also its operation expenses and they support an integrated public policy to enhance the innovation ecosystem in their society

The community that is represented as the association of a group of talented people in this model has an outstanding contribution to encourage the empowerment of the ICT enhancement of their community. They also support the local government for the economic growth

and provide ICT innovation for the public service such as City-Smart program. The City-Smart program is providing the embrace of public service on the Wi-Fi connection and they made an ICT program for one-stop public service for the license.

CDC (Community Development Center) of PT. Telkom:

Community Development Center PT. Telkom has been established since government of Indonesia determines the judicial policy of CSR. Since, theme of PT. Telkom's CSR is 'Develop Smart Indonesia', the role of CDC is as the enabler in Building Community programs which are divided into 3 main programs: access community, content community and community development (philanthropy program). Each program is community based whereas.

Access community program accommodate basic service on internet to the target community. This program is called internet access (Jalin Indonesia) and it has several programs such as internet go to community/IG2C (this program cause to emerge the internet communities based on their need assessment), education for tomorrow/E4T (this program provide future education method by using information technology to implemented in education system of school in the community and target group), Broadband Learning Centre/BLC (this is a free training and education program to the community and target group) and Indi school (this program is deploying cheap internet access to all the education zone).

Content community program accommodate idea and knowledge exploration to start up digital business and rise up creative entrepreneurs on ICT. This program called indigo creative and the target group or community are GAME (Game, Animation, Music and Edutainment). They created several programs for the target group with the fellowship program (provide business incubators to community or group target), digital creative playground (accommodate community or target group with indigo centre to channel creative ideas) and award program (provide target group or community award to the creative digital industry booster).

Community development program provide enhancement economics, social and environment to the target community.

CDC as an enabler on digital business and ICT development in Indonesia has dominant role in enhancing innovation in quadruple helix perspective. The role play of each helix in this case is as Fig. 2.

CDC as the representative of PT. Telkom play a prominent role by creating community based programs to leverage ICT users and provide innovation ecosystem by technology. CDC considers that community is also both beneficiaries and market, CDC creates needs and

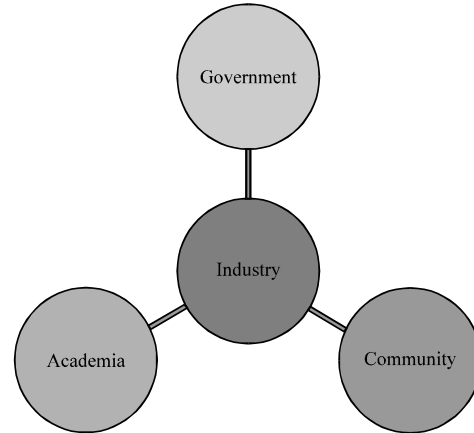


Fig. 2: The Industry-Centered Model of CDC

community generates demand on goods and service. Afterward they construct opportunity to commence innovation process.

CONCLUSION

Based on Quadruple Helix Innovation Theory/QHIT (Afonso *et al.*, 2010) the economic growth is related to innovation and the economic structures contained four helices (academia, industry, government and community).

The innovation cluster that is developed by all helices was considered as the prominent engine for the economic growth. It could be happened when the government provides regulation system, academia and industry support the research and development on innovation and community as market and also user contribute emergence of opportunity as the first step in innovation process. Community as the fourth helix in quadruple helix perspective has main role as the pull factors on innovation process. The community as the user creates demand on goods and services; afterward QH innovation model using user-oriented innovation approaches (Arnkil *et al.*, 2010).

In the case of CCA, community as the fourth helix play major role in enhancing innovation on ICT industry. This situation could conclude that community is not just a user but also an enabler because they create ICT business incubator from the bottom-up level. In the other hand, CDC placed community as users or market and also as beneficiaries. PT. Telkom as industry provides CDC to become ICT business incubators. It is expected to create demand and market on ICT.

The fourth helix in this concept is still various definitions depending on context. Further research

could explore 'other' concept of the fourth helix because it still an open model that can be created depend on the context.

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