

Level of Maturity Regional Innovation System as an Effort Improving Public Services

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ABSTRACT

Regional innovation system is related to the entire process of developing innovation between government institutions, research institutions, business entities, and the community that prioritizes science, technology, and the development of new methods. The purpose of this research is to identify and analyze the types and groups as well as the maturity of regional innovations in the city of Palembang and include them in the regional innovation map. The data collection method used was interview with relevant stakeholders, such as government officials, academics, and practitioners involved in the development of regional innovations and public services. Observation, which is a method of collecting data by making direct observations on regional innovation systems and public services in a number of selected regions. Questionnaire, which is a method of collecting data using questionnaires filled out by a number of related respondents, such as government employees and communities involved in or receiving public services in the area studied. The results of this study show that the regional innovation development roadmap for the city of Palembang until 2019 has totaled 126 innovations issued by the regional organization (OPD), but there are still many programs that are at the initiation stage so efforts are needed to develop infrastructure, human resources, regional funding to policies capable of making innovations run sustainable. Efforts to accelerate the implementation of governance reforms in the regions need to be encouraged through innovation programs for all regional government administration affairs. Therefore, the development and implementation of innovation in the regions is not only limited to the internal bureaucracy, but also must be encouraged to the private sector and the community which is expected to increase regional competitiveness.

Keywords: System, regional innovation, public service

INTRODUCTION

Development is a crucial and mandatory process undertaken by all countries. The development process should encompass all aspects, both economic and social. Development is a physical reality and a society's determination to make the utmost effort through a combination of social, economic, and institutional processes to achieve a better life (Todaro & Smith, 2012). The primary goal of development is to enhance the welfare of the population.

In the current global era, development needs to emphasize the utilization of Science and Technology (S&T) and innovation as key factors in building competitiveness, known as innovation-driven development. Development growth should be driven by strategies that are not only efficient but also prioritize innovation by harnessing S&T (Jiang, 2022).

Unfortunately, Indonesia's global ranking in terms of innovation remains low. According to the Global Innovation Index (GII) report, Indonesia ranks 85th out of 126 countries, placing it below several other ASEAN countries such as Malaysia (ranked 35th), Thailand (ranked 44th), Vietnam (ranked 45th), Brunei (ranked 67th), and the Philippines (ranked 73rd). Similarly, in terms of global competitiveness, Indonesia is ranked 45th, with one of the lowest indicators being Regional Innovation at a score of 37.1, still below the average for East Asia and the Pacific (Global Innovation Index, 2020).

The government has issued the Law Number 18 of 2002 concerning the National System of Research, Development, and Application of Science and Technology, which mandates both the central and local governments to strengthen support for S&T to enhance the nation's competitiveness and self-reliance in the face of global competition. Additionally, Law Number 23 of 2014 on Regional Governments has also designated innovation as a critical element in the administration of local governments. Innovation is the key to improving the competitiveness of a region or country.

In response to the aforementioned regulations, the Joint Regulation of the Minister of State for Research and Technology and the Minister of Home Affairs Number 03 of 2012 and Number 36 of 2012 on Strengthening the Regional Innovation System (SIDa) was issued in 2012. Furthermore, as the

implementation of Law Number 23 of 2014, there is the Government Regulation Number 38 of 2017 on Regional Innovation.

Therefore, the Regional Government has the responsibility to build and strengthen the Regional Innovation System (SIDa) as the foundation for development performance with a focus on innovation. SIDa serves as a framework to facilitate synergy among regional government, the private sector, universities, and all relevant stakeholders in harnessing S&T and innovation in regional development (OECD, 2017).

Palembang, as a Metropolitan city, currently lacks a reference or framework for an integrated regional innovation system. Hence, the establishment of the Palembang City innovation system is imperative. The concept of this innovation system is based on the National Innovation System (SIN), which has become part of the national agenda, as outlined in Law Number 17 of 2007 concerning the National Long-Term Development Plan (RPJN) 2005-2025 and Law Number 18 of 2002 concerning the National System of Research, Development, and Application of Science and Technology.

The implementation of these regulations is translated in the Joint Regulation of the Minister of Research and Technology Number 3 of 2012 and the Minister of Home Affairs of the Republic of Indonesia Number 36 of 2012 on Strengthening the Regional Innovation System (SIDa). The substance of this joint regulation requires Regional Governments to strengthen the Regional Innovation System (SIDa) by formulating the SIDa Road Map, organizing institutional arrangements, developing human resource quality, and building SIDa based on local potentials. Through an integrated innovation system, it is expected that there will be a harmonious coordination and reporting mechanism related to regional innovation with the central government (Sihombing et al., 2015).

The urgency of conducting a regional innovation mapping in Palembang involves several key aspects, including identifying the innovation potential in Palembang and determining innovation development priorities. Innovation mapping can identify opportunities for collaboration among government agencies, research institutions, businesses, and the community to develop better innovative solutions. An

innovation map can help plan concrete steps and enhance its competitiveness at both the national and international levels.

LITERATURE REVIEW

Regional innovation indicators are a number of measures or parameters used to measure the level of innovation and progress in the application of innovation in the region. These indicators are designed to assist stakeholders in understanding and evaluating the extent to which a region has succeeded in developing and implementing innovations in various fields, such as leadership, planning, public services, community empowerment, policies and regulations, infrastructure, industrial development, and other sectors. By paying attention to regional innovation indicators, local decision makers can conduct better analysis and planning to optimize resource use and improve the quality of life of the community as a whole.

Regional innovation indicators include:

1. **Innovative regional leadership:** Innovative leadership is a leadership style that encourages and facilitates the innovation process in the region. Innovative leadership can be measured from the ability of regional leaders to create regional innovation visions, missions, and strategies as well as motivate and facilitate all stakeholders in developing innovation.
2. **Innovative regional development planning:** Innovative regional development planning is planning that considers innovation factors in the preparation of regional development plans. This includes using accurate data and information and involving the community and relevant parties in the planning process.
3. **Community involvement in decision making:** Community involvement in decision making is the process of actively involving the community in the decision-making process in the district. This aims to ensure that the policies taken are in accordance with the needs and expectations of the community and get support from the community.
4. **Innovative regional financial capability:** Innovative regional financial capability is the ability of regions to utilize existing financial resources effectively and efficiently to support

the development of regional innovation. This includes capabilities in budget management, alternative financial resources, and innovation financing.

5. **Innovative local policies and regulations:** Innovative local policies and regulations are policies and regulations designed to support the development of innovation in the region. This includes policies in human capital development, support for industry and small and medium enterprises, and regulations to encourage technology development and innovation.
6. **Innovative human resource empowerment:** Innovative human resource empowerment is the process of increasing the capacity of human resources to develop and implement innovations in the region. This includes improving innovative skills, knowledge, and attitudes in order to support the development of innovation in the region.
7. **Innovative infrastructure and connectivity:** Innovative infrastructure and connectivity is the development of infrastructure and connectivity in the region that utilizes the latest technologies and innovative solutions to support the development of innovation in the region. This includes the development of information technology infrastructure, transportation networks, and access to more environmentally friendly energy resources.

The level of maturity of the regional innovation system as an effort to improve public services, there are several related theories that can be used as references in research, including (Stejskal et al., 2018), (Cooke, 1997), (Cooke & Memedovic, 2006):

1. **Innovation Theory:** This theory proposes that innovation is the development or utilization of new technologies, ideas, or products to meet the needs of society or improve the efficiency and effectiveness of public services.

Innovation theory refers to the concept that innovation is the process of developing or utilizing new technologies, ideas, or products to meet the needs of society or improve the efficiency and effectiveness of public services. This theory emphasizes the importance of

innovation in improving the quality of public services and bringing positive changes to society.

According to innovation theory, innovation can take many forms, such as technological innovation, process innovation, product innovation, and management innovation. Technological innovation relates to the development of new technology or the use of existing technology to improve the performance and efficiency of public services. Process innovation is concerned with the development of new work processes that are more efficient and effective in delivering public services. Product innovation is concerned with the development of new products or services to meet the needs of society. Management innovation is related to the development of new methods or strategies in managing public services more effectively and efficiently.

In the context of regional innovation development, innovation theory is important because it can assist the government in building a regional innovation system that can meet the needs of the community and improve the quality of public services. With an effective regional innovation system, it is expected to create a conducive environment for the development of regional innovations that can bring positive changes to society and better public services.

2. **Innovation System Theory:** This theory views innovation as the result of interactions between various elements in the innovation system, such as government, universities, industry, and society. Innovation Systems Theory is an approach that views innovation as the result of interaction and collaboration between various elements in an innovation system. The innovation system consists of various actors, such as government, universities, industry, society, and other organizations related to innovation. In an innovation system, each actor has a different role and function in the development and dissemination of innovation.

Innovation Systems Theory emphasizes that innovation is not an activity carried out individually, but is the result of collaboration and interaction between various actors in an

innovation system. Thus, to increase the level of innovation in a region or country, close cooperation and synergy between government, universities, industry, and society are needed.

In the context of public services, this theory suggests that innovation can occur through collaboration between the government and society in the development and implementation of more effective and efficient public services. For example, collaboration between government and society in the development of mobile applications for public services can improve the efficiency of public services and increase public participation in public policy making.

3. **System Maturity Theory:** This theory views system maturity as a condition in which the system can function optimally and is able to produce good output. System Maturity Theory is a concept that proposes that every system has stages of development that must be passed before reaching maturity or optimality of its function. This concept is used in various fields, including in the development of regional innovation systems.

In the context of regional innovation, system maturity theory states that the regional innovation system must experience systematic and planned stages of development, starting from the stage of formation, growth, consolidation, to maturity. This stage will enable the regional innovation system to produce optimal and quality output in improving public services.

In the formation stage, the regional innovation system must build cooperation with various relevant stakeholders, such as government, universities, industry, and the community, to obtain the support and resources needed. Furthermore, in the growth stage, regional innovation systems must strengthen their capacity and performance, as well as increase the amount and quality of output produced.

The consolidation phase is the stage where the regional innovation system must evaluate its performance and make adjustments if needed, while still maintaining the vision and development strategy that has been set. Finally, the maturity stage is the stage where the regional

innovation system has reached optimal conditions and is able to produce good output in improving public services.

By applying system maturity theory in regional innovation development, it is expected to increase the effectiveness and efficiency of regional innovation development and produce quality and beneficial outputs for the community.

4. **Public Service Theory:** This theory proposes that public services must meet the needs and expectations of the community and have good quality. Public Service Theory is a view that the government must provide adequate and quality services to the community as service users. Public services must pay attention to the needs and expectations of the community, and ensure that the services provided are in accordance with established quality standards.

This theory emphasizes the importance of public participation in the formulation and evaluation of public policies, so that the resulting policies can meet the needs and expectations of the community. In addition, this theory also emphasizes the importance of transparency and accountability in the delivery of public services, so that the public can monitor and evaluate government performance in providing good services.

5. **Performance Measurement Theory:** This theory is used to measure the performance of innovation systems and public services in achieving predetermined goals. Performance Measurement Theory posits that every organization, including government and public institutions, needs to conduct performance measurement to evaluate the extent to which the goals and objectives that have been set have been achieved. In the context of research on the maturity level of regional innovation systems as an effort to improve public services, this theory can be used to measure the performance of regional innovation systems and public services in achieving predetermined goals, as well as to identify weaknesses and strengths of regional innovation systems and public services. Performance measurement can be done using relevant performance indicators, such as the level of

community participation, the efficiency and effectiveness of public services, and the level of innovation generated by regional innovation systems. Measurement must use appropriate indicators and also enable monitoring and integration of operational conditions of complex systems, where implementation uses information and communication technology to innovate in administrative management (Ratriyani & Roychansyah, 2022).

METHOD

To conduct research on the maturity level of regional innovation systems as an effort to improve public services, research methods that can be used include literature studies, namely research methods by collecting and analyzing data from various literature sources related to regional innovation and public services. In literature studies, studies can be carried out on policies, programs, and implementation of regional innovations in a number of relevant regions. Interview, which is a method of collecting data by conducting direct interviews with relevant stakeholders, such as government officials, academics, and practitioners involved in the development of regional innovations and public services. Observation, which is a method of collecting data by making direct observations on regional innovation systems and public services in a number of selected regions. Questionnaire, which is a method of collecting data using questionnaires filled out by a number of related respondents, such as government employees and communities involved in or receiving public services in the area studied.

In conducting this research, data analysis and data processing were carried out to obtain accurate and valid information about the maturity level of the regional innovation system as an effort to improve public services. In addition, data validation was carried out by triangulating data from several research methods used.

RESULT AND DISCUSSION

The maturity index was measured using a questionnaire distributed to innovation users by asking 21 regional innovation indicators according to the Ministry of Home Affairs including 1). Innovative local leadership, 2). Innovative regional development planning, 3). Community involvement in decision making, 4). Innovative regional financial capabilities, 5). Innovative regional policies and

regulations, 6). Empowerment of innovative human resources, 7). Innovative infrastructure and connectivity, 8). Strengthening of innovative regional governance systems, 9). Innovative development of creative industries and economy, 10). Innovative development of information and communication technology, 11). Empowerment of innovative small and medium-sized enterprises, 12). Empowerment of innovative cooperatives and micro, small, and medium-sized enterprises, 13). Empowerment of innovative tourism sector, 14). Innovative development of agricultural and fisheries sectors, 15). Innovative development of industrial sector, 16). Innovative development of health sector, 17). Innovative development of education sector, 18). Empowerment of innovative financial services sector, 19). Innovative development of environmental policies, 20). Innovative improvement of public service quality, 21). Implementation of innovative governance systems.

From the maturity scale, there are 8 indicators that are already GOOD, namely 1) Availability of human resources for innovation managers, 2) use of electronic devices, innovation technology, 3) socialization to regional organization (OPD) and the community, 4) legality of managers with a decree, 5) availability of innovation service information, 6) ease of service for users, 7) benefits for the government and society, and 8) service user satisfaction. While the indicators that need to be addressed immediately are 6 indicators, namely 1) innovation budgeting through the APBD, 2) innovation technology, 3) replication to other regions, 4) complaint services by users, 5) Too much energy and time [efficiency], 6) online systems [online].

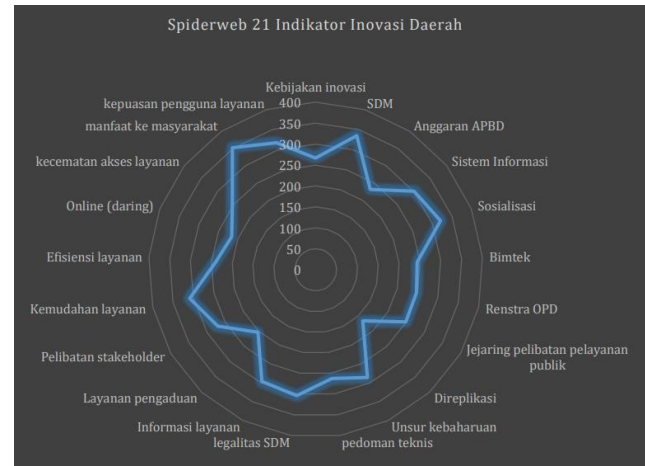


Figure 1. Spiderweb diagram 21 indicator innovation area Palembang City

The roadmap for regional innovation development in Palembang City until 2019 has amounted to 126 innovations issued by OPD, but there are still many programs that are at the initiation stage so efforts are needed for the development of infrastructure, human resources, regional funding to policies able to make innovation run sustainably. Efforts to accelerate the implementation of governance reforms in the regions need to be encouraged through innovation programs on all matters of local governance. Therefore, the development and implementation of innovation in the regions is not only limited to the internal bureaucracy, but must also be encouraged to the private sector and the community which is expected to increase regional competitiveness. Innovation is not just ideas and technologies that are considered new, but is the discovery of new ideas and how to translate those ideas into actual results. Innovation is also not something simple that comes with an idea, but includes its implementation, the process of integrating it into the system, and monitoring the results in the long run

The maturity level of an information system can be used to determine how far the application of information systems and information technology has in improving various things such as efficiency, effectiveness, quality, and response to users, in this case consumers or the public (Payong, 2020). The maturity level of the regional innovation system can be an effective effort in improving public services in a region. A mature regional innovation system can facilitate the creation of a conducive environment for

innovation, as well as encourage active participation of the community, the business world, and government institutions in the innovation process.

Some things that can be done to increase the maturity level of regional innovation systems are as follows:

1. Improve coordination between government agencies in developing regional innovations. This coordination includes interagency and intergovernmental related to the development of regional innovation. This coordination is important so that the development of regional innovation runs effectively and efficiently. Coordination between government agencies can be done in various ways, such as coordination meetings, regular meetings, or discussion forums. In addition, the use of information and communication technology can also help accelerate the coordination process between government agencies in developing regional innovations. Various conveniences from the development of information technology are felt impact on users, both in organizations and government (Putra et al., 2020). The importance of information technology governance needs to be applied appropriately, so that it can support organizational goals (Haryanto, 2021).

In coordination between government agencies, it is necessary to maintain open and transparent communication between the government agencies involved (Pereira et al., 2017). That way, each party can understand each other and know developments related to regional innovation development. In addition, there is also a need for a clear division of duties and responsibilities in each stage of regional innovation development so that each government agency can focus on its respective duties and responsibilities. With good coordination between government agencies, it is hoped that the development of regional innovation can run more effectively and efficiently. In addition, good coordination can also help prevent overlapping or duplication of programs implemented by different government agencies in the development of regional innovation (Santos et al., 2022).

2. Increase active community participation in the development of regional innovation. The community should be encouraged to participate in the regional innovation development process, either by providing input and suggestions, or by participating directly in

the development process. Increasing active community participation in regional innovation development is important to create a conducive environment for innovation and improve the quality of public services. People as direct users of public services have valuable experience and knowledge about their needs and expectations for public services. Therefore, involving the community in the development of regional innovations can help improve the quality of public services and increase community satisfaction.

Some ways that can be done to increase active community participation in the development of regional innovation include: Conduct effective and open communication with the community regarding the development of regional innovation, including providing clear information about the goals and benefits of the innovation developed. Increase community involvement in the decision-making process through the organization of participatory forums, such as village, or subdistrict consultative forums, which can help the community to provide input and suggestions. Involving the community in public service quality assessment activities, so that the community can provide feedback on the public services that have been provided. Encourage public participation in training and coaching programs related to public services, so that the public can understand more deeply about the importance of public services and how to improve the quality of public services. community engagement can help to create a model that enables citizens, policy makers, government, urban planners, academics, and enterprises in urban environment to connect, interact, and collaborate (Anthony, 2023).

By involving the community in the development of regional innovations, it is hoped that public services can be more responsive and adaptive to the needs of the community. This can help create more effective, efficient, and quality public services. In addition, community participation can also help increase transparency and accountability in the development of regional innovation (Anthony, 2023).

3. Establish cooperation with the business world and research institutions. Cooperation with the business world and research institutions can assist the government in obtaining the resources and knowledge needed in the development of regional innovation. Collaborating with the business world

and research institutions can assist the government in obtaining the resources and knowledge needed in the development of regional innovation. Businesses and research institutions have resources and expertise that can be used to support the development of regional innovation.

Some of the benefits of collaborating with the business world and research institutions include getting financial support from the business world in developing regional innovation (Bilberg et al., 2017). Acquire knowledge and experience from research institutions in conducting research and development of regional innovations. Provide human resources and facilities necessary for the development of regional innovation. Increase access to new technologies that can be used in the development of regional innovations. Increase networks and partnerships that can assist the government in improving public services and promoting regional innovation.

To establish cooperation with the business world and research institutions, the government needs to take several actions such as: Strengthening regulations and policies that support the development of regional innovation and cooperation with the business world and research institutions. Collaborate with research institutions that have competence and expertise in the field of regional innovation (Robaczewska et al., 2019). Build good relationships with business actors, such as local companies, business associations, or potential investors. Provide facilities and human resources needed in the development of regional innovations, such as laboratories and experts. Promoting and marketing regional innovations in order to get support from the community and the business world.

By collaborating with the business world and research institutions, the government can get the necessary support in the development of regional innovation. This can help improve the quality of public services and strengthen the region's position in global competition.

4. Strengthening information and communication technology infrastructure. Adequate information and communication technology infrastructure can help drive regional innovation. In the digital era, information and communication technology can be used to accelerate the innovation process and expand the reach of public services. In the digital era,

information and communication technology can be used to accelerate the innovation process, increase efficiency, and expand the reach of public services.

Some of the benefits of strengthening information and communication technology infrastructure for regional innovation development include improving accessibility and quality of public services through online platforms that can be accessed by the public (Samara et al., 2022). Facilitate access to information and data needed in the development of regional innovations (Kusharsanto et al., 2021). Increase efficiency and productivity in the development of regional innovations by using sophisticated technology systems. Accelerate the regional innovation process by optimizing technology to support research, development, and implementation of innovation. Improve the quality and effectiveness of public services through the use of appropriate technology, such as mobile applications, geographic information systems, or e-learning platforms (Alzahrani et al., 2021).

In addition, strengthening information and communication technology and knowledge management capacity through multilateral cooperation in developing e-government and information and communication technology infrastructure offers many advantages, including the sharing of investment costs and reaping the benefits of economies of scale (Bleeker, 2019). A toolkit for strengthening information and communication technology -centric ecosystems has been recommended, which includes strengthening human capital development, refocusing innovation on domestic issues, development of last-mile infrastructure, and strengthening (ITU, 2017). Therefore, it is important to invest in information and communication technology infrastructure to support regional innovation development and improve public services.

To strengthen information and communication technology infrastructure, the government can take several actions such as increasing access to fast and stable internet networks throughout the region. Provide adequate information and communication technology infrastructure, such as data centers, servers, and application software. Provide training and technical support for government employees in the use of information and communication technology. Improve coordination between

government agencies in the use of information and communication technology to strengthen regional innovation development (Ejemeyovwi et al., 2019). Conducting campaigns and educating the public about the benefits and ways of utilizing information and communication technology in public services. Suggests that new technologies bring governments closer to the people. Highlights that governments see information and communication technologies and the Internet as a major platform for innovation. Emphasizes that lack of investment in infrastructure is a major obstacle to the uptake of information and communication technology (Özdemir, 2017). Finally, states that information and communication technology infrastructure ignites the growth of the digital-first economy.

By strengthening information and communication technology infrastructure, governments can leverage technology to improve the efficiency, effectiveness, and accessibility of public services. This can help encourage regional innovation and improve the quality of life of the community. By increasing the maturity level of the regional innovation system, it is expected to create better and more effective public services for the community. However, keep in mind that the process of developing regional innovations requires considerable time and effort. Therefore, strong commitment and support from various parties are needed to make the regional innovation system an effective effort in improving public services.

CONCLUSION AND RECOMMENDATION

Improving public services through regional innovation requires efforts such as increasing the maturity of the regional innovation system by taking a holistic approach involving various related parties. Strengthen coordination between government agencies in the development of regional innovation to ensure the development of regional innovation runs effectively and efficiently. Increase active community participation in the development of regional innovations so that the community can provide input and suggestions in the development process. Establish cooperation with the business world and research institutions to obtain the resources and knowledge needed in the development of regional innovation. Strengthening information and communication technology infrastructure to accelerate the innovation process and expand the reach of public services.

The suggestion that can be given is that the government needs to prioritize the development of regional innovation as an effort to improve public services. The government also needs to map and analyze community needs in developing regional innovations. The government can utilize aid programs or other sources of funding to support the development of regional innovation, including cooperation with international or private institutions. The government needs to collaborate with research institutions to evaluate and develop regional innovations continuously. The community also needs to be educated about the benefits and how to use regional innovations in public services. With these efforts, it is expected to improve the quality and accessibility of public services, as well as encourage the creation of better and sustainable regional innovations.

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