

The Effect of Bottom-Up Approach in Development Planning on Regional Economic Development in North Sumatra Province, Indonesia

Dikky Anugerah Panjaitan¹, Satia Negara Lubis², T. Sabrina³, Badaruddin⁴

Abstract

Development planning is a continuous process, including the discretion of decision-makers based on resource availability managed systematically. The combination of bottom-up approach and this process is becoming mainstream in Indonesia to promote the achievement of outcomes. Therefore, this research aims to determine the influence of development planning with bottom-up approach on economic development in North Sumatra region. The data analysis used is multiple linear regression with a backward approach to identify factors, influencing regional economic development. A total of 6 endogenous variables are used for aspects of regional economic development and the implementation of the approach. The results show that there are only four exogenous variables with significant influence on regional economic development, namely Village Development Planning Conference (Musrenbang), Regency/City Musrenbang, Provincial Musrenbang, and Community Aspiration Channel. These four forms of bottom-up approach should be intensified to increase the effectiveness of regional development. Meanwhile, additional variables necessitate thorough evaluation and integration into the model to enhance effectiveness and make substantive contributions to regional economic development

Keywords: *Bottom-up; regional economic development; and development planning.*

Introduction

Development planning is a continuous process including the policies of decision-makers based on available resources (Castelnovo et al., 2016). The concept requires periodic time since development is implemented based on the principle of autonomy (Rodriguez-Pose, 2013) and regulation of national resources, providing opportunities to improve democracy and regional performance (Faguet & Sánchez, 2014). Regional economic development (Djadjuli, 2018) is achieved when the implemented policies are in line with the potential of the place. This is related to the varied development potential of each region and considers the capabilities of the resources (Hendrawati Hamid, 2018).

Economic growth is an important indicator in assessing performance, specifically for analyzing the results of development implemented in a country or region (Zhang et al., 2021). An economy experiences growth when the production of goods and services increases from the previous year (Charysa, 2013). Therefore, economic growth shows the extent of generating additional income or social welfare in a certain period.

In North Sumatra Province in 2019, economic growth was 5.22% or above the national percentage recorded at 5.02%. Due to the impact of the COVID-19 pandemic in 2020, this variable experienced a reduction of -1.07%. However, the condition was slightly better than national economic growth which experienced a reduction of -2.07%.

Ensuring the consistency of integrated programs and activities is important for the government. A strategic approach includes analyzing the evaluation of regional development performance targets to ensure that programs and activities implemented by the work unit adhere to the predetermined objectives. This step is necessary to ensure that the objectives and targets in RKPD (Regional Development Work Plan) are outlined and implemented through the programs and activities of each Regional Work Unit. Development planning also has a central role in determining economic growth in a region (Charfeddine & Kahia, 2019). However, this variable is often complex since the concept includes multiple interests and diverse stakeholders. Research should be carried out regarding the influence of planning with bottom-up approach to conduct economic development.

Methods

¹ Universitas Sumatera Utara, Indonesia. Email: dikky.pandikusu@gmail.com.

² Universitas Sumatera Utara, Indonesia. Email: satia.negara@usu.ac.id

³ Universitas Sumatera Utara, Indonesia. Email: tengkusabrina20@gmail.com.

⁴ Universitas Sumatera Utara, Indonesia. Email: badaru_69@yahoo.com.

Data collection

This research was carried out in North Sumatra Province in one year from June 2023 to September 2023. Primary data was used through questionnaires and was supported by secondary data. The population consisted of leaders, staff, and community who were directly part of development plans. These included the Head of Provincial BAPPEDA, the Head of Regency/City BAPPEDA, and Development Planning Section of North Sumatra Province. The number from each level was 183 individuals and the entire population was sampled.

Data analysis

Multiple linear regression analysis is used to determine the elements influencing regional economic development. This analysis consists of 7 dependent (Y) and 6 independent variables (X) used to solve existing problems (Padilah & Adam, 2019). Regression equation used:

$$Y1 = \alpha + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6 + e$$

$$Y2 = \alpha + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6 + e$$

$$Y3 = \alpha + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6 + e$$

$$Y4 = \alpha + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6 + e$$

$$Y5 = \alpha + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6 + e$$

$$Y6 = \alpha + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6 + e$$

$$Y = \alpha + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6 + e$$

Where:

Y1: Income

Y2: Economic Growth

Y3 : Expenditures

Y4: Business Field

Y5: Employment

Y6: Economic Access

Y: Regional Economic Development

X1: Village Level Musrenbang

X2: District Level Musrenbang

X3: Regency/City Level Musrenbang

X4: Provincial Level Musrenbang

X5 : Thoughts of Legislative Members

X6: Community Aspiration Channel

α = Constant

$\beta1 \beta2 \beta3 \beta4 \beta5 \beta6$ = Regression coefficient

e = Interference error/Error

Likert scale is a psychometric tool commonly used to measure attitudes, opinions, or perceptions (Subedi, 2016). This scale consists of a series of statements or questions, and respondents are asked to show the level of agreement or disagreement. Likert scale is used in surveys and questionnaires to collect quantitative data regarding community attitudes or opinions (Ho, 2017). The numerical value assigned to each response analyzes and quantifies data to identify patterns and trends.

Table 1. Likert Scale Assessment.

Number	Score	Classification
1	183-329	Very Not Good
2	330-476	Not good
3	477-623	Fair/Moderate
4	624-770	Good
5	771-915	Very good

Hypothesis test

The purpose of each test is to determine the acceptance or rejection of the hypothesis under consideration (Purwoko et al., 2023). A hypothesis is a statement or assumption that is true or false about a group of community. In the context of testing, the term “null hypothesis” is used. H0 shows the hypothesis being tested, and when rejected, then H1 is accepted as a replacement (Mardiatmoko, 2020).

- The coefficient of determination (R²) is an approach for assessing how an independent variable explains a particular dependent variable. The coefficient of determination can be found between zero and one (Piepho, 2019).
- The simultaneous Significance Test (F Test) is used to determine how independent variables influence the dependent variable simultaneously (Ahmad et al., 2019).
- Partial Regression Coefficient Test (T-Test) finds out the effect of the independent variables on the dependent variable in the regression model, which is tested using the partial regression coefficient test. There is no statistically significant relationship between the independent and dependent variables when p-value is greater than 0.05 (Dewi & Yuniasih, 2021).

Results and Discussion*Descriptive statistics*

Descriptive statistics include minimum, maximum, mean (average), and standard deviation values and the results obtained are shown in Table 2:

Table 2. Descriptive Statistics for bottom-up development planning pattern variable (X).

Dimensions	Indicato r	N	Minimu m	Maximu m	Mea n	Average value	Classificatio n
X1 Village Level Musrenbang	X1.1	18 3	2	5	3,831	705	Good
	X1.2	18 3	2	5	3,863		
	X1.3	18 3	1	5	3,869		
X2 District Level Musrenbang	X2.1	18 3	2	5	3,842	716	Good
	X2.2	18 3	2	5	4,186		
	X2.3	18 3	2	5	3,716		
X3 Musrenbang at Regency/Cit y Level	X3.1	18 3	2	5	3,809	716	Good
	X3.2	18 3	2	5	4,284		
	X3.3	18 3	2	5	3,645		
X4 Provincial Level Musrenbang	X4.1	18 3	2	5	3,705	737	Good
	X4.2	18 3	2	5	4,224		

	X4.3	18 3	2	5	4,169		
X5 Legislative Membership	X5.1	18 3	2	5	3,809	668	Good
	X5.2	18 3	1	5	3,716		
	X5.3	18 3	2	5	3,432		
X6 Community Aspiration Channel	X6.1	18 3	2	5	4,104	675	Good
	X6.2	18 3	2	5	3,710		
	X6.3	18 3	1	5	3,262		
Mean per variable					3,843		

The following hypothesis is stated based on Table 2:

1. In dimension X1, the highest and lowest mean values are 3.869 (indicator X1.3) and 3.831 (indicator X1.1), with an average of 705 and good classification.
2. In dimension X2, the highest and lowest mean values are 4,186 (i.e. indicator X2.2) and 3.716 (indicator X2.3), with an average of 716 and good classification.
3. In dimension X3, the highest and lowest mean values are 4,284 (indicator X3.2) and 3,645 (indicator X3.3), with an average of 716 and good classification.
4. In dimension X4, the highest and lowest mean values are 4,224 (indicator X4.2) and 3,705 (indicator X4.1), with an average of 737 and good classification.
5. In dimension X5, the highest and lowest mean values are 3,809 (indicator X5.1) and 3,432 (indicator X5.3), with an average of 668 and good classification.
6. In dimension X6, the highest and lowest mean values are 4,104 (indicator X6.1) and 3,262 (indicator X6.3), with an average of 675 and good classification.
7. For the average of all Variables X, the lowest and highest mean values are 3,652 (dimensions X5 Legislative Membership) and 4,033 (dimensions X4 Provincial Level Musrenbang), with a mean per variable of 3.843.

Based on Table 2, the aspects of bottom-up development planning pattern which include Village Level Musrenbang, District Level Musrenbang, Regency/City Level Musrenbang, Provincial Level Musrenbang, Legislative Member Thoughts, and Community Aspiration Channel are in the good assessment category with an average score of 3.84 out of 5. The aspects with the highest and lowest assessments were Regency/City Level Musrenbang and Legislative Member with scores of 4.03 and 3.63, respectively.

Farid and Fithriana (2016) explained that Development Planning Conference known as Musrenbang, was a tool used to collect development aspirations from all levels of society. This tool reflects community participation and is a place where the government, community from various segments, as well as the business sector, can meet and dialogue about Regional programs. Musrenbang aims to improve Initial Draft RKPD Regional Government Work Plan. At Regency/City level, the tool acts as a forum for stakeholders to strengthen RKPD design based on the results of SKPD Musrenbang, in line with the suitability between Draft Renja SKPD and Preliminary Draft RKPD designed by BAPPEDA. The programs/activities selected have priorities by funding sources from APBD, Provincial APBD, and APBN as a reference in preparing the regional annual budget.

Semeraro et al., (2020) argued that bottom-up development planning pattern was a strategy emphasizing the active participation of society, community, and small organizations in decision-making. This idea shows that development strategies and plans must be based on the needs, ambitions, and input of society. In this design, the planning process starts from bottom-up, with the direct participation of individuals who are directly impacted by the policy or development initiative.

Gervasi., et al (2016) argued that bottom-up approach promoted inclusiveness and active participation of community in developing policies. This allows community to have greater control over the decision-making processes affecting daily lives. This pattern also facilitates the formation of open dialogue, the exchange of ideas, and the identification of deeper needs. By considering direct input from community, the pattern can produce relevant and effective development plans. The main advantage of bottom-up development planning pattern is the ability to create a strong sense of ownership among community. In the concept of the decision-making process, community tends to be more supportive in implementing the plan. This creates a solid basis for the sustainability of development projects and increases the probability of success in the long term based on broader and representative participation from all levels of society.

Hypothesis Test

Partial test of Income Variable (Y1)

Based on the regression coefficient of each variable, the following regression model is obtained:

$$Y_1 = 28.003 + 0.293X_1 - 0.560X_3 + 0.282X_4 + e$$

Simultaneously, the independent variables influence the dependent variable. However, some of the independent variables do not have a significant effect on income. The results of multiple linear regression testing show that only three of the variables have a significant influence ($\alpha=0.05$) (Ahmad et al., 2019), namely Village Musrenbang, Regency/City Musrenbang, and Provincial Musrenbang.

From the data analysis carried out, Village Musrenbang is proven to have a significant influence on income. Therefore, development planning at village level plays an important role in increasing community income. Successful implementation of development programs can create economic opportunities with a direct impact on welfare of village community. According to Adamowicz and Zwolinska-Ligaj (2020), growth must be accelerated in rural areas to limit development gaps and contribute to general socio-economic progress. Potential for regional growth should also be increased through establishing better policies and implementing regional development strategies. This was consistent with the research by Marhaeni et al., (2020) in Bali where village officials could manage funds for infrastructure development to support economic growth

Regency/City Musrenbang variable is proven to have a significant influence on income. Therefore, coordination and development planning plays an important role in determining income levels. Development policies can create conditions that support equitable and sustainable economic growth in the region. Planning at each level must be based on the needs of local community to support economic growth. Inconsistency in making decisions based on community needs can affect economic growth efforts. According to Suryawati & Helpiastuti (2016), the two main problems in regional development are inconsistencies between regional planning documents and reconciliation between planning with top-down and bottom-up approaches. Inconsistencies in planning document substance originate from RPJPD, RPJMD, and RKPD. This occurs because the elected regional head has a vision fully adapted to the vision and mission stated in RPJPD. In addition, the timeline for achieving the mission in both RPJPD and RPJMD is unclear.

Provincial Musrenbang variable is closely related to income in North Sumatra region. Therefore, economic development directions and strategies originating from provincial level can have a positive impact on community income levels. Shin et al., (2013) explained that good coordination between village, regency/city, and provincial levels in the context of Musrenbang can be the key to success in creating conditions to support the increase in income in the region. These results can be a basis for policymakers in designing more targeted and effective economic development strategies at regional level, with a focus on coordination between levels of government and community participation.

Partial test of Economic Growth Variable (Y2)

Based on the regression coefficient of each variable, the following regression model is obtained:

$$Y_2 = 27.452 + 0.316X_2 - 0.625X_3 + 0.298X_4 + 0.137X_6 + e$$

Simultaneously, the independent variables influence the dependent variable. However, some of the variables had a significant effect on Economic Growth. The results of multiple linear regression testing show that only four of the variables have a significant influence ($\alpha=0.05$) (Mulyati & Masruri, 2019), namely District Musrenbang, Regency/City Musrenbang, Provincial Musrenbang, and Community Aspiration Channel.

From the results, several variables have a significant influence on economic growth in the region. District Musrenbang variable has a significant impact after data analysis. Musrenbang at district level provides direction and more focused development plans, contributing to economic growth at local level. Musrenbang can accommodate the needs of community by accommodating all the aspirations.

Regency/City Musrenbang variable shows a significant influence. Good development coordination and planning have an important role in increasing regional economic growth. Successful implementation of development programs resulting from Musrenbang creates an environment supporting development of economic sector in North Sumatra.

Provincial Musrenbang and Community Aspiration Channel variables have a significant effect on economic growth. Therefore, the policies and directions from provincial level also have an impact on economic development at regional level. The existence of an effective channel can strengthen community participation in development process to support sustainable economic growth.

Partial test of Expenditure Variable (Y3)

Based on the regression coefficient of each variable, the following regression model is obtained:

$$Y_3 = 22.608 + 0.180X_1 - 0.364X_3 + 0.258X_4 + 0.176X_6 + e$$

Simultaneously, the independent variables influence the dependent variable. However, some of the variables have a significant effect on expenditure. The results of multiple linear regression testing show that only four independent variables have a significant influence ($\alpha=0.05$) (Isa, 2020), namely Village Musrenbang, Regency/City Musrenbang, Provincial Musrenbang, and Community Aspiration Channel.

The data analysis carried out shows that Village Musrenbang, Regency/City Musrenbang, Provincial Musrenbang, and Community Aspiration Channel, have a significant influence on the dependent variable Expenditure. Village Musrenbang appears to play an important role in determining expenditure levels at local level. Development Planning Deliberations enable active community participation in determining local development priorities. Therefore, the funds allocated contribute significantly to increasing expenditure at the level. The purchasing power of village-level community influences Musrenbang carried out.

Expenditure shows a significant influence on the dependent variable. Effective coordination and allocation of funds from regency/city level can provide a significant increase in expenditure and purchasing power. These results reflect the success of planning strategies and fund allocation at a higher level in supporting regional economic development.

Provincial Musrenbang and Community Aspiration Channel have a significant influence on expenditure. Therefore, economic development directions and strategies from provincial level as well as community participation through aspiration channels play an important role in determining expenditure levels. Good coordination between village, regency/city, and provincial levels, with community participation, can create an environment supporting regional economic growth.

Partial test of Business Field Variable (Y4)

Based on the regression coefficient of each variable, the following regression model is obtained:

$$Y_4 = 1.211 + 0.214X_1 + 0.278X_4 + 0.320X_6 + e$$

Simultaneously, the independent variables influence the dependent variable. However, some of the variables have a significant effect on business fields. The results of multiple linear regression testing show that only three independent variables have a significant influence ($\alpha=0.05$) (Yasin & Priyono, 2016), namely Village Musrenbang, Provincial Musrenbang, and Community Aspiration Channel variables.

Several independent variables, such as Village Musrenbang, Provincial Musrenbang, and Community Aspiration Channel, have a significant influence on the dependent. Village Musrenbang shows a significant influence on Business Field, as well as the direction and focus of development. Therefore, participation and development planning at village level contribute to the diversification and growth of business fields at local level. Decisions taken by village economy create new opportunities for various business field. By conducting musrenbang, local community receives information regarding the availability of information for community to open a business and receive training assistance, as well as capital support to support development. Bartik et al., (2020) reported that the United States government provided capital assistance to MSME owners affected by the COVID-19 pandemic.

Provincial Musrenbang variable has a significant influence on Business Field. Therefore, economic development policies and directions from provincial level play an important role in creating conditions supporting business growth in the region. In the context of Musrenbang, coordination between village and provincial levels forms a strategic framework for sustainable economic development. Provincial level accommodates community that opens businesses by providing convenience for MSME in competition. Chen et al., (2021) explained that small businesses were struggling to compete in a rapidly changing environment and dynamic market in the era of the digital economy. Furthermore, provincial government can provide capital assistance to community who opens businesses.

Community Aspiration Channel has a significant influence on the business sector. Castro-Arce & Vanclay (2020) explaining community participation through aspiration channels creates awareness and needs in economic development policies and initiatives. By considering community aspirations, economic development strategies can be better suited to local needs and potential. Local community is aware of access to essential business facilities, necessary technology for launching enterprises, proficiency of the workforce required for business management, and the state of products primed for marketability. Identifying the most pressing needs among these aspects is crucial for effectively providing business opportunities.

Partial test of Employment Variable (Y5)

Based on the regression coefficient of each variable, the following regression model is obtained:

$$Y_5 = 20.620 + 0.503X_2 - 0.439X_3 + 0.255X_6 + e$$

Simultaneously, the independent variables influence the dependent variable. However, some of the variables have a significant effect on employment. The results of multiple linear regression testing show that only three independent variables have a significant influence ($\alpha=0.05$) (Hanum & Safuridar, 2018), namely District Musrenbang, Regency/City Musrenbang, and Community Aspiration Channel variables.

Based on the analysis results, several variables, such as District Musrenbang, Regency/City Musrenbang, and Community Aspiration Channel, have a significant influence on employment. District Musrenbang shows a significant influence on employment, where planning and coordinating economic development at district level can play an important role in creating jobs. Meanwhile, strategic decisions provide direction and focus on workforce needs in the area. Musrenbang decisions at district level also accommodate the interests of local community in carrying out actions to reduce the unemployment rate. Kunze & Suppa (2017) explained that community participation in planning played a role in reducing unemployment. Different benefits can be realized from this participation, such as increased efficiency, legitimacy, and transparency of decision-making, as well as identification of local needs and promotion of sustainable decisions.

Regency/City Musrenbang has a significant influence on employment. This reflects the importance of planning and economic development policies at regency/city level to form diverse employment opportunities. Policies and programs resulting at this level can make a major contribution to creating jobs relevant to local economic potential. Furthermore, regency/city government is expected to provide programs for the productive workforce in North Sumatra.

Community Aspiration Channel has a significant influence on Employment. The active participation of community in the planning process and the expression of aspirations through channel enhance an environment conducive to development of employment opportunities. The participation catalyzes

improved outcomes since governmental organizations gain deeper insights into effectively addressing concerns and values. This leads to more informed decision-making processes and enhances commitment to achieving desired outcomes.

Partial test of Economic Access variable (Y6)

Based on the regression coefficient of each variable, the following regression model is obtained:

$$Y_6 = 0.654 + 0.280X_1 - 0.270X_4 + 0.316X_6 + e$$

Simultaneously, the independent variables influence the dependent variable. However, some of the independent variables have a significant effect on Economic Access. The multiple linear regression testing shows that only three independent variables have a significant influence ($\alpha=0.05$) (Sasmitha & Ayuningsasi, 2017), namely Village Musrenbang, Provincial Musrenbang, and Community Aspiration Channel variables.

Village Musrenbang has a significant influence on Economic Access and the active community participation in development planning creates conditions supporting better access to opportunities. Strategic decisions can help identify and overcome obstacles limiting community access to economic resources. In the context of economic access, community at village level also knows the actual situation, such as access to business services, and government assistance efforts.

Provincial Musrenbang also shows a significant influence on Economic Access. The results show the importance of coordinating and planning economic development at provincial level to increase community access to broader opportunities. In this context, Musrenbang activities at provincial level must facilitate the needs of local community. Provincial government must provide assistance programs for community to open businesses, easy access to permits, access to business services, capital assistance, and access to information resources regarding regional potential. Strategic policies and programs can contribute positively to expanding economic opportunities in the region.

Community Aspiration Channel has a significant influence on Economic Access. Participation through the channel creates a mechanism to identify economic needs and aspirations more accurately. Therefore, better economic development policies and programs can be designed by considering direct input and aspirations from community.

Partial test of Regional Economic Development variable

Based on the regression coefficient of each variable, the following regression model is obtained:

$$Y = 17.174 + 0.220X_1 - 0.262X_3 + 0.231X_4 + 0.201X_6 + e$$

Simultaneously, the independent variables influence the dependent variable. However, some of these variables have a significant effect on regional economic development. The multiple linear regression testing shows that only four independent variables have a significant influence ($\alpha=0.05$) (Shahadah, 2006), namely Village Musrenbang, Regency/City Musrenbang, Provincial Musrenbang, and Community Aspiration Channel variables. Village Musrenbang is proven to have a significant impact on regional economic development, where participation and development planning at village level make a positive contribution to the region. Strategic decisions taken can form the basis for economic projects relevant to local needs and potential. Strategic decisions taken in village development planning meetings can become the basis for economic projects relevant to regional needs and potential. Heß et al., (2021) argued that local needs and potential could be identified through participation in the planning process. This leads to development of economic projects for the specific needs and potential of society. Additionally, community participation builds trust and support for economic development initiatives.

Regency/City Musrenbang and Provincial Musrenbang play an important role in Regional Economic Development. Coordination and planning at regency/city and provincial levels provide an opportunity to explore economic potential and opportunities at a broader level. Meanwhile, the successful implementation of policies and programs at provincial and regional levels can have a positive impact on regional economic growth. According to Pan et al., (2023), location-based policies can stimulate economic growth in underdeveloped regions and reduce disparities. In this context, regional integration assists

countries in overcoming divisions affecting the flow of goods, services, capital, community, and ideas, acting as an obstacle to economic growth. Additionally, strategic planning for economic development in rural areas and small towns can create additional jobs and income to maintain and improve quality of life.

Community Aspiration Channel shows a significant influence on Regional Economic Development. Participation through these channels creates a mechanism that considers community needs and expectations in planning and implementing economic development policies. By considering the level of aspirations, economic development strategies are more inclusive and responsive to the real needs of community. Furthermore, participation through aspiration channels forms a mechanism that considers community needs and expectations in planning and implementing economic development policies. By considering the level of aspirations, economic development strategies are more inclusive and responsive to the real needs of the community. In this context, community engagement promotes an environment of collaboration, empowerment, and trust, facilitating development of solutions to problems. Participation through aspiration channels creates a mechanism that considers community needs and expectations in planning and implementing economic development policies.

Conclusion

In conclusion, the independent variables were reported to influence regional economic development. According to the multiple linear regression testing, only four independent variables had a significant influence, namely Village Musrenbang, Regency/City Musrenbang, Provincial Musrenbang, and Community Aspiration Channel. The results showed that participation and development planning through Village Musrenbang, Regency/City Musrenbang, Provincial Musrenbang, and Community Aspiration Channel had a significant influence on Regional Economic Development in North Sumatra. Village Musrenbang had a significant positive impact, showing the contribution of participation and development planning at village level. Regency/City Musrenbang and Provincial Musrenbang also played an important role in identifying economic potential and opportunities at a broader level. Community Aspiration Channel reported significant influence, creating an inclusive mechanism in planning economic development policies. Community participation through aspiration channels could also form an environment of collaboration, empowerment, and trust, supporting solutions to economic development problems.

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