LOCAL ECONOMIC DEVELOPMENT STRATEGY THROUGH TECHNOPARK BASED ON INLAND FISHERY RESOURCE IN SAMOSIR REGENCY

by Tino Yuka Aldila

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Abstract

Local economic development is one of the development policies that is considered appropriate and strategic in the context of regional development in Indonesia by optimally utilizing local resources. In line with this concept, the Government of Samosir Regency established a technopark as a center for innovation based on inland fishery resources to encourage local economic activities for the community. The purpose of this study is to examine the strategy of the local government of Samosir Regency in developing the local economy through technopark based on inland fishery resource. The analytical tool used by the Analytical Network Process (ANP) includes analysis of aspects of factors, problems, solutions and alternative strategies. Based on the results of the ANP analysis, the collaboration factor is the most influencing factor in strategy development. Meanwhile, in the problem aspect, the problem of limited infrastructure, low public interest and weak commitment are the main problems that need to be resolved, so that the solution aspect becomes a priority is building trust between stakeholders, allocation of financing for infrastructure and socialization of coaching programs to the community. The formulation of the main strategy for local economic development through the development of technoparks based on the results of the ANP analysis is to build multi-stakeholder synergy to support local economic development in Samosir Regency.

Keywords: Local Economic Development, Teknopark, ANP
JEL Classification: Economic development

Introduction

In line with the implementation of regional autonomy and fiscal decentralization, the role of local governments in pursuing regional competitiveness has become crucial and strategic. According to Martin and Tyler (2003), an area is very important to have competitiveness for several reasons, including; (1) for investment, attracting foreign private capital and public capital; (2) for the workforce, encouraging a skilled and creative workforce, creating a conducive environment and providing for the domestic labor market; (3) for technology, attracting innovation activities and knowledge transfer. Therefore, regional competitiveness is the key to increasing the national economic growth rate, thus requiring special attention to create a good investment climate nationally (Kisel'áková et al., 2020; Wilson, 2019). In addition, efforts to increase regional competitiveness can be carried out through regional economic development by utilizing the potential possessed by each region (Rochwulaningsih, 2019). Economic development in each region can be interpreted as the process of local governments and their communities utilizing some of the existing local resources and is expected to increase development (Magdalena & Suhatman, 2020). This process makes the development of the local economy very important because it can be used to generate new opportunities or jobs and encourage development (Ferronato et al., 2019; Kahn et al., 2020; Schroeder et al., 2019).

Local economic development is one of the development policies considered appropriate and strategic in the context of regional development in Indonesia and anticipating the start of the free trade era. Local economic development policies are essentially development policies in the regions based on the development of sectors that are the top priority pursued in local communities' economic activities (Kuncoro, 2004; Wiranto, 2004).

Samosir Regency is an area rich in potential natural resources, especially water resources, where most of the area is water. The de facto area of Samosir Regency includes Samosir Island, which is surrounded by Lake Toba plus part of the mainland of Sumatra Island. The area is 2,069.05 km2 with a land area of around 1,444.25 km2 (various topography and land contours, namely flat, sloping, sloping,

and steep) and a lake area of about 624.80 km2. Soil structure is unstable and estimated to be in the path of tectonic and volcanic activity. Lake Toba, the largest lake in Indonesia, provides natural potential, especially the vast fishery potential for Samosir Regency. Based on data from the BPS of Samosir Regency, the role of the Agriculture, Fisheries, Livestock, and Forestry Plantations sector in forming Samosir Regency's GRDP reaches more than 50%. This finding shows that these sectors are the majority source of income that has so far supported the economy of Samosir Regency.

The fishery potential of Samosir Regency is huge, but its management is not optimal. For example, the Fish Seed Center (BBI), which the Samosir Regency Government established to produce superior fish seeds for the cultivating community, can only supply 15 percent of the total fish seed needs. In addition, Samosir requires 100,000 fish seeds per day for the needs of fish farmers in Samosir, so the need for fish seeds must be supplied from other areas such as Pematang Siantar and Simalungun, and this results in high transportation costs (Sijabat, 2018).

Fisheries businesses in Samosir Regency are generally still managed as household businesses, both aquaculture and fishing activities. According to the Samosir Regency BPS, until 2013, aquaculture households in Samosir Regency continued to grow to 362 households consisting of 231 fish farming households in ponds and 131 floating net cages (KJA) fish farming households.

Recognizing the problem of the lack of supply of fish seed needs, the Samosir Regency Government sees the need for a revitalization policy of BBI to maximize BBI production and achieve the production target of fish seed needs. The revitalization of BBI Samosir requires technological assistance and experts to optimize fish seed production. Based on this, the Samosir Regency Government initiated a collaboration with the Indonesian Institute of Sciences (LIPI) to revitalize BBI Samosir. Through the LIPI Limnology Research Center, a study was conducted on BBI Samosir, and based on the study results; it was proposed to build a Teknopark Samosir as a center for research and technology areas in the waters of Lake Toba. In addition, Samosir Teknopark functions to build an integrated fisheries system and form innovation-based industrial clusters in Samosir Regency. Teknopark Samosir has been operating since 2015, with the initial focus of activities on developing fisheries and managing aquatic resources in the Lake Toba area.

A Technopark institution requires multi-stakeholder collaboration, including local Government, academics, the business sector, community, and media, in implementing the Technopark program (Noori et al., 2020). Every stakeholder member of the Teknopark institution needs to play a role and actively participate in optimally creating industrial clusters that can be a driver of competitiveness for the local economy of Samosir. Local economic development is an area/location-based economic development process carried out through collaboration between the Government, the community, and the private sector ("market") to optimize the use of local resources in order to improve the welfare of the community as a whole (Blakely, 2010). The definition of local economic development in the new paradigm refers to the synergistic cooperation between the Government, the community, and the "Market", which is the key to the success of local economic development. Some research results also recommend that efforts increase integration, collaboration, coordination, or participation as part of the synergistic dimension or factor to support the success of local economic development in several countries (Tello, 2010).

This research is expected to provide recommendations for policymakers to improve the competitiveness of the Samosir Regency. The objectives of this research include:

1. Identify Technopark Development's impact on local economic development in Samosir Regency.
2. analyze the form and role of the Penta helix collaboration in the Samosir Teknopark institution
3. formulate a strategy for developing the local economy of Samosir through the development of marine and fishery resource-based technoparks

Research Method

Location The research was conducted in Samosir Regency, with data collection and processing time carried out for three months. The types of research data are secondary data and primary data. Secondary data were obtained from documentary studies in the form of reports on the development of Teknopark Samosir, development planning documents originating from LIPI as the academic side, and also the Samosir Regency Government (LIPI: LIPI Limnology Research Center, Samosir Regency Government: Samosir Regency Bappeda, Management Organization TP Samosir, BPS Samosir). Primary data were obtained from interviews and filling out questionnaires through related research informants (Head of Research Center, Researcher involved, Head of Bappeda and Manager of TP Samosir, Head of Farmer Community and Start-up/MSME Actors.

The sample in this study will be taken by purposive sampling. The sample members were selected based on representatives from the Samosir Government, LIPI researchers, MSME/Start-up actors, community representatives, and the media.

The data analysis method in this study consists of three stages, namely descriptive analysis, to identify the impact of technopark development in supporting local economic development in Samosir Regency. Furthermore, the analysis method will be used to analyze the Penta helix collaboration in Teknopark Samosir, and the stakeholder analysis method will be used by conducting in-depth interviews with the five stakeholders involved. Finally, after getting an overview from the descriptive analysis, to formulate a strategy for local economic development through the development of technoparks, the ANP (Analytical Network Process) method will be used, by analyzing the assessment criteria to obtain a set of measurement standards, to then be used as a tool in comparing various alternatives.

Result and Discussion

Benefits of Teknopark in Supporting Local Economic Development

According to Blakely (2002), the success of local economic development can be seen from several indicators, namely: first, the expansion of opportunities for small communities in employment and business opportunities; second, the expansion for the community to increase income; third, the empowerment of micro and small business institutions in the production and marketing process; and fourth, institutional empowerment of partnership networks between the government, the private sector, and local communities. Saragih (2017) says that the LED strategy has two main objectives. The first is the increase in people's income, and the second is the expansion of local job opportunities (enhancement of people's income and local job opportunities).

Expanding opportunities for small communities in employment and business opportunities

BBI, which was initially unable to produce fish seeds optimally when it was revitalized into a technopark, has provided most of the needs for fish seeds in Samosir Regency. The community of fishery business groups is now able to buy fish seeds of relatively good quality.

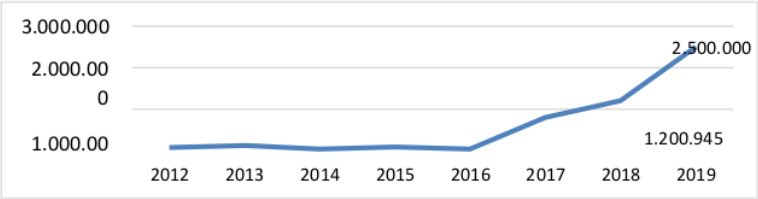

Figure 1: Growth of Fish Seed Production at BBI Samosir in 2012-2019

Source : Samosir Regent's Presentation, 2022

As a direct impact of the availability of fish seeds is the emergence of business groups for fish cultivators (nursing and rearing) fish, fish processing food businesses, and service businesses providing supporting facilities and infrastructure in Samosir Regency with direct guidance from the government and academics. Number of business fields fostered through the technopark program.

Table 1: Number of Start-ups and Labor Absorption through the Samosir Teknopark Program Year 2015-2019

Business fields	Business Unit Name	Total manpower
Post Harvest Processing	Samandali	45 people
	TIC Kopi	3 people
	CV 12 Bersaudara	20 people
	Roti Ketawa	5 people
	Kacang Rondam	4 people
	Usaha Kolang-Kaling	10 people
	Bawang merah goreng	9 people
	Kripik kentang Cinabo, Kripik Pinandar	7 people
	Kopi Nature, Kaldera, Sinergi, Siringo-Ringo, Dotashi	18 people
	Usaha Buyung Sitakar	41 people
Fish Nursery	Aek Sibunga-Bunga,Saroha, Sepakat, Sipinngan Nauli	42 people
Fish Breeding	Arinta, Idonata Simbolon, Lintong Nihuta, Pardosir, Lundak Sagala, Melati Tomok	94 people
Total	**25 Business Unit**	298 people

Source : Samosir Teknopark Report Document, 2019

The increasing number of business fields and employment is expected to improve the community's welfare. For example, one indicator to see the welfare in a region is to look at the rate of growth of the value of the Gross Regional Domestic Product (GRDP) Per Capita. Boediono (1985) states that economic growth is also related to increased output per Capita. In table 2, it can be seen the increase in the value of GRDP per Capita in Samosir Regency from 2014 to 2019, in Figure 1, the graph it can be seen the trend of increasing the value of GRDP from year to year.

Table 2: GRDP Per Capita of Samosir Regency on the basis of current prices and on the basis of constant prices

Year	Current Price	Constant Price
	Value	Value
2014	23 061,59	19 234, 57
2015	25 396,80	20 226, 18
2016	27 655,31	21 171, 50
2017	29 987,13	22 197, 19
2018	32 469,66	23 301, 47
2019	35 152,68	24 562, 77

Source: Samosir district statistical center

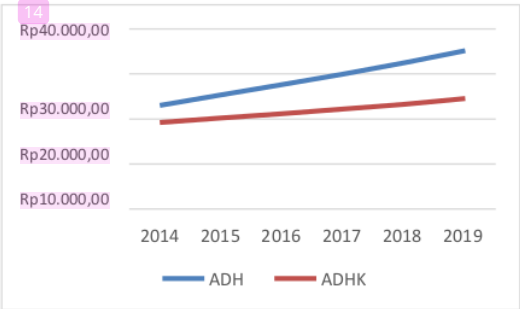

Figure 2: GRDP Per Capita of Samosir Regency on the basis of current prices and on the basis of constant prices

GRDP per capita of Samosir Regency grew by 40.80 percent in the last five years. Meanwhile, when viewed from the calculation based on 2010 constant prices, namely by eliminating the effect of price increases (inflation), during the 2014-2018 period, there was also an increase. Samosir Regency's per capita GRDP at constant prices in 2018 reached 23.30 million rupiahs. Average growth of 5.0 percent in the last five years (BPS Samosir Regency, 2020).

Expansion for Communities to Increase Income

Based on the results of research on the fish breeding process in Samosir, To increase the income of the Samosir community in the fisheries sector, academics suggested to the local government that the government change the Regional Regulation (Perda) on the sale of fish seeds which initially, fish farmers were only allowed to sell seeds with a size of 9- 12 cm for Rp. 250 per head. After further FGDs were carried out between academics, government, and fish farming groups in Samosir, a new regulation was made in the Regional Regulation that farmers may sell fish seeds of 3 (three) sizes, namely 2-3 cm (Rp. 100/head), 3 -5 cm (Rp. 200/head) and 5-7 cm (Rp. 300/head). This finding impacts the addition of fish farming business segmentation so that the velocity of money in fish seed sales transactions is fast. Communities involved in fishing also increase because of more significant and faster profits. This condition also causes market demand for fish seeds to be fulfilled more quickly.

Empowerment of Micro and Small and Medium Enterprises (MSMEs) in the Production and Marketing Process as well as partnership networks between the government, private sector, and local communities.

The empowerment of MSMEs is carried out with guidance related to PIRT (Home Industry Company) licensing. This finding impacts the marketing process with a broader reach in one district. In 2017 processed agricultural products that have received a PIRT number are only 1 product. With the guidance from BP POM and the North Sumatra Provincial MUI, in collaboration with the Samosir Teknopark and the Samosir Regency Manpower, Cooperative, and UMKM Office, in 2018, the PIRT permit increased to 8 processed products. Then in 2019, the PIRT permits increased to 30 MSME products.

Meanwhile, on indicators of the cooperation network that has been built, partnerships have been carried out with local Universities and Fisheries Vocational Schools. Several collaborated universities include Medan State University, Agricultural Vocational High School, Nomensen University, and North Sumatra University. Until now, the Technopark Samsosir model has several tools for relatively complete water quality analysis. It is hoped that the Samosir Technopark Model can also open networks with other related institutions, in this case significantly increasing collaboration networks with industrial groups, local entrepreneurs, hotels, communities, and local media.

Stakeholder Analysis at Teknopark Samosir

Harmonization, empowerment, and partnership networks between actors (Government, Local Government, business, communities, and universities) are essential principles and steps in developing the local economy (Coffey and Polese, 1984; Esteves et al., 2021; Roxas et al., 2020; Yasir et al., 2021). A

technopark institution requires multi-stakeholder collaboration, including local Government, academics, business sector, community, and media, in implementing the technopark program. This finding is in line with the concept of local economic development, which emphasizes the process of area/location-based economic development through collaboration between the Government, the community, and the private sector ("market") to optimize the use of local resources in order to improve the welfare of the community as a whole (Blakely, 2002). Therefore, in order to realize a local economic development strategy, a stakeholder analysis is needed.

To know the role of each stakeholder. In the Teknopark institution, 5 (five) stakeholders are involved in the management of Teknopark, including the Samosir district government, academia, the business sector/MSMEs, the community, and the media. According to Schmeer (1999), stakeholders in a process are actors (individuals, groups, or institutions) who have an interest in a policy or program that will be or is being implemented. Based on the results of analysis, observation, and in-depth interviews, the role of each actor in the collaborative management of technoparks can be seen in the following table:

Table 3: Identification of Stakeholders at Teknopark Samosir

No	Actor	agency	Role in Institutions Technopark
1	Regional Government of Samosir . Regency	Regional Development Planning Agency (BAPPEDA); Regional Secretary (Sekda); Department of Agriculture, Fisheries, and Livestock; Office of Cooperatives and Small Business;	Budget provider Provider of infrastructure, facilities, infrastructure Facilitating and coordinating the implementation of the technopark program
2	Academics	LIPI Researcher	Technology provider Provider of professional staff Guidance, training and coaching
3	Business Sector	Start ups/Starting Companies; MSMEs; field entrepreneur aquaculture	technology user mentoring, training and coaching participants
4	(MSME)	Farmers	technology user mentoring, training and coaching participants
5	Community	local newspapers; PR Samosir Regency Government; LIPI Public Relations	Technopark program news

Source : Author's Results, 2022

Based on the results of stakeholder identification in table 3, it can be seen that there are five stakeholders connected to the technopark institution. For local government actors, the role that has been carried out has been exceptionally well carried out, by being the driving force, both in terms of initiating technopark development, providing budget, and also a facilitator in implementing the technopark program, likewise, in terms of academics as a technology provider and community development and training. However, when viewed from the side of other actors, namely, the business sector, the community, and the media, the roles of the three actors are still passive. In a collaboration forum, the interaction between actors is essential because it benefits the region in solving local problems, formulating regional development, facilitating decision-making, and strengthening networks and system innovation. (Supriyadi, 2012). The business sector, in this case, startups and MSMEs, is only a technology user. This improvement causes the development of startups and SMEs to be slower.

Supposedly, the business sector needs to be involved in providing input and planning, especially in the technology development process. This result is as expressed by Fukuyama (1995). An interactive planning process can help generate independent behavior, mutualistic schemes, and trust as a 'radius of trust.

Local forums need to be built as the basis for the collective activities of several community members (ABGC) who are bound together and think together to contribute to each other. Local forums are small communities responsible for advancing the region and encouraging local economic activities. (Supriyadi, 2012). Cooperation with many industries also helps create industrial clusters that can significantly assist in developing local economies based on regional potential. In addition, from the community side, community leaders and leaders need to be actively involved in the management of technoparks so that they can attract many people to be active in technopark programs. The media, in this case, is expected not only to play a role in reporting on the technopark program, but the emphasis on the role of the media is to assist in the marketing process of technopark products.

Strategy Formulation

The strategy formulation in this study will use the ANP method. The ANP method requires a decision analysis process by grouping criteria before deciding on a choice from various alternatives. The flow of research and grouping that is trying to be built starts from mapping the problem, recommending solutions, and developing program strategies. Each input variable is sourced from the literature review, results of the FGD, and interview process with the respondents. Based on this, the mapping of criteria/sub-criteria or alternatives in this study can be seen in the following ANP network.

Factors Influencing Local Economic Development Strategy through Technopark Development

According to Rindawan (2019), the institutional factor of a Techno Park is one of the keys to the success of creating technology-based innovations in the region. According to Sanz in Anttiroiko (2004), a Technology Park or Science Park must be managed by a professional team. Furthermore, Sanz said that in a technopark, collaboration factors are needed to create a good and permanent network system between various actors. Based on the opinion of the respondents who were processed in the super decision application, each factor has a different geometric mean (GMK). Of the three factors, the greatest GMK value is the collaboration factor of 0.53961. It identifies that the most influential factor in the local economic development strategy through technopark development is the collaboration factor between stakeholders. Meanwhile, the HR factor is the second priority factor with a GMK value of 0.29696, and the smallest GMK value is the institutional factor with a value of 0.16342. The limit of the inconsistency value used in this study is a maximum of 0.10. The inconsistency value resulting from the assessment data on the factor aspect is 0.00885 so it can be concluded that the assessment process is quite consistent. The W value generated from the rater agreement calculation mechanism is 0.48, which means that 48% of respondents agree that the collaboration factor is a priority factor in the local economic development strategy through the development of technoparks in Samosir Regency.

Problem Aspect Analysis

Based on the results of the ANP analysis on the super decision, the priority problems in the local economic development strategy through the development of technoparks on the institutional aspect are the problem of infrastructure limitations with a geomean value of 0.42857. In the HR aspect, the problem of low public interest in coaching and training programs is a priority problem in HR that must be resolved with a geomean value of 0.66666. Meanwhile, in collaboration, the problem of weak commitment between stakeholders is the main problem with a geomean value of 0.68334. Collaboration between stakeholders is the key to the successful implementation of the program in technoparks. According to Rindawan (2019), the stakeholders of a technopark are the government (usually local governments), the research community (academics), and the business and financial communities. Stakeholders work together to integrate the use and utilization of commercial buildings, research

facilities, and conference centers into hotels. The inconsistency value in the problem selection criteria is 002365, still below 0.1, indicating that the respondent's assessment process is relatively consistent

Solution Aspect Analysis

Based on the data processing that has been carried out, the main priority for institutional solutions is the procurement and maintenance of infrastructure according to standards and the addition of infrastructure facilities with a geomean value of 0.44862. As for the solution for determining the legal basis for technoparks, it ranks second, with a geomean value that is not much different, namely 0.40852, and the third is technopark managers who are not only filled by the local government but also representatives of relevant stakeholders, get a geomean value of 0, 14286. Meanwhile, the main priority for HR solutions is the socialization of training and coaching programs that target the needs and problems of the community with geomean values of 0,66663. As for the solution for recruiting professionals, it ranks second, with a geomean value of 0.33337. In collaboration solutions, the main priority is building trust between stakeholders in the collaboration process with a geomean value of 0.68344. As for the solution to build a communication container, it ranks second, with a geomean value of 0, 19981, and a solution for periodic FGD implementation ranks third with a geomean value of 0.11685.

Table 4. Priority Problems and Solutions Processed Results Super Decision Application

No	Problem	Value	No	Solution	Value
1	Infrastructure limitations	0.42857	1	Establishing the legal basis	0.42857
2	membership is not representative	0.14286	2	infrastructure maintenance	0.42857
3	unclear rules	0.42857	3	Representative structure	0.14286
4	lack of dialogue	0.11685	4	FGD	0.11685
5	lack of commitment	0.68334	5	Trust between stakeholders	0.68334
6	no communication platform	0.19881	6	Forming a communication platform	0.19981
7	low interest in coaching and training	0.66667	7	Employee recruitment	0.33333
8	limited professional staff	0.33333	8	Socialization	0.66667

Strategy Priority

The final stage in grouping the ANP network is the selection of local economic development strategies through the development of marine and fishery resource-based technoparks in the Samosir Regency. The strategy formulation started with an analysis of the literature review and the interview process with the respondents. Based on the data processing results using the ANP method, the main priority of the strategy is to build multi-stakeholder synergy in the success of the technopark program to support local economic development in Samosir with a geometric mean value of 0.46730. These results indicate that the synergy between actors is the key to the success of local economic development.

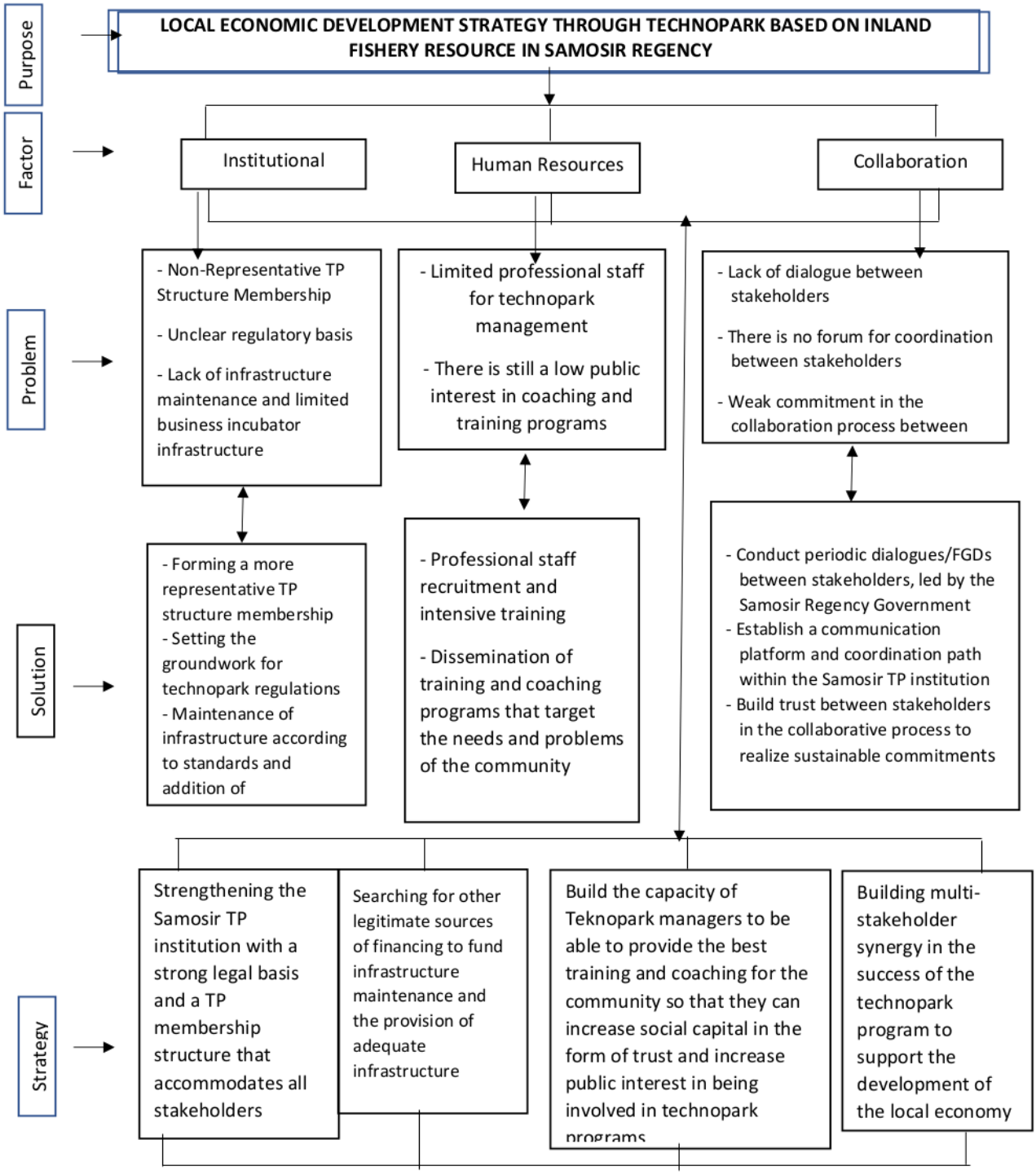

Figure 3. ANP Network Structure

Several studies explain the need for synergies between actor activities and policy synergies with the instruments used are resource mobilization, network areas, clusters, formal and informal associations, and are community-driven on the concept of local economic development (Mabin, 1995; Rip, 2002; Gupta, M Das, et al., 2004).

The second strategic priority is the search for other legitimate sources of financing to fund infrastructure maintenance and the provision of adequate infrastructure with a geometric mean value of 0.27718. The third strategic priority is to build the capacity of Teknopark managers to provide the best training and coaching for the community, to increase social capital in the form of trust, and increase public interest in being involved in technopark programs with a geometric mean value of 0.16009. The fourth priority is strengthening the Samosir TP institution with a solid legal basis and a TP membership structure that accommodates all stakeholders. The inconsistency value in the respondent's answer is 0.0160, still below 0.1, which means that the respondent's answer is consistent. The W value obtained from the rater agreement calculation is 0.47. Therefore, the respondent's level of agreement on the priority strategy is 47 percent.

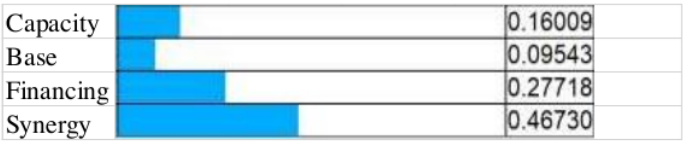

Figure 4: Priority of Local Economic Development Strategy through Development of Aquatic and Fishery Resources-Based Technoparks in Samosir Regency.

Conclusion

Results Based on the research that has been submitted, the conclusions that can be drawn are as follows:

1. The Teknopark program in Samosir, based on 4 (four) indicators of local economic development, According to Blakely (2007), has had an impact on 1) opening up opportunities for small communities in employment and business opportunities; 2) expanding for the community to increase income; 3) the empowerment of micro and small business institutions in the production and marketing process; and 4) institutional empowerment of partnership networks between the government, private sector, and local communities. However, along the way, they are still faced with many problems, including developing the fostered business units; only a few units can still run and face capital problems. In addition, insufficient infrastructure capacity and infrastructure facilities at the technopark business incubation center hinder startups from developing.
2. In the indicator of the empowerment of micro and small institutions in the production and marketing process, there is also a limited number of MSMEs that Teknopark can foster. The MSME coaching program was stopped due to the effects of the COVID-19 pandemic and also limited local government budgets to continue program implementation. Meanwhile, on indicators of institutional empowerment of partnership networks between the government, the private sector, and local communities, there is more active collaboration between local governments and academic actors, both from LIPI and local universities. The development of cooperation networks with large-scale industries as well as community communities has not been seen to be actively carried out.
3. Results Based on the stakeholder analysis of the Penta helix collaboration model on technopark institutions, the roles of the three actors, namely the business sector, community, and media, still seem passive in the institutional and implementation of technopark programs.

4. Results Based on the ANP network analysis, it can be seen that the collaboration factor is the most influential in developing local economic strategies through the development of technoparks in Samosir. This finding is because the collaboration factor is the key to the program's success. All stakeholders' commitment and participation are needed to implement the technopark program that supports local economic development. Based on the problems, the problem of limited infrastructure and facilities, the problem of low public interest and the problem of weak commitment are priority problems that must be resolved. Therefore, based on this, the priorities are, among others, the addition of infrastructure and facilities that follow the standard of development solutions, outreach and development programs that target the needs and problems of the community, and building trust among stakeholders in the collaboration process to realize commitments sustainable.
5. Priority Formulation Strategies in Local Economic Development through Development of Aquatic and Fishery Resources-Based Technoparks include 1) Building multi-stakeholder synergy in the success of the technopark program to support local economic development in Samosir, 2) Finding other legitimate sources of financing for infrastructure maintenance and provision more adequate infrastructure, 3) Building the capacity of Teknopark managers to provide the best training and coaching for the community, to increase social capital in the form of trust and increase public interest in being involved in the Teknopark program, 4) Strengthening Samosir TP institutions with a solid legal basis and a TP membership structure that accommodates all stakeholders.

Based on the mapping of factors, problems, and solutions in technopark institutions, as well as stakeholder analysis on the Samosir technopark institutional model, the collaboration between stakeholders is a priority that must be considered. For example, the Samosir Regency Government needs to actively involve the business sector, the community, and the media in designing the technopark program and procuring technology for the management of technopark management. The synergy between stakeholders is expected to create industrial clusters and value chains from Teknopark Samosir so that they can significantly assist in developing the local economy based on regional potential.

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