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Analysis of Strategic Variables for the Development of Indonesia – Papua New Guinea Border Area

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A b s t r a c t

The Republic of Indonesia (RI) - Papua New Guinea (PNG) border area is one of the national borders on the island of Papua and is located very strategically from a cultural, social, economic and political perspective. This region is an underdeveloped area with various complexities of problems in it. Therefore, it is crucial to develop the region in the context of improving people's welfare and maintaining states sovereignty. This study aims to analyze strategic variables in the development of the RI-PNG border area with a prospective analysis approach using the MICMAC (Matrix of Cross Impact Analysis) method. The results show that the key variables that have strong influence and little dependence on the development of the RI-PNG border area are customary leadership, regulation, border governance, budget support and public infrastructure. These variables are also the driving variables that affect the overall development system.

Keywords: Development; Border Region; MICMAC

Introduction

Administratively, there are five autonomous regions in Papua Province which are directly adjacent to the state of Papua New Guinea (PNG). The autonomous regions in question are Merauke Regency, Boven Digoel Regency, Pegunungan Bintang Regency, Keerom Regency, and Jayapura City. These border areas are included in the category of areas that have a high level of poverty, inter-regional inequality, and high economic cost. This is then main problem that causes the state border areas in Papua Province to be classified as isolated and underdeveloped areas. Of the five autonomous regions, the Bintang Mountains Regency is the most underdeveloped area, both in terms of human resources and infrastructure aspects. Data from the Central Statistics Agency for Indonesia in 2019 shows that the lowest HDI is in the Pegunungan Bintang Regency of 46.48, while the highest is Jayapura City of 80.16 (BPS, 2020).

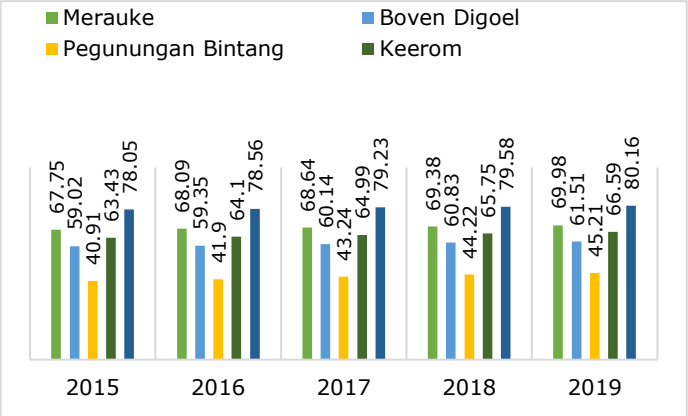

Figure 1. HDI at the RI-PNG Border (BPS 2020)

Although Jayapura City has the highest HDI in the RI-PNG border area, the poverty rate is also the highest, reaching 34.42%; while the lowest is Keerom Regency, which is 9.55% (BPS, 2020). The above condition is a real picture that there is inequality between regions in the five autonomous regions of the RI-PNG border. One of the factors that causes inequality between regions is the geographical condition of the region (topography) in Papua, especially the mountainous areas which are difficult and cannot be reached by land transportation facilities across districts. The construction of the trans-Papua road (Merauke - Boven Digoel - Pegungan Bintang - Keerom - Jayapura City) is one of the obstacles in efforts to accelerate development in the autonomous regions of the country's borders.

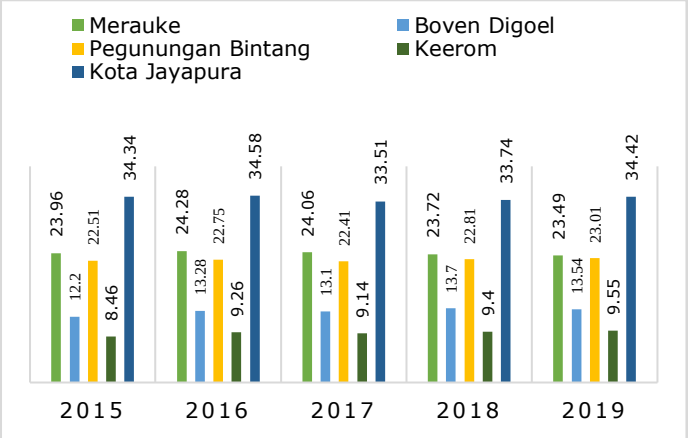

Figure 2. Poverty Rate at the RI-PNG Border (BPS 2020)

In general, the border areas in Indonesia are quite different from the border areas of neighboring countries. For example, research that has been carried out by (Husnadi, 2006) on the Entikong-Serawak border showed that the border area in Malaysia is more developed so that people living in the Entikong border travel more often to Malaysia to look for work and also shop for basic needs compared to those in Malaysia. Husnadi research was proven by Rahim (2022) using the Aggregation Model (OECD 2008), which stated that the Papua border area is in the developed area, when viewed from the development index of Papua border that is ranging from 14,6 – 27,1 throughout 2010-2019. Nevertheless, the average poverty rate in Papua border areas is still very high.

Based on the empirical facts above, it can be concluded that the low level of population welfare, high poverty, low quality of health, and low quality of education are the main problems in almost all border areas of the Republic of Indonesia with neighboring countries. To overcome the problems above, one of the efforts made by the government is to intervene by making policies in accelerating the development process in border areas as the face of the state.

Policy intervention is a strategic action taken and carried out unilaterally by the government in the form of priority programs through accelerating the development of border areas as entry points for trade and cross-border economy. One example of government policy intervention at the RI-PNG border is the establishment of the Integrated Cross-Border Post (PLBN) in Skow (Jayapura City),

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Yetetkun (Boven Digoel), and in Sota (Merauke Regency). The government hopes that with the construction of the three PLBNs, there will be an increase in the flow of goods and services traffic from people in both countries and at the same time changing the face of the front as the country's storefront.

However, the above expectations have not been fully realized due to various actual problems, including: first, the development and utilization of the potential of border areas that has not been optimal. Second, the lack of availability of basic facilities and infrastructure in the border area, causing the border area to always be left behind and isolated with a low level of community welfare and lack of accessibility. Third, the low quality of human resources. Fourth, the uneven distribution of the population due to the geographical characteristics of the area. Fifth, environmental damage due to uncontrolled exploitation of natural resources regardless of their carrying capacity, especially in land border areas (BNPP, 2011).

The five actual problems are also caused by institutional factors due to the character of the bureaucratic and political elite who tend to fight less for their own people in border areas who live in poverty (BNPP, 2011).

The purpose of this article is to identify the key factors that directly influence the development of the border area in the Province of Papua-Papua New Guinea using a prospective analysis.

According to Husnadi (2006), in general, the development of border areas in various countries based on regional economic trends is divided into four typologies: first, the backward region of a country is oriented towards more developed neighboring countries; second, areas of more developed countries are oriented towards neighboring countries that are relatively lagging behind; third, each country is not mutually oriented to one another; and fourth, the two regions are aiming for cooperation towards economic integration.

Another study by (Imbiri, 2011) stated there is economic inequality, lagging behind in the development process, and isolation in the leading villages in Muara Tami District, Jayapura City and Wutung Village (PNG) which border each other between the two countries. Likewise, the Papua New Guinea government seems to apply closed policy in accessing its border areas, so that economic growth in the border areas is very slow and the level of welfare of the people in Wutung Village is also very low.

Seeing the inequality between border areas and urban areas that has the potential to harm Indonesia from an economic and political perspective, the central government has begun to change the old paradigm which was originally only oriented inward (inward looking) with a new paradigm that is oriented to the outside (outward looking).

The new paradigm in the development and management of border areas in Indonesia is due to the (military) security approach that has been used so far only to guard the country's borders. Whereas in the border area there are economic potentials that should be utilized optimally to improve the welfare of the population at the border.

On this basis, development policies for border areas in Indonesia have begun to receive attention from the government, especially in the era of President Joko Widodo's administration. One of the policies of the Nawacita concept that is relevant to the direction of border area development is the third agenda of Nawacita, which is to build Indonesia from the periphery by strengthening regions and villages within the framework of the Unitary State of the Republic of Indonesia (Rahim 2021).

Based on the above background, the scope of this research is to analyze the role of the key factors (variables) that influence the development of border areas in Papua Province. This research is different from previous research because in several border studies in Indonesia, there has been no research using the MICMAC method in the study of border areas in Indonesia. This research is the first to be conducted in Indonesia, particularly in the development and management of border areas in Papua Province using prospective analysis.

Research Method

Data Collection

The technique of data collection is done by purposive sampling. Purposive sampling is a technique of selecting stakeholders who are directly involved with the border. They are also respondents who represent institutions based on expertise in their field and understand border issues.

Data obtained from respondents is in the form of primary data based on the distribution of questionnaires and in-depth interviews with selected respondents, as well as field surveys. Respondents will determine the variables based on the questions in each questionnaire.

The selected respondents came from technical agencies such as the National Border Management Agency (in this case, the Skouw PLBN Administrator), the City Environment Service, the Papuan Border and Foreign Cooperation Agency, Jayapura City Border Management Agency, Muara Tami District Military Command, Papua Province Development Planning Agency, Jayapura City Development Planning Agency, Papua Province Public Works and Spatial Planning Office, Papua Province Industry and Trade Office, Papua Province Transportation Service, Muara Tami District Government Jayapura City, and Skou Village Government, Jayapura City.

Table 1
Key Factors (variables) Identified in the Development of Sustainable Frontier Areas

Dimension	Factor (Variable)	Label
Social-Culture	Quality of Human Resources	QHR
	Social Capital and Local Wisdom	Social_Cap
	Community Conflict of Land and Nature	Conflict
	Productivity of Human Power	Productivity
	Trends in Migration Population	Migration
	Level of Poverty	Poverty
	Rate of People	Pop_Rate
	Level of Education	Educaton
Economy	Regional Competitiveness	Competitiv
	People's Revenue	Revenue
	Regional Income (PAD)	Reg_Income
	Investment Value of PMA/PMDN	Invesment
	Natural Resources Extract	Nat_Extract
Environment	Carrying Capacity	Carryng_Cap
	Land Conversion	Convertion
	Environmental Damage	Environment
Infrastructure	Public Infrastructure	Public_inf
	Security and Defense Infrastructure	Defense_inf
Law and Institution	Disintegration of Nation	Disintegration
	Crime of Cross Border	Border_Crime
	Corporation of Cross Border	Cooperation
	Regulation of Area	Regulation
	Supporting Budget	Budget
	Local Leadership (Adat)	Leadership
	Land Availability	Land

Source: Primary Expert Data (2020)

Data Analysis

The data analysis technique used is MICMAC (Matrix of Cross Impact Analysis) software. This software has been developed by the Institut d'Innovation Informatique pour l'Entreprise under the supervision of the Laboratory for investigation in Prospective Strategy and Organization, LIPSOR Godet (Godet, 1999).

MICMAC analysis plays a role in doing three things: (1) determining the key factors, namely the influence factor and the dependent factor; (2) mapping the relationship between factors in the coordinates of influence (Y) and dependence (X) as well as the relevance of these factors in the system; and (3) explain the causal chain of the system (Fauzi 2019).

Mapping factors in the system using MICMAC, there are four stages that must be done, namely: (1) defining the problem; (2) identify internal and external factors; (3) identify the relationship between variables; and (4) mapping variables and rankings. The first and second stages were carried out through questionnaires and individual interviews (in-depth interviews) with some stakeholders to explore in-depth data and information about the potential and constraints occur in the development of border areas. While the third and fourth stages were carried out using MICMAC software.

The level of relationship between variables was assessed using a Likert scale. The form of the assessment is as follows: 0 = no relationship; 1 = weak relationship; 2 = moderate relationship; 3 = strong relationship; P = potential effect (cannot be determined but has the potential to appear in the future).

The results of the assessment of the relationship are identified into three groups of influence, namely direct influence, indirect influence, and potential influence. First, a direct effect occurs when one variable affects other variables without going through other variables. Second, indirect effect occurs when one variable affects other variables and other variables affect other variables. Third, the

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potential effect occurs when the influence of one variable contradicts another. Fourth, there is no relationship if one variable has no effect on other variables (Stratigea, 2013).

Table 2
Key Factors (variables) Identified in the Development of Sustainable Frontier Areas

	1 : Quality_HR	2 : Conflict	3 : Manpower	4 : Poverty	5 : Pop_Rate	6 : Competitiv	7 : Income	8 : Budgeting	9 : Investment	10 : CarringCap	11 : Convertion	12 : Public_Inf	13 : Defens_Inf	14 : Governance	15 : Sequrity	16 : Crime	17 : Coorp	18 : Regulation	19 : Leadership	20 : Productiv	21 : Nat_Extrac	22 : Eduction	23 : Env	24 : Ec_Growth	25 : Migration	26 : Land
1 : Quality_HR	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0
2 : Conflict	0	0	0	0	0	0	0	0	3	0	3	0	0	0	3	0	0	0	0	0	3	0	3	3	0	2
3 : Manpower	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 : Poverty	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
5 : Pop_Rate	0	0	0	0	0	1	0	0	0	1	1	0	1	0	3	0	0	0	0	0	0	0	0	2	0	0
6 : Competitiv	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
7 : Income	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
8 : Budgeting	2	0	0	0	0	2	0	0	0	0	0	3	3	0	3	0	2	2	3	0	0	2	2	0	0	0
9 : Investment	0	0	3	0	2	2	2	0	0	3	3	3	0	0	0	0	0	0	0	0	0	0	3	3	3	0
10 : CarringCap	0	1	0	0	1	0	0	0	2	0	0	2	1	0	0	1	0	0	0	0	0	0	3	2	1	2
11 : Convertion	0	3	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
12 : Public_Inf	0	1	2	3	0	3	3	0	3	2	1	0	0	0	2	3	0	0	0	2	0	0	1	3	3	0
13 : Defens_Inf	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	2	0	0	0	0	0	2	0	0	0
14 : Governance	0	3	0	0	3	3	0	0	1	0	3	1	0	0	2	3	3	0	2	0	0	0	1	0	3	0
15 : Sequrity	0	0	3	0	0	0	3	3	3	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	2	0
16 : Crime	0	3	0	0	0	0	0	0	0	3	2	0	0	0	3	0	0	0	0	0	0	0	3	3	2	0
17 : Coorp	0	0	3	0	0	3	3	0	0	0	0	0	0	0	0	3	0	0	0	1	0	3	0	3	1	0
18 : Regulation	0	3	0	2	3	3	3	0	3	3	3	3	0	0	0	0	3	0	0	0	0	0	3	0	3	3
19 : Leadership	0	3	0	0	0	0	0	0	0	0	3	1	2	1	3	2	0	2	0	0	2	0	2	0	3	3
20 : Productiv	0	0	0	3	1	3	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 : Nat_Extrac	0	3	1	1	0	0	1	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0
22 : Eduction	1	0	1	2	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0
23 : Env	0	3	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 : Ec_Growth	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25 : Migration	0	0	0	0	3	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	3
26 : Land	0	3	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

The table above is a raw input data base on expert opinion that will be processed using MICMAC application (software).

The operational principle of the cross-matrix on MICMAC is in filtering influence and dependent variables. The principles of MICMAC are carried out through the Lefebvre method (1982) with the following illustration (Fauzi, 2019):

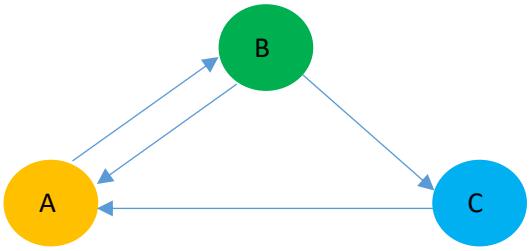

Figure 3. Interaction of Three Variables
Source: Fauzi (2019)

In Figure 3, there are three variables interact with each other, namely A, B and C through different interaction patterns. The structure of the relationship can be described with a Boolean Matrix as follows (Fauzi, 2019).

From the M matrix, if there is a relationship from A to B, the writing is represented by a matrix of element 1. It is also seen that the diagonal element will be zero at this stage, which means that the effect of the variable on itself is not taken into account. This matrix is known as MDI (Matrix of Direct Influence).

$$M = \begin{array}{c} \\ A \\ B \\ C \\ \sum \text{kolom} \end{array} \begin{array}{c} \begin{array}{ccc} A & B & C \end{array} \\ \begin{bmatrix} 0 & 1 & 0 \\ 1 & 0 & 1 \\ 1 & 0 & 0 \end{bmatrix} \\ \begin{array}{ccc} 2 & 1 & 1 \end{array} \end{array} \begin{array}{c} \sum \text{baris} \\ 1 \\ 2 \\ 1 \\ \end{array}$$

Taking into account the indirect influence, an MDII matrix (Matrix of Direct and Indirect Influence) will be generated by squaring the MDI matrix (Fauzi, 2019).

$$M^2 = \begin{array}{c} \\ A \\ B \\ C \\ \sum \text{kolom} \end{array} \begin{array}{c} \begin{array}{ccc} A & B & C \end{array} \\ \begin{bmatrix} 1 & 0 & 1 \\ 1 & 1 & 0 \\ 0 & 1 & 0 \\ 2 & 2 & 1 \end{bmatrix} \end{array} \begin{array}{c} \sum \text{baris} \\ 2 \\ 2 \\ 1 \\ \end{array}$$

After squared, it appears that there is a change in the number of rows and columns. The matrix results show that the diagonal element which was originally 0 then changes to 1 in (A,A) and (B,B). The value of 1 on the elements (A, A) can be interpreted that there is a round of influence with a length of 2 points from A to A (Fauzi, 2019).

MICMAC analysis plays a role. The MICMAC method is an analytical structure that is widely used in various research fields, for example (Nazarko et al., 2017), in value chain management (Prabu, Nallusamy and Rekha, 2015), in computing (Villacorta et al., 2012), in economics (Toumache and Rouaski, 2016), (Ambrosio-Albalá et al., 2009), in sustainable tourism development (Ariyani and Fauzi, 2019), in rural development (Villacorta et al., 2012), and in the field of e-commerce logistics (Jiang et al., 2019).

From the results of the identification of 22 strategic variables, the assessments of 16 respondents were included into the MICMAC software in the form of raw data and then processed and obtained a matrix of direct linkages and direct action. In the MICMAC analysis, there are three important outputs in the discussion. First, an analysis of the direct influence variable and the dependence between variables. Second, the analysis of indirect influence variables and dependencies between variables; and third, analysis of potential direct influence variables and dependencies between variables.

Results and Discussion

The direct influence matrix data processing is presented in the form of a map of the categorization of key factors according to influence and dependence. The results of the MDI explain the position of one variable to other variables which are grouped into four quadrants based on the strength of influence and direct influence and direct dependence on other variables.

Based on the grouping (Figure 2), it can be seen that the variables in quadrant I are variables that have a very strong influence but have little dependence. The variables are Indigenous Leadership (Leadership), Regulation (Regulation), Border Governance (Governance), Budget Support (Budgeting) and Public Infrastructure (Public_Inf). Six variables in Quadrant I are variables that play an important role as entry points in the development of border areas in Papua Province.

Variables of Indigenous Leadership (Leadership), Regulation (Regulation), Border Governance (Governance), Budget Support (Budgeting) and Public Infrastructure (Pub-Inf), are prerequisites in the development of border areas.

Quadrant I is the quadrant that describes the Relay Variables. These variables are characterized by strong influence and also strong dependence. This means that any changes in these variables, they have sufficient consequences to affect other variables. The existence of variables in the relay position needs to be observed carefully because the nature of the influence and dependence is equally large (Fauzi 2019).

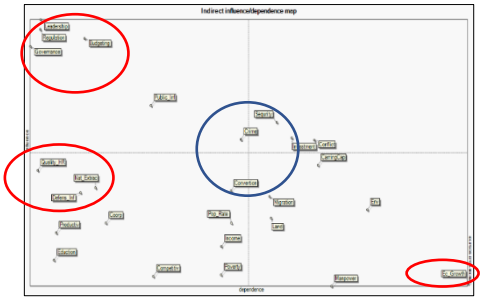

Figure 4. Mapping the Relationship between Influence and Dependence Variables

In quadrant II, it has been identified that the Conflict of Natural Resources and Land (Conflict), Investment of PMA/PMDN (Investment) and Security (Security) are relay variables. These variables become important factors in regional development of the border in Papua Province which must be

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controlled since it disrupts the stability of the development system at the RI-PNG border. These results confirm the field findings that there are still land conflicts, especially on customary lands (ulayat) between indigenous peoples on the Indonesian border and indigenous peoples in PNG because of the overlapping due to theft of timber along the border by both parties.

In quadrant III (bottom right) is a variable called the "output" variable, characterized by very small influence but high dependence. Included in this variable are economic growth (Ec_Growth), Environmental Damage (Environtmental), Land Availability (Land), and Labor Absorption (Manpower). These variables are the result of the development of the border area. The policy carried out by the government is how to manage the potential of border areas, especially local economic development that can increase employment and reduce poverty levels. These variables must be a concern of the local government related to the problems of poverty, environmental damage, and land conversion. Field findings show there is conversion of agricultural land to non-agricultural land in Muara Tami District. Whereas in the Jayapura City Spatial Plan, Muara Tami District is included in the agropolitan and minapolitan area development plans. However, at the tima when the research was conducted, this area became increasingly dense with the construction of shop houses and elite housing. Poverty is still a major problem at the RI-PNG border, including Mosso Village, which is directly adjacent to PNG.

In quadrant IV (bottom left), there are variables called "excluded" or "Autonomous" variables, which are characterized by small influence and small dependence. These variables do not stop the system itself from working. This means that the influence of these variables is very weak so that it does not have a significant influence on the development of RI-PNG border area. In this case, there are two variables in this quadrant, namely Quality of Human Resources (Quality_HR), Extract of Natural Resources (Extract), Defense Infrastructure (Defense_Inf), Labor Productivity (Productivity), Poverty (Poverty), Quality of Education (Education), and Community Income (Income). These variables do not play much role in the system because they receive less attention and government policy intervention. The finding that there is environmental damage due to mining mineral extraction in the border area. For example, the exploitation of the gold mine in Oktedi (PNG), which has caused environmental pollution to the territory of Indonesia. Another crucial variable is the regulatory variable, namely Transboundary Crime (Crime) and Land Conversion (Conversion). These two variables must be controlled wisely and if necessary, local regulations must be made that regulate border management because they have the potential to disrupt the development system, especially crimes committed by elements in illegal economic transaction activities. The action was carried out by taking advantage of the limited number of officers at the PLBN and border security officers at border posts. Several cases that have occurred in the RI-PNG border area since the operation of the Skouw_Wutung (PNG) PLBN are illegal trade crimes. For example, in a research finding by (Sinaga, 2009) which stated that a group of youths in Jayapura City sell stolen goods such as two-wheeled vehicles for sale in PNG by road to small villages along the Skouw-Wutung (PNG) and Keerom-PNG (PNG) border. According to Sinaga (2019), the stolen goods were exchanged for marijuana from PNG for IDR 800,000 to IDR 1,000,000 per kilogram of marijuana. The number of cases of selling and distributing marijuana in Jayapura City handled by the police is a proof that border management must be carried out systematically and covertly as this has the potential to threaten the future of the younger generation who live in Jayapura City and Keerom Regency. Therefore, the government needs to anticipate the potential dangers of selling narcotics (marijuana) and other crimes in border areas by cooperating with cross-border security patrols of neighboring PNG.

Based on the four quadrants above, there are six key variables that determine the success of development in the RI-PNG border area, namely (1) Indigenous Leadership (Leadership); (2) PMA/PMDN Investment (Investment); (2) Regulation (Regulation); (3) Border governance (Governance); (4) Budget Support (Budgeting); and (5) Public Infrastructure (Public_Inf). These five variables must be considered carefully by all stakeholders since they are entry points for the development in border areas. The following is an explanation of each key variable based on the results of the MICMAC analysis and field findings which will be discussed further.

Indigenous Leadership

One of the important factors in the development of border areas is customary leadership. The role of tribal chiefs in Papua Province is still very strong in influencing the process of accelerating the development. According to Kuntjoroninggrat (Mansoben 1995), traditional types of political leadership in Papua are still very strong in political decision-making. This has an impact on every government policy, including in border areas. One example that becomes the result of field finding is the conflict

over natural resources and land that often occurs between indigenous peoples in the two border areas of the Republic of Indonesia-PNG. The lack of involvement of tribal chiefs in each border area in the decision-making process carried out by the government will have an impact on the smooth development process. The number of cases of illegal logging and illegal trading as a form of cross-border crime is evidence of the lack of involvement of tribal chiefs in border management.

In many cases in Papua, especially in Jayapura City, Keerom Regency, and Pegunungan Bintang Regency, the tribal chief (adat) makes the sole decision on land acquisition, so that all indigenous peoples must obey and submit to the tribal chief's decision (adat). The traditional political leadership system of the strong man (big man) in the La Pago and Ondoafi Customary Areas in the Mamta Customary Territory is still in effect today. The results of the above analysis further strengthen that the variables included in the social and institutional dimensions greatly affect the whole system. Thus, efforts are needed to strengthen institutions for traditional leaders (tribal heads) in creating safe and conducive border conditions without reducing the sense of kinship and customary values in both regions of the country, even though they are limited by political territorial boundaries (state administration). Collaboration and sinergity program are keywords to conduct a sustainable development in border areas.

Regulations

Regulation is one of the important factors in managing state borders. This regulation contains regulations regarding the utilization of natural resource potential in border areas as it is prone to conflict between indigenous people and economic actors who take natural resources illegally and damage the environment. Another regulation that needs to be designed is a regulation on traditional cross-border market mechanism so that it is not monopolized by big traders (capital owners) who will sacrifice traditional cross-border economic actors.

Investment

Investment is one of the key variable in encouraging the progress of a region in order to increase economic growth, people's income and reduce proverty. Based on the result of the MICMAC analysis, it is seen that investment in RI-PNG border area has a large influence and low dependence. This illustrates that investment must have an impact on increasing growth in border areas. However, in fact, the only regions that have open accessibility are regions whose economic growth has increased. On the other hand, area with less accessibilty have slower economic growth. FDI/National investment in border areas is still very limited that is less attractive for investors. The entry of investment in the RI-PNG border area is one of the important aspects in encouraging development progress, expanding job opportunities, and increasing regional economic growth.

The rate of economic growth in the RI-PNG border area is relatively different due to the lack of investment and development of physical infrastructure such as road infrastructure, economic infrastructure, electricity infrastructure, transportation infrastructure and telecommunications infrastructure. Field findings show that the availability of physical infrastructure in Boven Digoel Regency, Keerom Regency, and Pegunungan Bintang Regency is very minimal, so that it has an impact on increasing economic growth. This condition can be seen in the image below.

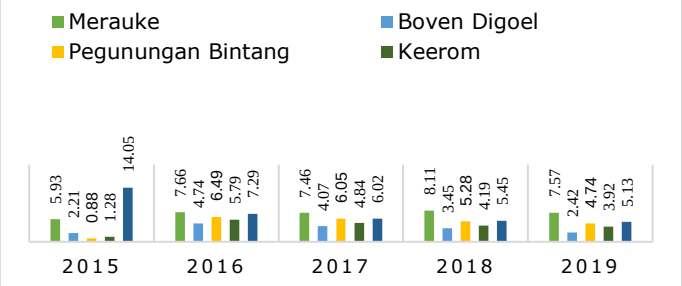

Figure 5. ADHK GDP Growth Rate in 2015-2019 at the RI-PNG Border

Public Infrastructure

Infrastructure is one of the important and fundamental factors in accelerating economic growth in border areas. Infrastructure development is a critical prelude to economic growth and development

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on a global scale (Okpalaoka, 2021). Massive public infrastructure development can reduce regional disparities. The results of the research by (Rahim 2021) stated that infrastructure plays an important role in physical development, economic infrastructure, electricity infrastructure, road infrastructure and telecommunications infrastructure as shown in the following table.

Table 3
Criteria for Border Area Development

Developement Criteria	Points	Sub Criteria	Point
Infrastructure	0.456	Physical	0.420
		Economy	0.333
		Electric	0.111
		Transportation	0.073
		Telecomunication	0.061
Natural Resource	0.343	Agriculture	0.570
		Forestry	0.189
		Fishery	0.164
		Mining	0.075
Human Development	0.201	Education	0.621
		Health	0.379

Source: Rahim, 2021

According to Rahim (2022), infrastructure contributes to economic growth by 60%; the first strategy in infrastructure development is physical infrastructure with road and bridge construction (0.420 points).

Budget Support

Budgeting is an important factor in supporting the smooth development process. Development without budget availability will be in vain. Therefore, budget support is urgently needed in accelerating development in border areas. The still slow development of the RI-PNG border area is also influenced by very limited budget support.

Border Governance

One of the important elements in the development of border areas is governance. Currently, governance is a determining factor for the success of development. The finding shows that the government's slow performance in developing border areas is strongly influenced by weak border governance, especially in public services and handling cases of cross-border crimes such as drug trafficking and illegal commodity trade.

From the results of the above analysis, it can be seen that the variables of the institutional and infrastructure dimensions greatly affect the variables in the system as a whole. This shows that institutional functions, regulations, governance and infrastructure are important variables that must be considered by all stakeholders. Institutions are key factors that determine the achievement of development targets. According to Fauzi (2019), actors (stakeholders) are entities that have strategic roles in the system and mobilize their resources to influence outcomes directly and indirectly with other actors.

Conclusions

Based on the results of the MICMAC analysis, five key variables have been identified that have very high influence and little dependence on the system, namely local leadership, regulation, budget support, border governance, and public infrastructure. The above variables are important prerequisites that will determine the success of development in the RI-PNG border area.

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