

How Do Stakeholders Perceive Regional Government Loans? A Principal Component Analysis

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Abstract:

This study is aim to eksplore perception and knowledge of stakeholder in Bangka Belitung Province about regional government debt. As known that regional government is expected to improve the independence of financing their program, so they may to purpose regional government debt. Sample of this study are stakeholder of regional government debt such as lesgilative, head of institution (OPD), and academics. Furthermore This study analyzes stakeholder perceptions consisting of legislative Assembly, executives and academics who are directly related to the implementation of regional loan policies using Polychoric PCA. The results show that component 1 is able to explain the characteristics of the data by 52.83 percent and shows that the majority of stakeholders have a neutral tendency towards the choice of the regional government to make Debt, namely 11 respondents, 5 respondents have a perception of disagreeing and 4 respondents have a perception of agreeing with the regional debt policy. area carried out by the provincial government of the Bangka Belitung islands. However, it is known that on average, respondents only understand regulations regarding regional loans by 63,135 percent.

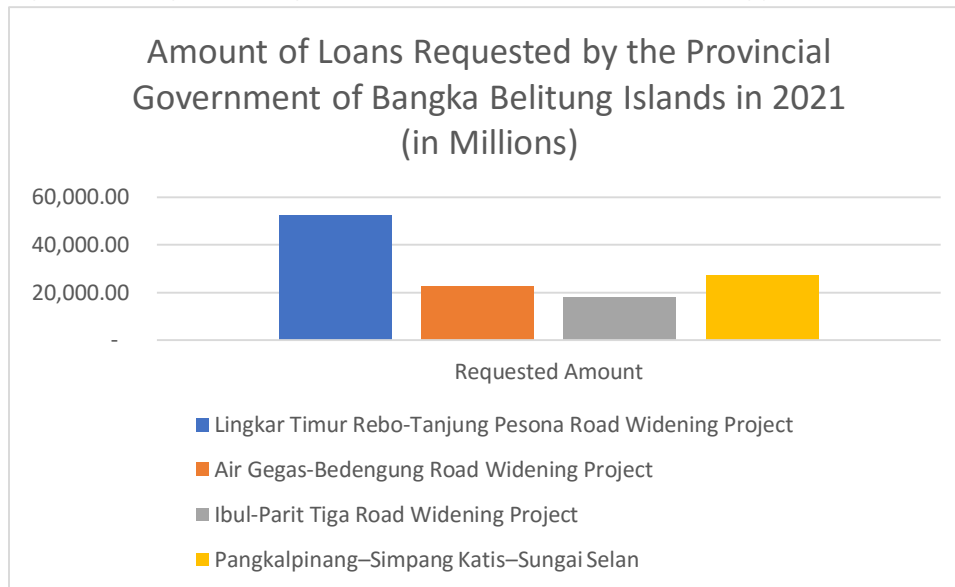
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1. Introduction

In the process of developing a region, a strategic way is needed for its implementation. Moreover, in developing regions or countries that we know, there is a fundamental problem because of the lack of capital when it comes to development. One way to obtain capital to carry out regional development is through regional debt (Tsui, 2011). Since 1999, the Indonesian government has been implementing the Regional Autonomy policy. With such system enacted, regional governments are given the flexibility to manage their own affairs, including finding sources of financing for their operations, infrastructure development, investment, and services to the community. The peak of such policy was in 2018, when the Government of Indonesia allowed regional governments to apply for a Regional Government Loan. Regional Government Loans have been used to cover budget deficit and allocated in the construction of facilities aimed at improving public services as well as the regional economy (Ashworth, Geys, & Heyndels, 2005). The pattern of the relationship between development and regional economic growth follows a cyclical pattern in which the construction of regional facilities will trigger economic growth in the area, and thus economic growth in the area will generate *demand* for public facilities and services. This means that regional development must be carried out in a sustainable and sustainable manner to boost the economy (Tsui, 2011).

Bangka Belitung Islands Province is one of the new provinces in Indonesia that was born in the era of regional autonomy. As a notably young province, Bangka Belitung Islands Province has a very high level of dependence on transfer funds in funding its regional budget, or APBD (Zukhri, 2020). The level of dependence is indicated by the ratio of transfer funds received by a region to the total income of the region (Bangga, 2017). Currently, the Provincial Government of Bangka Belitung Islands has made loan proposals to finance several strategic projects. Meanwhile, PT SMI as a Creditor company in the development sector has carried out intense coordination starting from 2020. The following is a list of loan applications from the province. Bangka Belitung:

Figure 1.1 Bangka Belitung Islands Provincial Government's Loan Application to PT SMI



Source: Publication of Bangka Belitung Provincial Government, 2020.

In order to reduce the very high level of dependence, the Provincial Government of the Bangka Belitung Islands needs to find alternative financing. One alternative is regional government loans. With Regional Government Loans, the government can carry out development that is investment in nature or supports the investment climate in the Bangka Belitung Islands Province to increase economic growth and accelerate poverty reduction. The Provincial Government of Bangka Belitung Islands started its Regional Government Loan application in 2020, while regulations on the loan have existed since 2018. This indicates that the Provincial Government of Bangka Belitung Islands was late in doing so compared with other regions.

Some previous studies on regional debt, such as that conducted by (Tsui, 2011), explained that one of the successes in carrying out regional development was to use the loan as capital. Examples of successful cases can be found in China. China has successfully carried out massive infrastructure development through regional government borrowing schemes. Building from this phenomenon, this study conducted an exploration related to the perception and knowledge of regional *stakeholders* regarding Regional Government Loans that have been secured. This research conducted a survey at the micro level related to the perception and knowledge of regional stakeholders on the debt policy that has been implemented by the Provincial Government of the Bangka Belitung Islands. Some of the targeted stakeholders are Members of the Provincial as well as City-Level and Regency-Level House of Representatives, Bureaucrats at the Provincial as well as City and District Levels, Economic Academics in the Bangka Belitung Region, and community leaders.

2. LITERATURE REVIEW

Studies on the development of public debt, in both the state and local government contexts, have been previously conducted by researchers. Studies on public debt in general are associated with the economic growth rate (Cai & Song, 2022; de Soyres, Wang, & Kawai, 2022). After the 2008 global financial crisis, the development

of studies on public debt has been widely associated with economic growth (Cai & Song, 2022; Tang et al., 2022). At least, there are two main discussions focusing on the relationship between regional public debt and economic growth (Cai & Song, 2022).

First, the impact of government debt is not always positive on economic growth. In principal indeed, at certain stages, debt can be a catalyst for economic growth. However, the impact of debt on economic growth turns out to be negative if it exceeds the limit (Cai & Song, 2022). In theory, if debt is managed properly, it will be able to encourage investment and consumption through infrastructure development, which will eventually be able to encourage economic growth. However, if the debt exceeds a certain ratio that has been set, then there will be a negative impact on economic growth (Cai & Song, 2022).

Second, contrary to the first discussion, the impact of government debt has a positive effect on the economic growth rate. Regional government debt will drive economic growth as it will increase investment and consumption of locals (Zhao, Tian, Lei, Boadu, & Ren, 2019). In addition, in the current context, government debt can also be used for the construction of environmentally friendly economic projects or what is known as green economy, supporting sustainable development programs (Adebayo & Kirikkaleli, 2021).

The discussion of regional debt in previous studies has provided a fairly comprehensive view of the impact of regional debt on economic growth. However, the measurement of its economic impact is sometimes biased and difficult if assessed from the public's perspective. This study attempts to evaluate the impact of debt on the economy through the perspective of stakeholders using a principal component analysis approach.

Regional Government Loan

Regional Government Loans consist of all transactions that result in the region receiving a certain amount of money or receiving benefits that are worth money from other parties, thus creating an obligation for the region to repay (Government Regulation/PP No. 56 of 2018). Regional Government Loans shall be an initiative of the Regional Government in order to carry out the affairs of the Regional Government in accordance with the provisions of the laws and regulations and be responsible for the activities proposed to be funded from the Loan. Regional Governments are not allowed to apply for a loan to foreign parties directly, but they must go through the Central Government. The decision on the loan application will later be forwarded to the regions. Through the Central Government, Regional Government Loans can be obtained from Domestic and Foreign Loans. Domestic and Foreign Loans. Domestic loans include any loan by the Central Government obtained from a domestic lender that must be repaid on certain terms in accordance with its validity period. Foreign Loan is any financing through a debt obtained by the Central Government from an overseas lender that is bound by a loan agreement and is not in the form of state securities, which must be repaid on certain terms. Both Domestic and Foreign Loans can be forwarded from the Central Government to Regional Governments with the provisions and requirements that have been regulated in the laws and regulations.

Regional Loans can be sourced from: (1) Central Government; (2) Other regions; (3) Banks; (4) Non-Bank Financial Institutions; (5) Community. Regional Loans sourced from the Central Government from the State Budget consist of: a. Forwarded Domestic Loan; b. Forwarded Foreign Loans; and c. other sources in accordance with the provisions of laws and regulations. The amount of regional loans that can be made is regulated in the Regulation of the Minister of Finance of the Republic of Indonesia No. 117 of 2021, which is 0.32% of the projected Gross Domestic Product.

A government budget consists of the amount of government expenditure and revenue. In certain economic conditions, one type of policies that the government can adopt is fiscal policy. The fiscal policies implemented can be seen in the government's budget, and the budget deficit is one of the government's fiscal policies, namely expansive fiscal policies. Government budgets are structural and cyclical in nature. Budgets are structural or active in nature, meaning they are determined by active and discretionary policies such as setting of tax rates, social security, and government spending to calculate the government revenue and expenditure, as well as the possibility of deficits/surpluses when the economy operates at a potential production level. However, most of the budgets are cyclical or passive, meaning that they are determined by the state of the economic cycle to calculate the impact of the economic cycle on the budget or to measure changes in revenue, expenditure, and

deficit/surplus arising from the fact that the economy is not operating at its potential output. The cyclical budget is the difference between the actual budget and the structural budget (Samuelson and Nordhaus, 1997). Consider the following figure:

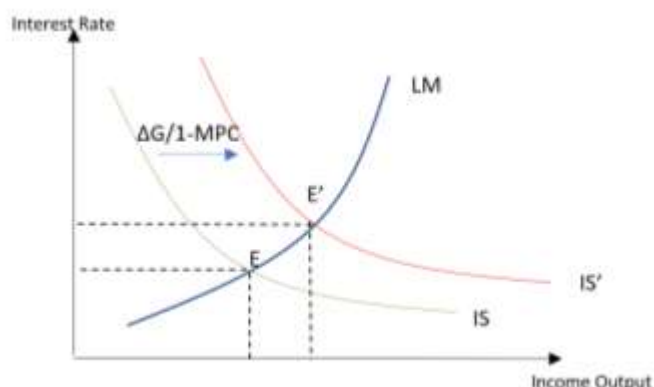


Figure 2 Shift in the IS-LM curve due to *Government Spending*

The fiscal deficit is an indication that the government is increasing its spending to pursue more prioritized targets by going into debt. Figure 2.1 shows that increased government budgeting will increase regional output; some macroeconomic targets, such as economic growth, investment, and unemployment could be positively affected. (Mankiw, 2006)

The definition of deficit conventionally can be calculated based on the difference between total expenditure and total income, including grants. Meanwhile, the second definition is the monetary deficit. The monetary deficit is the difference between total government spending (excluding the payment of the principal debt) and total income (excluding debt receipts). The third definition is the operational deficit, which is a monetary deficit that is measured in real value and not face value. The last definition is primary deficit.

According to Dornbusch et al. (1989), budget deficits can be grouped into two components. The two components are the primary deficit and the debt interest payment. The primary deficit is defined as the difference between government output (excluding debt interest payments) and all government revenue (excluding new debt and debt installment payments). The grouping of components of the budget deficit was intended to look at the role of the debt liability in the government budget. If the liability of government debt, loan interest rates, and currency rates are higher, the interest payment on debt will also be higher, thus the budget deficit will be higher as well. The government will then be forced to run a higher budget deficit due to the factor of debt interest payments. In addition, there are still several definitions of deficits and which definition to use largely depends on the criteria used as well as the purpose of the analysis. Usually the deficit concept of choice depends on several factors, including: the type of imbalance that occurs, the scope of government (central government, government consolidation, and the public sector), the method of accounting (cash and accrual basis), and the status of *contingent liabilities* (Simanjuntak in Waluyo, 2006).

3. RESEARCH METHODOLOGY

This study conducted a survey at the individual level of government stakeholders within the Bangka Belitung Islands Province. Bangka Belitung Islands Province is the study location. Furthermore, this study also probed into the micro side regarding the understanding of Regional stakeholders, such as Bureaucrats, as well as the Legislative Officials regarding the application for regional loans to be carried out by regional governments. Here are some details of the limitations of this study:

- **Geographical Limitation:** The scope of work of the stakeholder survey on regional debt management covers the area of the Province of Bangka Belitung Islands. The survey was conducted within the provincial government of Bangka Belitung

Islands. Respondents consisted of bureaucrats, people's representatives, and academics in Bangka Belitung Province.

- Time Limitation: Referring to the schedule, the study was carried out within a period of 8 months from February 31, 2022 to September 26, 2022.
- Respondent Limitation: The number of respondents, consisting of policymaker stakeholders at the Bangka Belitung Islands Province level, was at least 20 people.
- The respondents selected were people living in the Bangka Belitung Islands Province bearing the role of bureaucrats, people's representatives, or academics.

First of all, this study conducted a survey to see the extent of regulatory insights from stakeholders regarding regional debt policies that have been carried out by the government. Not only that, this study also extracted information about individual perceptions of the stakeholders regarding debt policies that have been carried out. Furthermore, quantification of insight and perception data was carried out to provide an overview that had been targeted at the beginning of the study. In interpreting the survey data, this study used cross tabulation to see the extent of stakeholders' insights. Furthermore, this study used polichoric PCA to index individual perceptions of regional debt policies and the results of perceptions was also probed further by discussing clusters of perception indicators that had been mapped out. To dig into in-depth information about one's insights into something, it is necessary to take a qualitative approach (Blumberg, 2014). In-depth interviews were conducted to explore information on stakeholder insights on the mechanisms for filing, disbursing, and managing debt; general theoretical insights (particularly on impact); as well as approval preferences regarding regional debt policies. The results of the interview were processed with the approach developed by Miles and Huberman, namely by reducing data, presenting data, and drawing conclusions.

Polychoric Principal Component Analysis

The data analysis method in this study is PCA (*Principal Component Analysis*). PCA is a technique for constructing new variables that are linear combinations of the original variables. The maximum number of these new variables will be equal to the number of the old variables, and these new variables do not correlate with each other. This study adopted a primary component analysis (PCA) to reduce the dimensions of the indicators obtained by the perception index from survey results that might have characteristic correlations between variables. Moreover, the computation efficiency may be low if all Baidu index keywords are selected. PCA is able to effectively reduce information overload, and its outstanding performance has been proven in previous studies (How and Lam, 2018; Li et al., 2018a; Wang, 2021).

Principal Component Analysis is a technique performed to extract multiple *orthogonal* linear combinations from a set of variables. The *orthogonal linear combination* in a set of variables provides information regarding the characteristics of that set of variables (Filmer and Pritchett, 2001). Intuitively, the analysis of the main component is a linear index which captures information from a set of variables with the highest *eigenvalue*¹.

In a set of variables, there are as many as N variables where a_{1j}^* to a_{Nj}^* is the indicator value of a perception, in this case the rating of tourists. *The principal component* begins by specifying each variable that has been normalized with its mean and standard deviation $((a_{1j}^* - a_1^*)/(s_1^*))^2$. The following is a variable formulation formed into a linear combination from the set of variables for each traveller/respondent j :

$$\begin{aligned}
 a_{1j} &= v_{11}A_{1j} + v_{12}A_{2j} + \dots + v_{1N}A_{Nj} \\
 a_{Nj} &= v_{N1}A_{1j} + v_{N2}A_{2j} + \dots + v_{NN}A_{Nj}
 \end{aligned}
 \qquad j = 1, \dots, J$$

(1)

¹Eigenvalue is a value that describes the characteristics of a set of variables

² a_1^* that are the average value of a_{1j}^* of all respondents ($a_1^* = (1/J) \sum_{j=1}^J a_{1j}^*$)

Note:

J = Stakeholder/Respondent

$1...N$ = Aspects of question dimensions (Policy Approval, Stakeholder Trust in regional governments in terms of fund management, Aspects of policy information dissemination, transparency of budget and risk management in conducting regional debt policies, sustainability of regional debt policies, and preferences for regional debt allocations)

$A_{1j} \dots A_{Nj}$ = respondent perception index $1...j$

$v_{11} \dots v_{NN}$ = coefficient of each variable of each respondent

$a_{ij} \dots a_{Nj}$ = value of answer i in respondent j

On model (11), A is a component while v is the coefficient on each component on each variable (where v is the same for each respondent). The solution cannot yet be determined (*indeterminate*) because the observed variable is only on the left side of the model (a_{1j}). *Principal Component Analysis* is able to solve the problem of *indetermined solution* by finding linear combinations of variable sets with maximum variance. *First principal component* (A_{1j}) is a linear combination with a maximum variance followed by a second linear combination (A_{2j}), which (A_{2j}) is *orthogonal* to the first linear combination with a high variance. Look at model (12):

$$A_{1j} = f_{11}a_{1j} + f_{12}a_{2j} + \dots + f_{1N}a_{Nj} \quad j = 1, \dots, J$$

$$A_{Nj} = f_{Nj}a_{1j} + f_{N2}a_{2j} + \dots + f_{NN}a_{Nj} \quad (12)$$

the scoring factor of the model is obtained through an *inverse* performed on model (11)³. The value of the *first principal component* is found on line 1 of model (12). The last step in compiling the perception index is to normalize the data a with its mean value and standard deviation. The perception index formed from *first principal component* is as follows:

$$A_{1j} = \frac{f_{11}(a_{1j}^* - a_1^*)}{s_1^*} + \dots + \frac{f_{1N}(a_{Nj}^* - a_N^*)}{s_N^*} \quad (13)$$

Note:

a_{1j}^* = value of the answer to component 1 in respondent j

a_1^* = mean value of perception across respondents (1...J)

s_1^* = standard deviation of the perception

Cluster Analysis

This study used a questionnaire to capture stakeholder perceptions of regional loans. The questionnaire consisted of sixteen questions divided into six clusters as follows:

Cluster	Question number	Aspect
Cluster 1	1 and 2	Stakeholder approval of regional loan policies
Cluster 2	3 and 4	Stakeholder trust in the government in the management of loan funds
Cluster 3	5, 6, and 7	Information dissemination by the regional government to stakeholders about regional loans
Cluster 4	8, 9, and 10	Government transparency in the process of managing regional loan funds
Cluster 5	11, 12, and 13	Risk, impact, and sustainability of regional loans

³Both sides on model 1 are multiplied by v^{-1} . v^{-1} and notated as f

Cluster 6	14, 15, and 16	Preference for the use of regional loan funds
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4. Results and Discussion

Stakeholder Perception Index Results Using Principal Component Analysis

Factor analysis is a statistical technique used to simplify the correlation matrix between variables. Royce (1963) defined a factor as a dimension or construct that is the concise form of correlation between variables. PCA is a statistical technique used to simplify the correlation matrix between variables. The main difference between PCA and other factor analysis techniques is that PCA will try to explain the maximum variation in the correlation between variables in its first component. The basic data for PCA is a correlation matrix between variables, and initially PCA was used to simplify the correlation between continuous variables. Kolenikov and Angeles (2004) suggested too matrix users about the use of tetrachoric correlation for PCA with only binomial variables, or polychoric correlation for a mixture of binomial and ordinal variables. Uebersax (2006) also emphasized the importance of using tetrachoric and polychoric correlations to measure the correlation between binomial and ordinal category variables. This study used Polychoric PCA to Compile a Perception Index where the measurement technique uses the *Likert Scale*. After calculating the 16 components of the perception question on 16 respondents. The result shows that the index value will use the weighting of the comp1 value with the highest eigenvalue of 8.453. Comp1 was able to explain the overall characteristics of the data with a value of 52.83 percent. For this reason, the comp1 value was used as a weighting reference for each question element of as many as 16 questions with 5 criteria (Perception scale) that had been set. The use of Polychoric PCA allowed this study to extract the value of the per-scale perception level indicator that had been determined on all 16 questions that had a scale: Strongly Disagree (0), Disagree (1), Neutral (2), Agree (3) and Strongly Agree (4). These are the *coefficients* for the scoring produced by Component 1 with the highest variable characteristic, 52.83 percent.

The results show that the lowest value for the stakeholder perception index is -5.447861 while the highest value is 4.99275. To note, the "strongly disagree" (0) on indicators 3,4,7,8,10,11 and 12 does not show any value because none of the respondents chose it. This study attempted to categorize the data into 3 groups according to the following table:

Table 4.2. Likert Indicator value categorization result

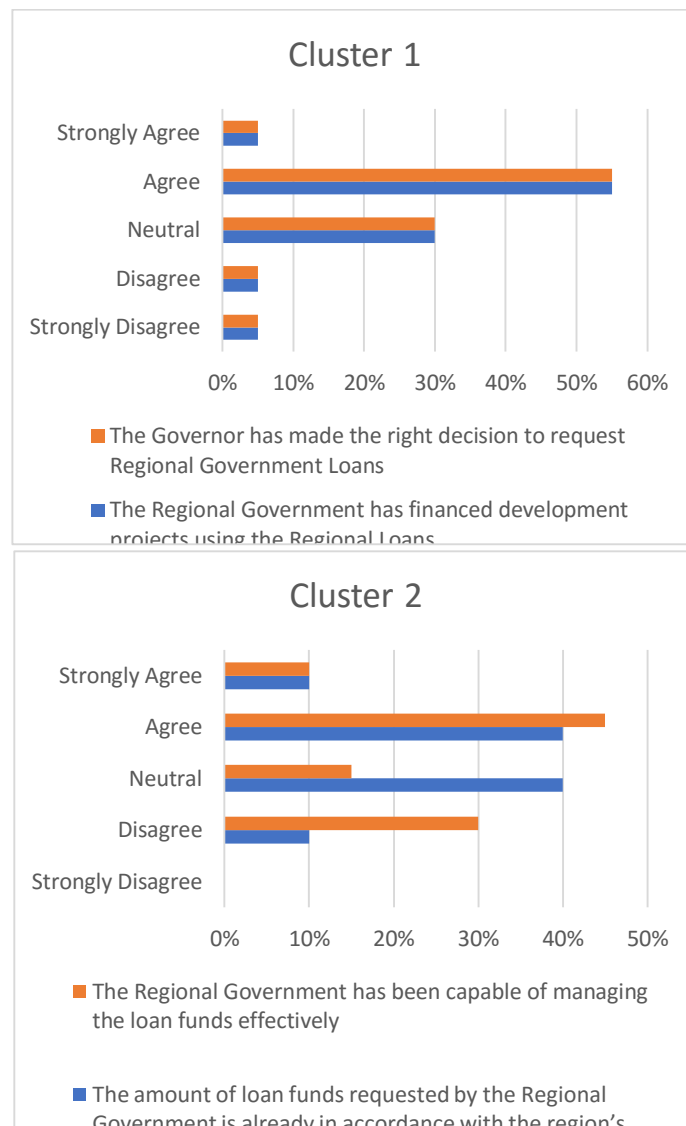
Tendency to Disagree	Tendency to Choose Neutral	Tendency to Agree
-5.44 to -1.968	-1.969 to 1.513	1.514 to 4.993

Based on the indicators that have been determined based on the categorization, the summary is presented in the following table:

Preception Category	Freq	Percent	Cum
Tendency to Disagree	5	25	25
Tendency to Choose Neutral	11	55	80
Tendency to Agree	4	20	100

It is known that as many as 5 people have a tendency to disapprove of regional loans by the Provincial government of Bangka Belitung Islands. Eleven respondents show a neutral tendency, while 4 respondents tend to agree. The results are dominated by neutral perception, followed by a tendency towards disagreeing with the government's debt policy strategy.

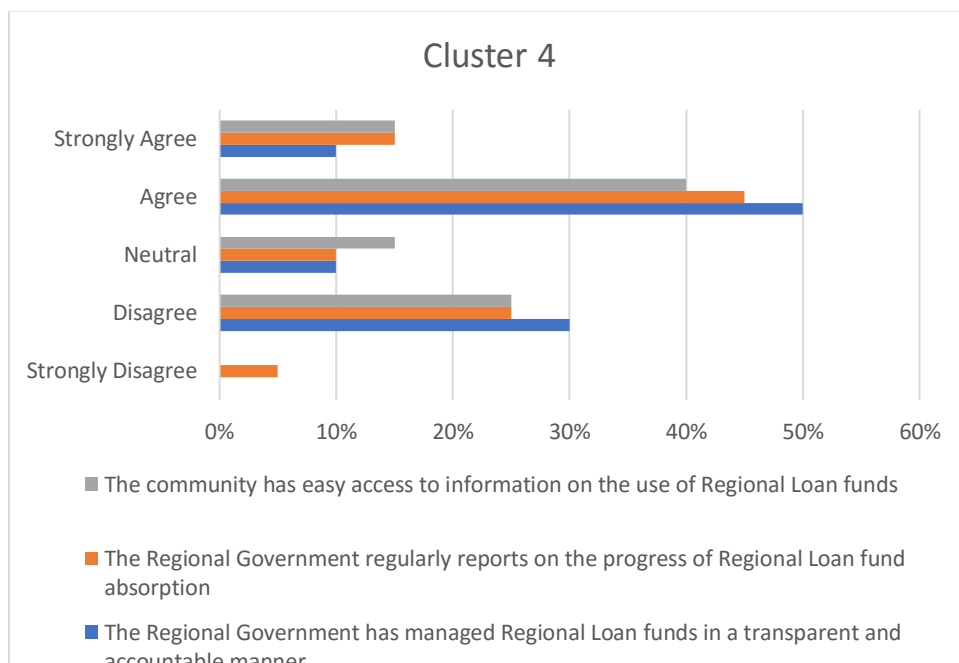
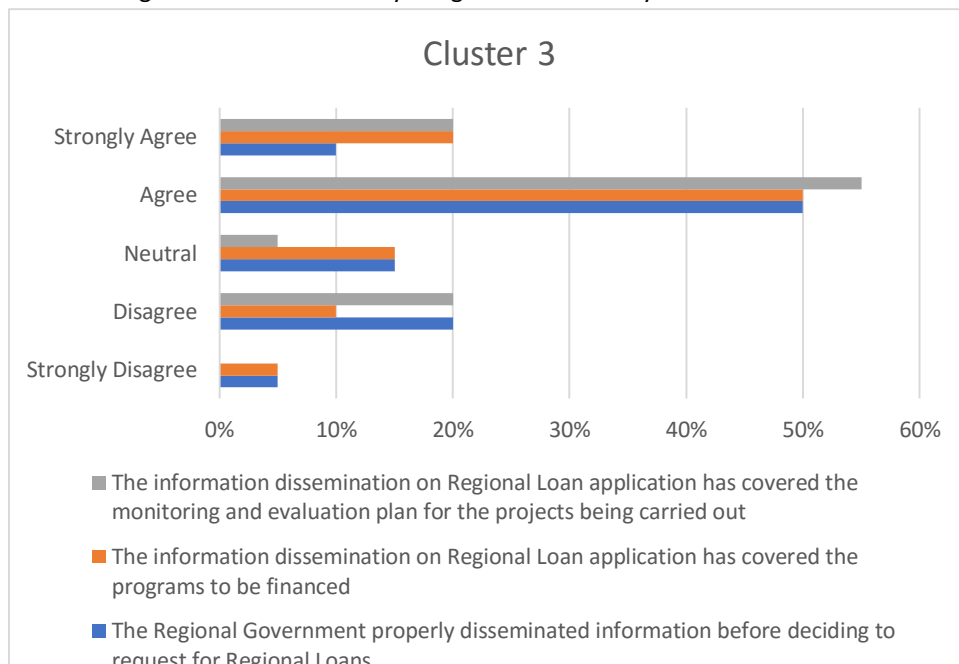
Cluster Analysis Result



Cluster 1
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
The Governor has made the right decision to request Regional Government Loans
The Regional Government has financed development projects using the Regional Loans
Cluster 2
The Regional Government has been capable of managing the loan funds effectively
The amount of loan funds requested by the Regional Government is already in accordance with the region's needs

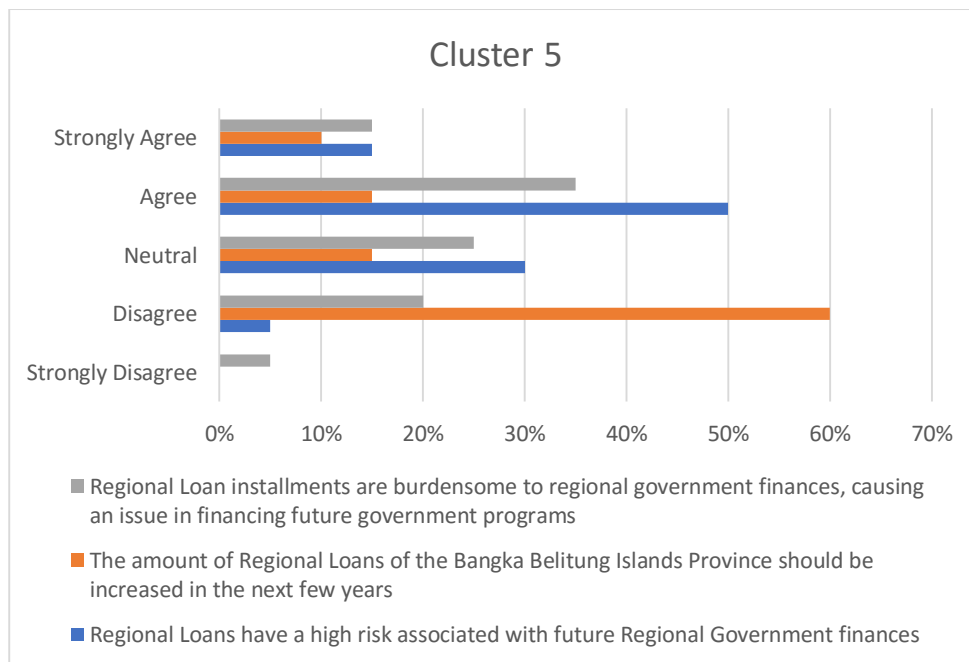
Cluster one, which discusses the stakeholder acceptances, shows that as many as 60% of respondents approve of the regional loan policy carried out by the Provincial Government of the Bangka Belitung Islands, while 30%

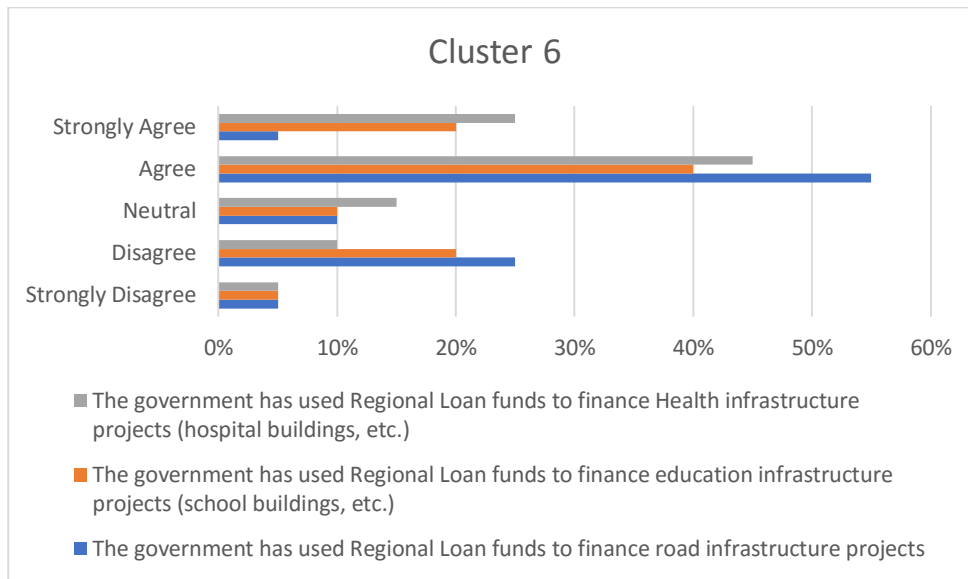
of respondents express neutrality, and 10% of respondents express their disapproval of the regional loan policy that has been carried out. The disapproval of respondents is caused by the lack of information dissemination of the regional loan policy, lack of transparency in the management of regional loan funds, and perception that the Bangka Belitung Provincial Government is considered less capable in managing the loan funds obtained. As many as 55% of respondents perceive the Provincial Government of Bangka Belitung Islands as able to manage regional loan funds effectively. Thirty-percent of respondents express disagreement with the statement; most of the 30% are academics. Furthermore, as many as 50% express certainty that the loan amount submitted is in accordance with the region's needs. However, 40% remain neutral and 10% express disapproval. This is because information about the amount of regional loans obtained by a region has been very difficult to access.



Cluster 3
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
The information dissemination on Regional Loan application has covered the monitoring and evaluation plan for the projects being carried out
The information dissemination on Regional Loan application has covered the programs to be financed
The Regional Government properly disseminated information before deciding to request for Regional Loans
Cluster 4
The community has easy access to information on the use of Regional Loan funds
The Regional Government regularly reports on the progress of Regional Loan fund absorption
The Regional Government has managed Regional Loan funds in a transparent and accountable manner

In the third dimension, which concerns information dissemination, 75% of respondents agree and strongly agree that the Regional Government disseminated information related to the plan, implementation, monitoring, and evaluation of programs or infrastructure financed by regional loans. Most of the 75% are board members and members of related local government organizations (OPD). Meanwhile, as much as 20% of those who express disapproval are academics. In terms of transparency, 55% of respondents agree that information on the use of regional loan funds is easily accessible and 60% of respondents state that regional government reported the progress of the budget absorption in an accountable manner. Meanwhile, respondents state that information on the use of regional loans and progress reports could not be accessed easily; as many as 25%, and 30% of respondents state that the regional government has not been transparent and accountable in managing regional loan funds.

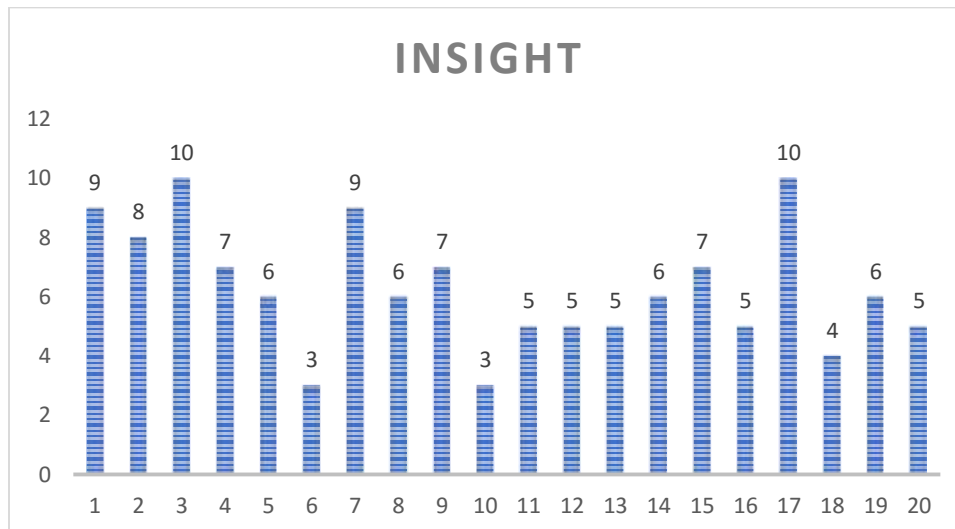




Cluster 5
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
Regional Loan installments are burdensome to regional government finances, causing an issue in financing future government programs
The amount of Regional Loans of the Bangka Belitung Islands Province should be increased in the next few years
Regional Loans have a high risk associated with future Regional Government finances
Cluster 6
The government has used Regional Loan funds to finance Health infrastructure projects (hospital buildings, etc.)
The government has used Regional Loan funds to finance education infrastructure projects (school buildings, etc.)
The government has used Regional Loan funds to finance road infrastructure projects

As many as 50% of respondents state that regional loans will burden and stabilize regional financial problems in the future, 25% of respondents remain neutral, and the rest state that regional loans will not interfere with and burden regional finances in the future. Sixty percent of respondents disagree with increasing the loans in the future, while 25% agree to increase the amount of regional loans in the future, and the rest remain neutral. This is because 65% of stakeholders consider regional loans to have a high risk. Cluster six discuss the preference for the use of regional loan funds. In the first place, 70% of stakeholders agree with the use of regional loan funds for construction of health facilities, followed by construction of educational infrastructure and roads as much as 60% each. As many as 55% of respondents agree with the three development options offered, while 20% of respondents agree with two options.

Insight Analysis



Stakeholder insights were explored by providing questions to respondents related to Regional Debt. Based on the results of data processing, the average value of respondents is 6.3. There are two respondents who scored ten (maximum score), two respondents who scored nine, one respondent who scored eight, three respondents who scored seven, four respondents who scored six, five respondents who scored five, one respondent who scored four, and two respondents who scored three. Based on the respondents' background, respondents from the executive branch obtained an average score of 7.57. Respondents from the legislative branch scored an average of 5.8, while respondents from academia scored an average of 5. The dynamics of values from the three branches are in line with the result of the perception analysis: the executive branch claimed that they had disseminated information, but the academics reported that they had not been recipients of such dissemination and that they had difficulty accessing information related to Regional Debt.

5. CONCLUSION

This study focuses on stakeholders' perceptions of regional government debt. The results show that the majority of stakeholders have a neutral perception toward the regional government loan policy. Furthermore, about 25 percent of all stakeholders do not approve of the policy, while 20 percent do.

From the cluster analysis, it is known that the majority of stakeholders show optimism about the appropriateness of the government in adopting the policy. Not only that, the government is perceived to have disseminated information dissemination and enabled access to information about this policy. However, in cluster 5, the majority of stakeholders agree that the regional loans have financial risks and the loan installments that must be paid will burden the current finances and make it difficult to finance future development projects. Not only that, about 60 percent of stakeholders do not agree with the government to request for more loans. Finally, the majority of stakeholders agree that the expenditure made by the government from loan funds is made to finance road infrastructure.

The implications of this study provide an important understanding of the study of how stakeholders perceive regional government debt. Furthermore, this article also provides an important understanding of how the development of regional debt studies is associated with economic growth rates.

The limitation of this study is that the study of stakeholders' perceptions of government debt is carried out in only one region (province). It is recommended that further research be conducted in various regions so that the results will be more comprehensive.

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