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**RESEARCH ARTICLE**

## Infrastructure Development Strategy in Increasing Connectivity Between Regions: A Case Study in North Tapanuli Regency, Indonesia

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**ABSTRACT**

This study aims to examine infrastructure development carried out by the local government and formulate a strategy to accelerate infrastructure development in increasing inter-regional connectivity in North Tapanuli Regency, Indonesia. The qualitative descriptive research method was employed in the study. The data collection technique is through interviews with purposively determined informants from government circles and parties related to infrastructure development. Observation techniques and documentation studies were also used in this study. Data were analyzed using descriptive analysis techniques, including data condensation, data presentation and drawing conclusions. SWOT analysis is used to analyze internal and external factors to formulate a strategy to accelerate infrastructure development in increasing inter-regional connectivity in North Tapanuli. The results of the study show: 1) The construction of road and bridge infrastructure in North Tapanuli Regency has not been optimally implemented. 2) The strategy for accelerating infrastructure development in increasing inter-regional connectivity, namely the S-O (strength - opportunities) strategy, uses strength to maximize the utilization of existing opportunities. The strategy for accelerating development includes stakeholder synergy in funding, aspiration-based communication and coordination, capacity building and institutions as facilitators, government as a catalyst for participation, leadership as a mediator for synchronization between the implementation of development programs, and action plans based on linkages with the development of priority sectors.

**KEYWORDS**

Infrastructure Development Strategy, Connectivity Between Regions

**ARTICLE INFORMATION**

**ACCEPTED:** 20 March 2023

**PUBLISHED:** 30 March 2023

**DOI:** 10.32996/jefas.2023.5.2.7

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**1. Introduction**

Based on The Global Competitiveness Report 2019, compiled by the World Economic Forum (WEF), Indonesia ranks 72nd out of 141 countries in terms of infrastructure development. This sequence shows the weak condition of infrastructure in Indonesia, which is marked by the lack of quality and quantity of existing infrastructure and has an impact on Indonesia's economic growth, which is running inefficiently. Weaknesses in limited infrastructure will also affect investment, where investors are hesitant to invest if transportation costs are high or the supply of electricity is not guaranteed. According to data published by the Indonesian Chamber of Commerce and Industry (Kadin Indonesia) that "as much as 17% of the total expenses of companies in Indonesia are absorbed by logistics costs. In fact, in the economies of neighboring countries, this figure is just under ten percent. Meanwhile, inefficient logistics problems covering the fields of transportation, warehousing, cargo consolidation, border clearance, distribution and payment systems hinder entrepreneurs' opportunities to expand their businesses (Arviandi, 2019).



Graph 1.1 Indonesia Infrastructure Budget 2014 – 2022 (Trillion)

Source: Ministry of Public Works Republic of Indonesia, 2021; RI Ministry of Finance Republic of Indonesia, 2022

Based on Graph 1.1 above, it is known that the infrastructure budget has increased from year to year for 9 years, but in 2020 it experienced a drastic decline. In 2021 the government issued the largest infrastructure budget during 2014-2022, namely 417.4 trillion. In 2022, the good condition of the bridge in the North Tapanuli district was 85.87%, the remaining 12.50% is in moderate condition, and 1.63% is in a slightly damaged and heavily damaged condition. Overall the condition of the bridges in North Tapanuli Regency is in good condition. It can be seen from 184 bridges a total of 158 bridges are in good condition. The stability of the bridge in North Tapanuli Regency is 85%.

The importance of the availability of regional infrastructure, especially roads and bridges, has a strategic position for regional development. If the infrastructure for roads and bridges is not properly provided or is inadequate, the distribution of superior products from the regions to marketing centers will undoubtedly be hampered. Likewise, access to various tourism potentials in North Tapanuli Regency is not running smoothly. As a result, it is difficult for regional growth and development from the agricultural, trade and tourism sectors to increase. The realization of inter-regional connectivity through the construction of road and bridge infrastructure is expected to be able to stimulate community economic growth in the trade, service and tourism sectors which are also expected to have an impact on increasing regional competitiveness.

Integration of planning and synchronization of regional development with PUPR infrastructure is the responsibility of the central and regional governments. This has been carried out in the same way as infrastructure development in the National Tourism Strategic Area (KSPN) / Super Priority Tourism Destination (DPSP) of Lake Toba in North Sumatra Province. These program points have the potential to be implemented because, in the vision and mission of the Tapanuli Regency Government, there is a related vision, namely the vision as a tourism destination.

At strategic program points, increasing local government support, especially in terms of providing readiness criteria which are the responsibility of the region, the researcher assumes, will face challenges where in relation to connectivity between village areas, until now data collection regarding the potential and integrated data relating to village conditions is still not actual and available. The third point is the attainment of the national infrastructure development target into a unified system that requires synchronization of development priorities between the central and regional governments, enabling implementation as in the RPJMD of the North Tapanuli Regency government; of course, it has been synchronized according to the RPJMN.

The fourth point of the strategic program is to realize an infrastructure development program that is right on target and on time, namely increasing commitment between the center and regions for the sustainability of the infrastructure that has been built by the Ministry of PUPR. It is possible for local governments to make commitments, but this often happens in terms of political will and the integration of local government officials in caring for them. This is like often the budget allocation for the maintenance of existing infrastructure is insufficient, minimal, and not even budgeted for.

The challenge that is felt the most severe for local governments is the sixth point, namely encouraging creativity and innovation for local governments to seek funding sources outside of the State Budget (APBN)/Special Allocation Fund (DAK), as is well known that the regional potential in North Tapanuli Regency is dominated by the agricultural and tourism sectors. The existing potential is still unable to increase the original income (PAD) of the North Tapanuli Regency. The involvement of funding from the private or business sector through partnership schemes and Corporate Social Responsibility (CSR) researchers assume it is still not enough to overcome obstacles in the funding sector in North Tapanuli Regency; the researchers assume that the potential is still so small.

Increasing regional responsibility in managing assets, especially after the construction phase, to achieve the PUPR infrastructure program on target and on time, researchers predict it is still difficult to achieve target accuracy and time. Given this, asset management mechanisms are often faced with problems of Corruption and abuse of authority.

Several studies related to the implementation model of local government policies in realizing infrastructure development (Gumelar, 2018) with a synthesis/hybrid model, namely a mixed model of infrastructure policy implementation by elaborating central government intervention and community participation. Infrastructure development is not only for economic development but supports socio-cultural and ecological systems in an integrated manner. According to research by (Kuahaty et al., 2019), road infrastructure development policies not only provide changes that are seen as road performance outputs for residents of rural areas but also provide socio-economic changes for the population from the perspective of policy outcomes. The development of road infrastructure also has implications for the problem of accessibility of residents in rural areas. Research by (Thacker et al., 2019) categorizes the positive and negative effects of infrastructure and the interdependence between infrastructure sectors.

Policymakers need to establish a long-term vision for a sustainable national infrastructure system, which is informed by the SDGs, and develop plans according to the infrastructure development vision. The contribution to the growth of transport investment differs from region to region, but research highlights the finding that transportation affects economic growth at the aggregate level. The lack of maintenance infrastructure eliminates the positive effects of investment over time in the medium term (Magazzino & Mele, 2021). The provision of infrastructure has a positive effect on regional economic growth and reduces poverty. Infrastructure spending, electricity capacity, and accommodation buildings have a significant positive effect on the regional economy (Sumardjoko & Akhmadi, 2019).

Observing the problems and challenges related to road and bridge infrastructure in North Tapanuli Regency to improve connectivity between village areas, researchers are interested in conducting studies to obtain an overview of road and bridge infrastructure development in North Tapanuli Regency to further formulate a road and bridge infrastructure development strategy to improve connectivity between village area.

## **2. Literature Review**

### **2.1 Definition of Development**

Development is defined as increasing people's ability to influence their future. This understanding provides an understanding that development projects and programs not only need to produce changes that are physical and concrete in nature but also need to produce such things in a certain way so that people gain greater capacity to choose and respond to these changes. This means that planned change must take into account the potential of individuals as well as their autonomy as a person (Bryant et al., 1987).

### **2.2 Regional Development Strategy**

Regional development strategies can be grouped into four groups (Arsyad, 2004):

1. Physical Development Strategy or Locality  
It is carried out with a program to improve the physical condition or locality of the area for the benefit of industrial and trade development. The aim is to create a regional or city identity, improve the charm base or quality of life of the community and improve the regional business world.
2. Business World Development Strategy  
Development of the business world is an important component in planning for regional economic development because of the attractiveness, creation or power of a healthy regional economy.
3. HR Development Strategy  
Human resources are the most important aspect of the process of economic development.
4. Community Economic Development Strategy  
This community development activity is an activity aimed at developing a community group in an area or known as a community empowerment activity. The purpose of this activity is to create social benefits, for example, through the creation of labour-intensive projects to meet the necessities of life or gain profits from their business.

### **2.3 Regional Infrastructure Development**

The theory related to the accelerated development strategy is the big push theory. This theory was coined by Paul Narcyz Rosenstein-Rodan (Rosenstein-rodan, 1961). Developing countries will break the chain of poverty, requiring "large-scale investment" in the industrial sector (big push). This large-scale investment will create synergistic interactions in various sectors. However, this is very difficult to do because the application of the big push concept requires the support of social infrastructure such as roads, bridges, ports, communication systems, hospitals, schools, irrigation, and so on.

Big push theory states that infrastructure needs to be built; first, everything else develops and then flows (trickle down effect). This theory states that in order to overcome the obstacles to economic development in underdeveloped countries and to push these economies towards progress, a "strong push" or a large overall program is needed in the form of a minimum amount of investment. There are a minimum number of resources that must be provided if a development program is to be successful.

The Big Push theory is used to cut the poverty chain, namely by investing on a large scale in the industrial sector. Over time this theory was later developed (Nurkse, 1971); he stated that development must be carried out by developing all sectors simultaneously in a balanced and equitable manner (Nurkse, 1971). This theory is also often known as the concept of balanced strategy development, which is defined as the pace of investment running simultaneously and variously to boost aggregate demand, complementary.

The Big Push theory is very close to capital and infrastructure. The ease of capital and its alignment with developing regions is a strategic step. The construction and development of infrastructure that connects many areas with business centers seem to really need to be prioritized by the government. The assumption of a balanced growth model is that there are practical and commercial complements in the industry in the production process in various sectors in accordance with external economics and massive and simultaneous production.

## **2.4 Interregional Connectivity**

The development of urban and rural areas requires access, namely ease or affordability to other areas or the affordability of the area to the surrounding area. Access factors in the previous approach are called external factors, which contain the power of interaction, interrelation, and regional independence with other regions both regionally, nationally and globally. The higher the value of the accessibility of the region to other regions, the higher the potential for regional development (Muta'ali, 2013).

Connectivity is manifested in the availability of infrastructure to minimize disparities between regions, even out development, and reduce poverty in a country (Hidayati S.Si, 2019). Connectivity is the existence of accessibility that is able to facilitate reach between regions, where access to a variety of information on a global scale supports equitable development throughout the region. Strengthening regional connectivity is one of the strategies for accelerating and expanding economic development. There are three principles of the concept of connectivity, including: maximizing growth through regional unity, not uniformity (inclusive development) by connecting growth centers. Second, expanding growth through regional connectivity through an intermodal supply chain system that connects hinterlands and those that are lagging behind with growth centers. Third, achieving inclusive growth by connecting remote areas with basic infrastructure and services in obtaining development benefits (Muta'ali, 2013).

## **3. Methodology**

This study uses a qualitative descriptive approach to understand phenomena by research subjects holistically, broadly and deeply. by way of a description of the strategy for accelerating development in order to improve connectivity between village areas. Data collection techniques were carried out through in-depth interviews in order to obtain more in-depth data and information. Data analysis techniques use SWOT analysis and interactive models, where activities in qualitative data analysis are carried out interactively and continuously until complete so that the data is saturated (Miles & Huberman, 2009). Testing the validity of the data with triangulation techniques, namely check, recheck, and crosscheck.

## **4. Results and Discussion**

### **4.1 Analysis of Infrastructure Development Strategy in North Tapanuli Regency**

Based on the SWOT analysis, it is known that the analysis matrix produces some of the best alternative strategies for increasing infrastructure development in order to increase connectivity between regions that need to be implemented in North Tapanuli Regency, including:

#### **1. S-O (strength – opportunity)**

This strategy is a strong strategy to maximize the potential and opportunities that exist, including:

- a. Increase the synergy between governments at all levels to increase the potential for short-term and domestic funding support such as DPRD aspiration funds, APBDes and CSR.
- b. Intensifying good communication between regional heads, regional apparatus and DPRD in gathering people's aspirations to take advantage of potential budgetary resources from the central government.
- c. Empowering the availability of heavy equipment owned by the Regency Governments for use by the community to support the smooth development of regional infrastructure.
- d. Increasing the involvement of human apparatus resources in the implementation of development to increase community participation in mutual cooperation.

- e. Optimizing the ability of the District Head to lobby the budget to the central and regional levels to support the development of National Tourism Destinations.
- f. Optimizing achievements in regional planning to optimize the development of the agricultural and tourism sectors as development capital.

**2. W-O (weakness – opportunity)**

A strategy in which weaknesses are attempted to be corrected or overcome by taking advantage of existing opportunities. This strategy includes:

- a. Prioritizing the areas to be built through optimizing the potential of DPRD aspiration funds, APBDes and corporate CSR funds.
- b. Increasing PAD by utilizing the budget from the center to increase investment in the regional economy.
- c. Synchronizing regional development priorities with central policy development priorities while empowering the support of community elements, community leaders, religious leaders and traditional leaders in infrastructure development.
- d. Simplify and accelerate service bureaucracy to increase public trust so as to increase community participation.
- e. Synergize the OPD involved with a clear division of authority and eliminate sectoral egos to support tourism sector projects as a national priority agenda in order to stimulate tourism supporting infrastructure development.
- f. Making the new regional leaders committed to continuing the previous program to support the development of the agricultural and tourism sectors as capital for infrastructure development.

**3. S-T (Strength – threat)**

This strategy is a strategy in which the strengths possessed are used to overcome the threats faced. This strategy includes:

- a. Increasing synergy between governments at all levels to control regional and population development.
- b. Intensify good communication between regional heads, apparatus and DPRD in increasing community productivity in areas that have been built to streamline infrastructure, especially in terms of maintenance.
- c. Empowering the availability of heavy equipment owned by the Regency Government to be used in accelerating the opening of access to isolated areas.
- d. Increasing the involvement of apparatus human resources in the implementation of development to accelerate the handling of the Covid-19 pandemic and streamline the budget.
- e. Optimizing the ability of the District Head to lobby the provincial and central governments in handling disaster-prone areas in the implementation of infrastructure development.
- f. Incorporate policy directions and strategies in regional planning to overcome rising land prices and overcome parties who oppose infrastructure development.

**4. W-T (weakness – threat)**

A strategy in which the weaknesses possessed is to be minimized or avoided in order to simultaneously overcome the threats encountered. This strategy includes:

- a. Prioritizing the areas to be built, together with increasing control over regional and population developments, in order to streamline the budget.
- b. Increasing PAD simultaneously with increasing community productivity in the economic sector so that PAD can become capital for infrastructure development.
- c. Synchronizing regional development priorities with central policy development priorities in line with efforts to facilitate the accessibility of heavy equipment so that development projects can be accelerated.
- d. Simplifying and accelerating service bureaucracy to increase the speed of handling the Covid-19 pandemic so that it can maintain budget allocations for infrastructure development.
- e. Synergize the OPD involved with a clear division of authority and eliminate sectoral egos along with efforts to deal with disaster-prone areas.
- f. Make the new regional leadership committed to continuing the previous program as well as a commitment to take action against speculators and parties who are against infrastructure development.

Based on the processing of the IFAS matrix and IFES matrix, it was found that the results of the calculations and analysis led to the selection of the best strategy that can be applied, namely the SO (strength-opportunity) strategy, which is a strategy to strengthen one's strengths by taking advantage of existing opportunities. This strategy is also known as a strategy to support aggressive growth policies (growth oriented strategy).

#### **4.2 Development Acceleration Strategy**

As a result of processing the IFAS and EFAS SWOT matrices, it is known that the S-O strategy is an ideal strategy to be applied to the strategy of accelerating road and bridge infrastructure development in North Tapanuli Regency. This strategy is a strategy in which the strengths possessed are used to maximize the potential and opportunities that exist. This strategy covers the following:

- 1) Increasing the synergy between governments at all levels to increase the potential for short-term and domestic funding support such as DPRD aspiration funds, APBDes and CSR.
- 2) Intensifying good communication between regional heads, apparatus and DPRD in gathering people's aspirations to take advantage of potential budgetary resources from the central government.
- 3) Empowering the availability of heavy equipment owned by the Regency Governments for use by the community, which supports the smooth development of regional infrastructure.
- 4) Increasing the involvement of apparatus human resources in the implementation of development to increase community participation in mutual cooperation.
- 5) Optimizing the ability of the District Head to lobby the budget to the central and regional levels to support the development of National Tourism Destinations.
- 6) Optimizing achievements in regional planning to optimize the development of the agricultural and tourism sectors as development capital.

The strategy for accelerating development based on existing conditions is analyzed based on the observations of researchers and information from informants that represent the expectations and realities of development actors and affected communities. Some concepts can strengthen design or construction thinking about conceptual and functional strategies. Strategy identification is said to be conceptual because the results of elaborating primary and secondary data are based on theory or concept. Functional validation is needed to produce functional indications about strategies that are able to explain conditions and strategic framework references whose outputs are represented in work programs or action plans.

The elaboration of the six points of the S-O strategy then summarizes the strategic elements as follows:

- 1) Synergy in central, provincial, APBDes and CSR funding. Actors in infrastructure development, especially the government, must synergize in funding infrastructure development, both from central, provincial, APBDes and corporate CSR. This strategic aspect becomes part of the integration of various things in development planning.
- 2) Communication and coordination between stakeholders to produce assistance from the central government based on community aspirations. The government, as a central figure in infrastructure development, must actually be able to communicate and coordinate among all the agencies involved with an emphasis on people's aspirations. Aspects of the strategy become an integral part of various things in the implementation of development.
- 3) Empowerment of the capacity of the available resources to accommodate and facilitate participation, meaning that the government, as a central figure, development facilitator must have the capacity of the resources to be able to empower it to increase participation. This aspect of the strategy is an integral part of development implementation and supervision.
- 4) The role of government as a catalyst for community participation in mutual cooperation. That is, the government is a catalyst for managed participation to support development. As an actor and catalyst, the government provides opportunities and even manages community participation in various stages of development. This aspect of the strategy is an integral part of the implementation of development.
- 5) The leadership of agency leaders as interrelationship mediators and synchronization between development programs. The main figure in an institution is, of course, the leader, so leadership is, as much as possible, a mediator of relations and synchronization between development programs implemented by the regions and the provinces and the center. This aspect is an integral part of development monitoring and evaluation.
- 6) The action plan in regional planning is based on priority sector development. The government, as a central figure in development, should ideally adhere to action plans or normative plans that are decided jointly and involve all authorized and affected parties. The action plan, in the strategic context, is directed based on the linkages of infrastructure development with the priority sectors being developed. For example, the urgency of the need to build many roads, namely in the context of supporting agricultural and tourism development programs, roads and elements of tourism and agricultural commodities are interconnected. This aspect of strategy becomes an integral part of planning.

#### **5. Conclusion**

*Infrastructure development carried out by the local government in North Tapanuli Regency has not been optimally implemented; for example, road and bridge infrastructure development in North Tapanuli Regency faces some obstacles like land acquisition that use a persuasive approach to ask the land owner's willingness to grant their land is seen as less effective, and it is not uncommon for land acquisition to be tinged with protracted conflicts over land compensation. The human resource capacity and institutional*

capacity of the North Tapanuli Regency Government with the availability of heavy equipment, fairly good coordination, and the availability of projects that are feasible to fund but are constrained by budget constraints. The governance of the North Tapanuli Regency Government, despite the low potential and incidence of KKN in the past few years in the implementation of infrastructure development. However, governance is characterized by a lack of acceleration by the government bureaucracy in the implementation of infrastructure development. Availability of funding, where the North Tapanuli Regency Government has low budget allocation capabilities, both short-term and domestic/regional funding schemes such as sourced from APBD, PAD, APBDes to CSR, as well as long-term foreign funding schemes such as sourced from the central government, grants, loans as well as foreign investment.

Empirically, the research findings stated that local governments, as implementers of infrastructure development, do not have enough capacity to accelerate infrastructure development in order to improve regional connectivity. Although the government is able to empower community participation, it has not been able to empower the private sector in the PPP approach. In another sense, local governments have not been able to articulate the function of government, namely the function of development optimally.

Theoretically, the research findings are not in line with Todaro and Smith's theory of the aspect of overall change that is difficult for local governments to achieve; in addition to the positive impacts felt by the targets, the benefits have not been significantly felt to improve the welfare of the community.

By implication, the research findings cannot be in line with *the big push theory*, which states that it is necessary to build infrastructure first; everything else develops then flows (*trickle down effect*). To push economic development towards progress requires a "strong push" or a large, comprehensive program in the form of a minimum amount of investment. The way it works "little by little" will not drive the economy successfully on the trajectory of development; But a large amount of infrastructure investment is an absolute requirement. This way of working and absolute requirements is difficult to achieve by the various limitations faced by the government daerah.

*To answer how to formulate a strategy to accelerate infrastructure development in increasing inter-regional connectivity, the researcher analyses using the SWOT Analysis model and choose the S-O (strength-opportunities) strategy, which uses existing strengths to maximize the utilization of existing opportunities. The accelerated development strategy includes stakeholder synergy in funding, aspiration-based communication and coordination, capacity and institutional empowerment as a facilitator, government as a participation catalyst, leadership as a mediator for synchronization between the implementation of development programs, and action plans based on linkages with the development of priority sectors.*

**Funding:** This research received no external funding.

**Conflicts of Interest:** The authors declare no conflict of interest.

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