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Prospective strategies for sustainable local economic development in support of the SDGs' goals "inclusive and sustainable economic growth" in the border region of Indonesia – Timor Leste, Belu Regency, East Nusa Tenggara Province, Indonesia

Chaterina A Paulus[1*], Emil Azmanajaya[2], Marthen R Pellokila[3], Natalia Paranoan[4]

[1]Department of Aquatic Resource Management, Nusa Cendana University, Indonesia
[2]Department of Civil Engineering, Balikpapan State Polytechnic, Balikpapan, Indonesia
[3]Department of of Agriculture, Nusa Cendana University, Kupang, Indonesia
[4]Department of Accounting, Universitas Kristen Indonesia Paulus, Makassar, Indonesia

*Corresponden author: chatepaulus@undana.ac.id

Abstract. In supporting inclusive and sustainable economic growth from the SDGs Program, Indonesia through the National Development Agenda (Nawacita) program takes a role in building border areas that are relatively isolated from relations with growth centers and centers of economic activity. The purpose of this paper is to formulate a sustainable local economic development (LED) strategy through a system approach, namely prospective analysis. Strategies developed based on scenarios that might occur in the future by considering the influence and dependence of key factors on competitiveness and performance. The results of prospective analysis are scenarios for developing LEDs through rural business incubator with an ability of technological innovation. This scenario is an optimistic scenario for establishing a rural business unit or known as BUMDes by taking into account the factors of competitiveness and performance. This scenario will occur if all the main competitiveness factors include technology innovation, rural business incubators, institutional cooperatives, product diversification and product marketing develop positively. Meanwhile, the operational recommendations from the chosen scenario are that the regional government needs to decide on a conducive policy to develop LEDs into professional and independent BUMDes. In addition, local governments need to operationally monitor and evaluate the main performance of BUMDes in order to increase economic growth in an inclusive and sustainable border region.

1. Introduction

The national program as outlined in the Nawacita agenda is the development of disadvantaged areas and border areas to become one of the centers of national economic growth. Belu Regency is one of the border districts, which is a development priority. Belu regency, East Nusa Tenggara province, which borders Timor Leste, has been known as the center of Bali cattle breeding business to produce 56,493 animals per year [1]. In this regency there are also up to 8,133 hectares of maize land with corn production twice a year, with production of up to 20,205 tons per year [1]; in fisheries sector the

average household income of fishermen for one year in the amount of USD 4,034.20±181.44 or the fisherman's household earns an average monthly income of USD 336.02±15.11 [8]. This potential has made Belu intend to further increase her farming and livestock business, to meet not only the national needs, but also for neighboring Timor Leste. The existence of village funds, has been proven to increase per capita income and reduce poverty [2][3][4]. Village funding has triggered community awareness to discover and develop the potential that exists in each village. Villages are increasingly encouraged to develop superior products and then facilitate business activities through the establishment of BUMDes. The rapid increase in the number of BUMDes in these border regions is not accompanied by an increase in quality, which can be seen from the ability and independence of the BUMDes as an independent and competitive rural economic unit. In order to develop BUMDes competitiveness in the midst of a competitive climate very high, especially in border areas between countries, the formulation of strategies to be developed in this study is formulated based on scenarios that might occur in the future (prospective strategies). The scenario is arranged based on the conditions that might occur in the future on the key factors that influence the development of BUMDes competitiveness.

## 2. Materials and Methods

2.1 Study area
The study was conducted in Belu regency. East Nusa Tenggara Province, Indonesia for seven months from December 2018 to June 2019. The geographical position of Belu regency in mainland of Timor is in the easternmost part and borders direct land along 149.1 kilometers and is on international crossing lines with Republik Demokratik Timor Leste (RDTL).

2.2 Data collection and analysis
The study was conducted using survey methods through interview and observation techniques. The data collected consists of primary data and secondary data. Primary data were obtained from questionnaires, field observations, and interviews with experts. Research experts consist of stakeholders from the government, community and researchers. The research experts involved must have comprehensive knowledge about managing local economic businesses (agriculture/fisheries/livestock/other resources), both technical, managerial, and institutional [5]. Twenty respondents were taken purposively with the criteria of respondents are farmer, fishermen and breeder household that undertake the local economic activities. In the context of enriching primary data, interviews were also conducted with several informants from officers from relevant agencies who served in the free market at the border. Secondary data were obtained from literature study in order to obtain theoretical foundation and supporting data related to the research material. Secondary data obtained from National Border Management Agency, Central Statistics Agency, border village officials, related agencies in Belu regency. Other supporting data obtained from related research reports, journals, bulletins, and so on.

2.3 Data Processing Method
Analysis of the sustainable LED in the Indonesia-Timor Leste border region was carried out using a prospective analysis method. According to [6], prospective analysis is used to predict the possibilities that will occur in the future. Prospective analysis can be used to design policy strategies. Prospective analysis is the development of the Delphi method that uses the opinion of expert groups for decision making. The stages of prospective analysis in the study can be seen in Figure 1.
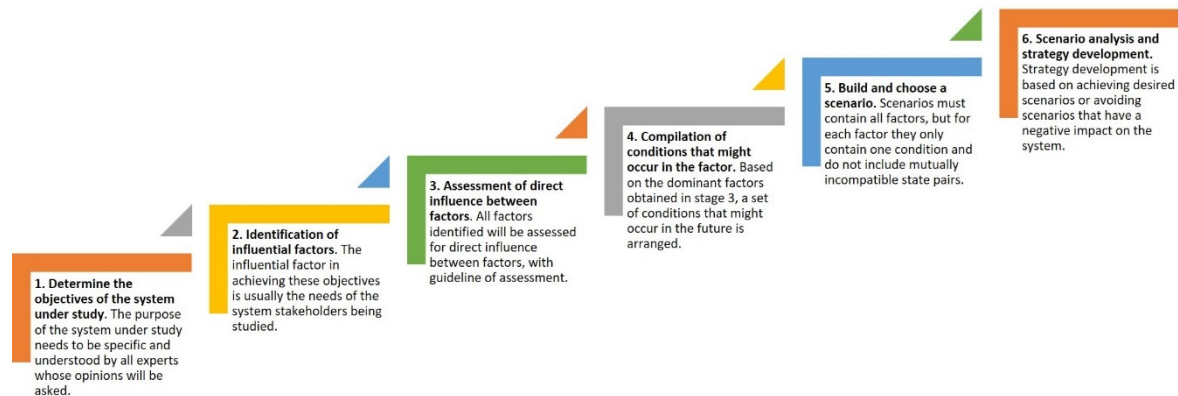
Figure 1. Stages of prospective analysis [6]

For the third stage, the assessment of direct influence between factors is carried out by assessing the direct influence between factors, with the assessment guidelines as shown in Table 1.

Table 1. Guidelines for assessing prospective analysis

Score	Influence
0	No influence
1	Small influence
2	Medium influence
3	Very powerful influence

The combined matrix results from expert opinion are processed with prospective analysis software. The calculation results are visualized in the influence and dependency diagram among the factors in Figure 2.
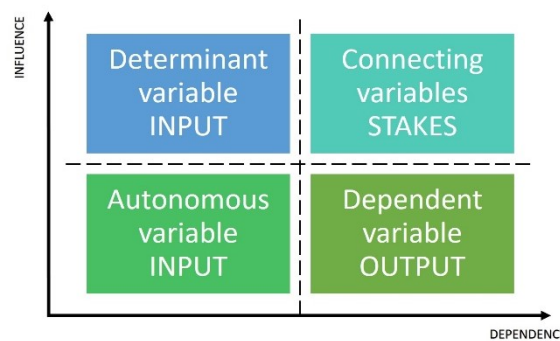
Figure 2. Diagram of influence and dependency system [6]

3. Result and Discussion

Key Factors Determinants Sustainable LED in border areas of Indonesia-Timor Leste
The identification of the key determinants of competitiveness is based on the factors that influence the sustainable LED in the border region of Indonesia-Timor Leste. Table 2 presents the results of literature studies and in-depth interviews with relevant experts, the factors that influence the development of LED competitiveness in Belu Regency, include: (1) Technology Innovation, (2) Establishment of Rural Business Incubator (BUMDes), (3) The Existence of Cooperative Institutions [7], (4) Product Diversification, (5) Product Marketing, (6) Regional Commodities, (7) Use of Superior Seeds, (8) Community Access to Capital and Markets, (9) Rural Community Empowerment

Program, (10) Research institute support [7], (11) Number of Villages and Population, (12) Land Carrying Capacity, (13) Suitability and Feasibility of Small and Medium Enterprises, (14) Availability of Processed Industries, (15) Product Certification, (16) Existence of Financial Institutions, (17) Partnership and Institutional Pattern, (18) Cross-Sectoral Cooperation [7], (19) Synchronizing Policies, and (20) Number of Border Markets.

Table 2. Key factors that influence sustainable LED in border areas are based on the results of literature studies and in-depth interviews with relevant experts

	Variables	Short Label
1	Technology Innovation	TechInov
2	Establishment of Rural Business Incubator	RuBisInc
3	The existence of cooperative Institutions	CoopInst
4	Product Diversification	ProDiver
5	Product Marketing	ProMarkt
6	Regional Commodities	RegSuCom
7	Use of Superior Seeds	SuprSeed
8	Community Access to Capital and Markets	CommAccs
9	Rural Community Empowerment Program	RurComEm
10	Research institute support	RsrchIns
11	Number of Villages and Population	NoVilPop
12	Land Carrying Capacity	LandCaCp
13	Suitability and Feasibility of Small and Medium Enterprises	SuFeSMEs
14	Availability of Processed Industries	ProcsInd
15	Product Certification	ProdCert
16	Existence of Financial Institutions	FinanIns
17	Partnership and Institutional Pattern	PartInst
18	Cross-Sectoral Cooperation	CrssCoop
19	Synchronizing Policies	PlcySync
20	Number of Border Markets	NoBoMark

Based on the results of the combined opinion of the experts, obtained 5 key factors that influence the increase in LED competitiveness in Belu regency, namely: (1) The ability of technological innovation, (2) Cooperative institutional capacity, (3) Product diversification ability, (4) Product marketing capabilities, and (5) Rural business incubators (BUMDes). The analysis results among the factors affecting the development of the competitiveness of the LED based on an analysis of stakeholders can be seen in Figure 3.
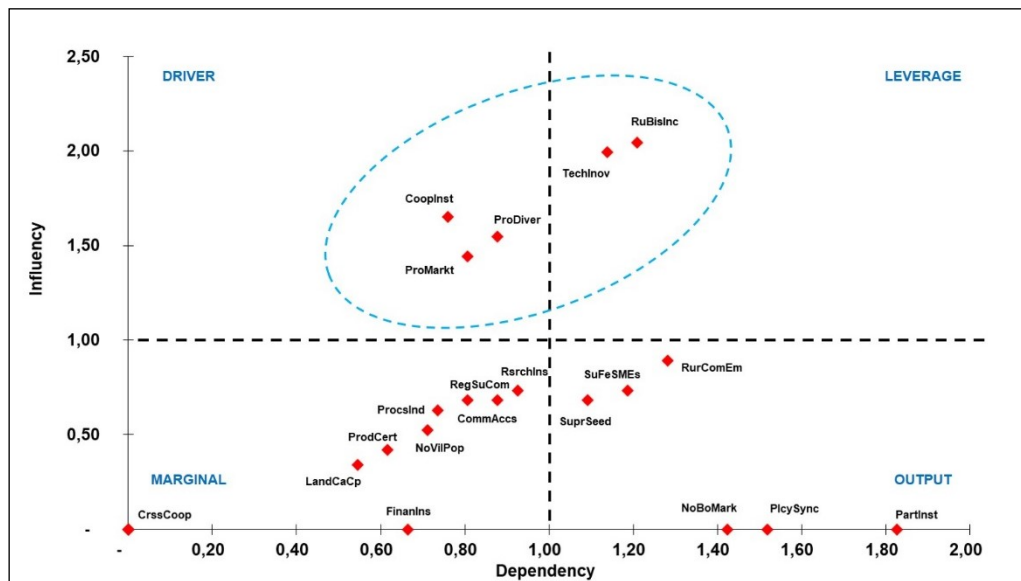
Figure 3. Publication Sustainable BUMDes competitiveness scenario in the Indonesia-Timor Leste border region in 2024

The determinant variables in quadrant I (driver/input) consists of the factors of the existence of cooperative institutions, product diversification, and product marketing. These three factors have a very strong influence in the development of rural business incubator (BUMDEs) competitiveness and are not very influenced by other factors in the system (independent variables). These results indicate that to be able to compete, the factors of the existence of cooperative institutions, product diversification, and product marketing are very important factors to consider. The existence of a cooperative institution is a BUMDes competitiveness factor that cannot be controlled internally, therefore the main dominant factor affecting BUMDes competitiveness and can be controlled internally is the product diversification, and product marketing factors.

The capability of diversification and marketing of BUMDes products needs to be improved because it will affect other competitiveness factors. The ability of diversification and marketing of products that increase will affect the competitiveness improvement BUMDes. Stakes variables located in quadrant II (leverage) includes the ability of technology innovation and the ability of the establishment of rural business incubator. These variables besides having a very strong influence on the system, these two factors have a dependency on the system. The variables located in quadrant I and quadrant II are the key variables that most influence the development of BUMDes competitiveness.

The variables included in the dependent variable in quadrant III (output) are the rural community empowerment program, suitability and feasibility of small and medium enterprises use of superior seeds, number of border markets, synchronizing policies, and partnership and institutional pattern. These variables are the results of the system. The variables in quadrant III have no influence and are very dependent on the system. These variables are the result of other factors that are in the independent sector and stakes. Variables in quadrant IV (marginal) includes the research institute support, regional commodities, community access to capital and markets, availability of processed industries, number of villages and population, product certification, land carrying capacity, existence of financial institutions, and cross-sectoral cooperation. These variables are autonomous variables. BUMDes competitiveness is actually not directly related to the 9 variables in this quadrant IV.

In order to increase competitiveness, BUMDes need to improve its performance which is identified as being weak. Based on the results of a joint opinion assessment from experts, there are 4 factors that influence the success of BUMDes development, namely (1) the ability of technological innovation, (2) cooperative institutional capacity, (3) product diversification ability, and (4)product marketing

capabilities. BUMDes will increase its competitiveness if BUMDes is able to make improvements to its key performance. BUMDes performance is a driving factor (entry points) for the development of BUMDes competitiveness in the future. The relationship of performance entry points for the development of BUMDes competitiveness is presented in Table 3

Table 3. Performance as an entry point for competitiveness of sustainable BUMDes in border areas are based on the results of literature studies and in-depth interviews with relevant experts

No	Competitiveness Factor	Performance Factor (Factor Driving Competitiveness)
1	The ability of technological innovation	The ability of technological innovation is increasingly enhanced if supported by research resources that are increasingly productive in producing innovative and competitive products
2	Cooperative institutional capacity	Cooperative institutional capacity is getting better with the increasing ability of cooperative actors and SMEs
3	Product diversification ability	The ability to diversify products increases if supported by the addition or diversification of types of production
4	Product marketing capabilities	The ability of product marketing is increasing if it is supported by partnerships and sustainable market networks as well as mastery of the latest technology

Mapping Scenarios for LED through BUMDes Development

The BUMDes development scenario is based on key factors that influence the development of BUMDes competitiveness. Based on these key factors, it will then be described about the various states that might occur in the future. For the five key factors that affect the competitiveness of BUMDes, conditions will be selected in the future. According to [6], this is intended to predict the likelihood that can occur in these factors, whether it will develop in a direction that is better than now, is permanent, or will be worse from the present situation. These results can provide vigilance for policy makers to carry out the chosen strategy. Mapping the situation of the determinants of BUMDes competitiveness that may have the opportunity to occur in the future can be seen in Table 4. Based on the conditions that have been made, then a scenario can be drawn up about the possibilities that will occur for the development of BUMDes competitiveness in the future.

Table 4. Mapping the state of the determinants of Sustainable BUMDes in the Indonesia-Timor Leste border region in 2024

Factor	State of affairs		
Technological innovation	1A	1B	1C
	Increasingly supported by more productive research resources	It remains because the level of productivity of researchers has not changed	--
Institutional cooperatives	2A	2B	2C
	Improved by increasing the ability of cooperatives and SMEs	It remains because government policies do not support the creation of cooperative institutions and SMEs	--

Product diversification	3A	3B	3C
	Increasingly if supported by the addition or diversification of types of production	Increases naturally over time in accordance with the mastery of appropriate technology	Uncertain (fluctuating) because the raw material of the product still depends on the season
Product marketing	4A	4B	4C
	Increasingly if it is supported by partnerships and sustainable market networks and the mastery of the latest technology	Still as it is now, there is no addition of partnerships and market networks and no mastery of technology	--
The ability of rural business incubators (BUMDes)	5A	5B	5C
	Improved by increasing the number of good quality production and high commodity productivity	Relatively stable because there is no improvement in the amount of good quality production and high commodity productivity	It is getting worse because of the decrease in the number of good quality production and low commodity productivity

source: expert meeting

The scenarios are structured in order to produce operational recommendations for future BUMDes development. Scenarios for the existence of BUMDes competitiveness in 2024 based on the results of stakeholder analysis are presented in Table 5. Scenario 1 is an optimistic scenario, therefore it needs to be encouraged to occur. Scenario 3 is a pessimistic scenario, so policy makers should try to avoid the possibility of this happening. Based on the likelihood of future occurrence, the optimistic scenario (scenario 1) is the most likely scenario to occur compared to other scenarios. The optimistic scenario is to become a professional BUMDes (Scenario 1). This scenario is based on the condition of a synergy between local Institutional cooperatives and BUMDes internal capabilities. An optimistic scenario will become a professional BUMDes will occur if the ability of technological innovation is increased which is supported by more productive research resources (1A), product diversification ability is increased supported by the addition or diversification of types of production (3A), product marketing ability is increased supported by partnerships and sustainable market networks and the mastery of the latest technology (4A), and the ability of rural business incubators (BUMDes) improved by increasing the number of good quality production and high commodity productivity (5A).

Table 5. Sustainable BUMDes competitiveness scenario in the Indonesia-Timor Leste border region in 2024

Scenario	State of affairs	Rank
Optimistic	1A-2A-3A-4A-5A	I
Moderate	1B-2B-3B/C-4B-5B/C	II
Pessimistic	1B-2B-3C-4B-5C	III

source: expert meeting

The moderate scenario (Scenario 2) is motivated by circumstances where even though the internal capability of BUMDes internal management in the future still has not shown significant changes towards improvement, as in scenario 3, in the future Institutional cooperatives will be more conducive

in developing BUMDes, therefore there is still hope for BUMDes to be able to compete in the future. The political will of the government to develop BUMDes is the basic capital in an effort to improve the BUMDes competitive ability. The pessimistic scenario (scenario 3) occurs if the ability of institutional cooperatives (2B) remains because government policies do not support the creation of cooperative institutions and SMEs, the ability of product diversification (3C) to be uncertain (fluctuating) because the raw material of the product still depends on the season product marketing capabilities (4B) still as it is now, there is no addition of partnerships and market networks and no mastery of technology, and the ability of rural business incubators (bumdes) it is getting worse because of the decrease in the number of good quality production and low commodity productivity (5C). The condition is exacerbated by Technological innovation that does not change because the level of productivity of researchers has not changed. A pessimistic scenario is a scenario that is not expected to occur, so it needs to be avoided.

Based on the scenarios arranged, for the development of BUMDes competitiveness in the future, the selected scenario is scenario 1, the optimistic scenario. The optimistic scenario is to become a professional BUMDes, therefore the village government needs to encourage this optimistic scenario to occur in the future.

4. Conclusion

This Prospective analysis has proven to be very effective in formulating strategies for developing the competitiveness of rural business incubators (BUMDes). Strategies are prepared based on the interrelationship between scenarios that might occur in the future, key factors that influence the development of competitiveness, and key factors determining performance as competitiveness entry points. Among the 20 factors that influence the development of LED competitiveness in Belu regency, the scenario produced based on prospective analysis is an optimistic scenario that becomes a professional BUMDes that can be realized by developing the ability of technological innovation, product diversification ability, product marketing ability, the ability of BUMDes, and need to be encouraged by local Institutional cooperative policies. These factors can be increased by increasing productive research resources, increasing the ability of cooperatives and SMEs, the addition or diversification of types of production, partnerships and sustainable market networks and the mastery of the latest technology, and increasing the number of good quality production and high commodity productivity.

Acknowledgments

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