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[Sari, 7(9): September 2020] ISSN 2348 – 8034
DOI: https://doi.org/10.29121/gjesr.v7.i9.2020.1 Impact Factor- 5.070

GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES

MODEL ANALYSIS OF FACTORS AFFECTING THE PRICE OF CONSTRUCTION MATERIAL UNITS IN VILLAGE GOVERNMENT

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ABSTRACT

The unit price of construction materials in the village of Hulu Sungai Selatan Regency has different prices where during the reporting, inspection from the Government Internal Supervisory Apparatus or Internal Supervisor at other institutions hereinafter referred to as APIP has a high price when compared to the HSS regency unit price.This could be one of the findings.When conducting the preliminary study, it was explained that there were differences in the means and infrastructure for the transportation of construction materials to project locations, both the type of transportation used and the transportation routes traversed. This is partly due to the condition of the village which is far from the material provided. There is a process of transporting the material by carrying twice that causes an increase in the cost of transportation fees.

From the results of this study, both with the Severity Index calculation method, it was found that the dominant factors affecting the unit price were transportation and location factors. These factors are risk factors that can cause transportation costs to increase in determining the unit price of materials. Whereas with the Smart PLS calculation model the priority that is considered to determine the basic unit price of cement, gravel, gravel, mountain rock, and concrete sand is the first priority is the transportation aspect, the second priority is the location aspect, the third priority is the regulatory aspect of government policy, the fourth priority is aspects of material resources and the fifth priority is economic aspects

The results of this study can be considered as input for other studies for more specific freight or transportation wage modeling based on the location of different areas such as lowland and highland areas. In this study, the researchers only produced predictive models of factors that influence in general, such as transportation factors and location factors, while the transportation factor itself consists of elements of other factors, because it is necessary to do more modeling analysis that is more specific to transportation and location factors in order to know specific results.

Keywords: *Unit prices*; Severity Index; smart PLS; overhead.

I. INTRODUCTION

Background

The Village Law has placed the village at the forefront of development and improvement of community welfare. Villages are given adequate authority and funding sources so that they can manage their potential to improve the economy and community welfare. Every year the Central Government has budgeted a large enough Village Fund to be given to the Village. In 2015, the Village Fund is budgeted at Rp. 20.7 trillion, with an average allocation of Rp. 280 million for each village. In 2016, the Village Fund increased to Rp. 46.98 trillion with an average of Rp. 628 million and in 2017 it increased again to Rp. 60 trillion with an average of Rp. 800 million.In order to support the implementation of village duties and functions in government administration and village development in all aspects in accordance with the authorities they have, Law Number 6 of 2014 gives a mandate to the Government to allocate Village Funds. Village Funds are funds sourced from the State Revenue and Expenditure Budget allocated to Villages which are transferred through the regency / city Regional Revenue and Expenditure Budget and are used to fund governance, implementation of development, community development, and community empowerment.

Village development is managed in a participatory manner because it involves the participation of the village community. Village development leads to the realization of village independence because village development activities must be managed by the village by utilizing human resources in the village as well as natural resources and the environment in a sustainable manner. Village development is a consolidation of programs in the village, as a strengthening of representation and accountability mechanisms at the local level. Developing villages make the village the main subject of development. The village builds a focus on efforts to improve community welfare and poverty alleviation through the fulfillment of the development of facilities and infrastructure.

With the existence of the Village Fund, the village government has carried out many village infrastructure development projects, from the construction of buildings, roads, environmental sanitation and public facilities for village communities. The Village Law has provided the basis for which later the Head of the Government Goods / Services Procurement Policy Agency Regulation Number 13 of 2013 concerning Guidelines for the Procedure for the Procurement of Goods / Services in Villages and was revealed to be the Regulation of the Regent of Hulu Sungai Selatan Number 27 of 2015 concerning Procedures for the Procurement of Goods / Services in The village has provided a complete basis for the Village building cycle which includes planning, implementation, monitoring and evaluation, reporting and utilization of development results. When planning, the village government is expected to conduct a price survey to determine the unit price that will be used in the construction cost budget plan.

The unit price for construction materials in the village of Hulu Sungai Selatan Regency has different prices where during the SPJ reporting inspection from the Government Internal Supervisory Apparatus or Internal Supervisor at other institutions, hereinafter referred to as APIP, has a high price when compared to the HSS regency unit price. This could be one of the findings, the village government argued that with the condition of the village's distance and with the existence of a taxpayer for the village where the village had to pay VAT and Regional Distribution Taxes, the village government took a high price to cover transportation costs and taxes. the. And also the Material Price for each village has differences (not uniform) even though it is in one sub-district.

As in the RAB for the road work of an anglai farm in the village of Pandulang, the price of grafting material is Rp. 250,000 / m3 while for the regency unit price of Rp. 144,200 / m3, mountain rock Rp. 300,000 / m3, while the unit price of Batu Gunung Regency is Rp. 264,850 / m3, thus causing the overhead value to reach 60% when compared to the district unit price. For the RAB on a neighborhood road in Karang Jawa Muka Village, the price of sirtu material is Rp. 212,000 / m3 while the unit price of sirtu district is Rp. 144,200 / m3, mountain rock Rp. 272,000 / m3, while the unit price for Batu Gunung Regency is Rp. 264,850 / m3 which causes an overhead value of 38% when compared to the district unit price. There is a very significant difference in determining the price of these materials.

When conducting the preliminary study, it was explained that there were differences in the means and infrastructure for the transportation of construction materials to project locations, both the type of transportation used and the transportation routes traversed. This is partly due to the condition of the village which is far from the material provider. For example, the process of transporting cement must be transported twice, first by four-wheeled vehicles and secondly by using two-wheeled vehicles.

Based on these reviews, the authors are interested in re-analyzing the factors that affect the unit price of material written in a thesis entitled "The Model for Establishing Basic Unit Prices for Construction (Case Study of Murung Raya Regency, Lambung Mangkurat University)." In view of the need for research on the factors that influence the price of construction materials in the village government which have different characteristics from existing projects in the Regional Government. It is hoped that this research can provide input on what factors need to be considered in determining the standard unit price for construction materials.

Problem Formulation

The formulation of the problem sought in this study, namely

1. What factors most influence the price of construction materials in the village government of Hulu Sungai Selatan Regency?

2. How do you determine the prediction model that influences the material unit price factors in the village government?

Research Objectives

The objectives of this research are:

1. Determine the factors that affect the price of construction materials in the village government that can cause the risk of overruns in material costs
2. Making prediction models that affect the price of construction materials in Hulu Sungai Selatan Regency.

Problem Limitation

The limitations of the problems given in this study include:

1. The construction project under review is a project carried out by the village government independently in Hulu Sungai Selatan Regency
2. The construction materials referred to in this study are the main materials in village infrastructure projects such as (Sirtu, Mountain Rock, Gravel, and Sand)
3. The factors that influence the price of construction materials are viewed from the perspective of the village government as owner, planner and implementer
4. Research data is the perception of construction actors in the Hulu Sungai Selatan district
5. The material price proposed is a predictive model for the influence of construction factors

Research Benefits

The benefit of this research is to get the determining factors or those that influence the village in determining the unit price for construction materials and the efficiency of the unit price obtained to meet the principles of procurement of goods / services for the village government.

II. BASIS OF THEORY

The Origin of Village Funds

Village is a village and customary village or what is referred to by other names, hereinafter referred to as Desa, is a legal community unit which has territorial boundaries which is authorized to regulate and administer government affairs, the interests of the local community based on community initiative, rights of origin, and / or traditional rights. recognized and respected in the government system of the Unitary State of the Republic of Indonesia

Village Administration is the implementation of government affairs and the interests of the local community in the government system of the Unitary State of the Republic of Indonesia. Village Government is the Village Head or what is referred to by any other name assisted by Village officials as an element of Village Government administrators.

Village Development aims to improve the welfare of the Village community and the quality of human life as well as poverty alleviation through the fulfillment of basic needs, development of Village facilities and infrastructure, development of local economic potential, as well as sustainable use of natural resources and the environment. Village development includes the planning, implementation and supervision stages. (Village Law, 2014)

Government Regulations Governing the Implementation of Construction Projects in Villages

In principle, the procurement of goods / services in the village is carried out by means of self-management by the village government by involving all village communities with a spirit of mutual cooperation, utilizing local wisdom, and maximizing the use of materials / materials from the local area, to expand job opportunities and empower local communities.

The Management Team for the Procurement of Goods / Services, hereinafter referred to as TPK, is a team established by the Village Head with a Decree, consisting of elements from the Village Government and elements of Village Community Institutions to carry out the procurement of goods / services.

TPK is determined according to needs, consisting of:

- the chairman, comes from the Village Apparatus Element; and
- at least 2 (two) members come from elements of the Village Community Institution.

In preparing the plan for the implementation of the procurement of goods / services, the TPK has the following main duties and authorities:

a. prepare a Budget Plan (RAB) based on local market price data;
b. establish simple technical specifications of goods / services;
c. specifically for construction work, establish a simple work plan drawing / sketch;
d. determine the providers of goods / services;
e. drafting a Letter of Agreement;
f. signed the Letter of Agreement;
g. keep and maintain the integrity of the procurement documents for goods / services; and
h. report all activities and submit the results of the procurement of goods / services to the village head accompanied by an official report on the handover of work results. (Perbup, 2015)

Characteristics of Remote Village

Definition of Remote Village In this activity, what is meant by Remote Village is a Rural Area that is isolated from Growth Centers / other areas due to not having or lack of Transportation Infrastructure, thus hampering the growth / development of the area.

Definition of Price

Price is a measure of the value of a person's satisfaction with the product he buys. Someone will dare to pay for a product at a high price if he assesses the satisfaction he hopes for the product he is going to buy is high. Conversely, if a person evaluates that his satisfaction with a product is low, he will not be willing to pay or buy the product at a high price. Economic value is created by activities that occur in the market mechanism between buyers and sellers. (Gitosudarmo, 2014)

Material Unit Price Analysis

Analysis of the unit price of material is to calculate the quantity / volume of each material, as well as the amount of cost required. While the material unit index shows the amount of material that will be needed to produce a volume of work to be done, either in volume 1 m3, 1m2, or per m'.The material / material requirement is the amount of material needed to complete part of the work in one work unit. . (AHSP Public Works, 2016)

Construction Material Cost Risks

Material costs are very important in the project, because this material cost has a large enough percentage of the total project cost. From the research results state that material costs absorb between 50-70% of project costs, and this does not include material storage costs (Ervianto, 2004).

Types of Research Data and Data Analysis Techniques

Types of Research Data

Data collection is a process of procuring primary data for research purposes. In completing this thesis, the research used is descriptive qualitative research so that the presentation is inductive. So, the data presented is in the form of a narrative based on the data obtained. Types of data collection techniques include: (1) interview (interview); (2)questionnaire (questionnaire); (3) observation (observation); (4) documentation; and (5) Tests.

Data Analysis Techniques

1. Quantitative

In quantitative research, data analysis is an activity after data from all respondents or other data sources have been collected. Data analysis activities in Sugiyono (2010) are: grouping data based on variables and types of respondents, tabulating data based on variables from all respondents, presenting data for each variable studied, performing calculations to answer problem formulations, and performing calculations to test hypotheses that have been proposed.

2. Qualitative

In Moleong (2010) it is stated that there are three models of qualitative data analysis, including:

1. Fixed comparison method, constantly comparing one datum with another datum and then constantly comparing categories with other categories.
2. Data analysis method according to Spradley, the research process

Instrument Test

In research, data has the highest position, because data is a description of the variables studied and serves as a means of proving the hypothesis. Whether the data is correct or not, will determine the quality of the research results. Whether the data is valid or not, depends on whether the data collection instrument is good or not. An instrument is said to be good as a measuring tool if it has valid (valid) and reliable (reliable) characteristics.

Validity Test

The first and popular technique to use is technique Product Moment Correlation proposed by Pearson.

There are 2 Product Moment correlation formulas:

- Product moment correlation with Deviation,

$$\mathbf{r} = \frac{\sum \mathbf{xy}}{\sqrt{(\sum(\mathbf{X^2})(\mathbf{Y^2}))}}$$

- Product moment correlation with rough numbers

$$\mathbf{r} = \frac{\mathbf{N}\ \sum(\mathbf{X.Y}) - \{(\sum \mathbf{X})(\sum \mathbf{Y})\}}{\sqrt{(\mathbf{N}\sum(\mathbf{X^2}) - (\sum \mathbf{X})^2)\ (\mathbf{N}\sum(\mathbf{Y^2}) - (\sum \mathbf{Y})^2)}}$$

Information :
r is the correlation coefficient between variable X and variable Y
x_i is the ith data value for the group of variables X
y_i is the ith data value for the group of variables Y
n is a lot of data

Reliability Test

In this study, the reliability test was carried out using the Cronbach Alpha Formula technique. According to Suharsimi Arikunto (2010: 239), the Alpha formula is used to find the reliability of instruments whose scores are not 1 or 0, for example, questionnaires or questions in the form of description. Alpha Cronbach formula:

$$\mathbf{r_{11}} = \left[\frac{\mathbf{k}}{\mathbf{k-1}}\right]\left[\mathbf{1} - \frac{\sum \mathbf{s^2}}{\mathbf{s^2_{total}}}\right]$$

Information:
$\mathbf{r_{11}}$ is the reliability coefficient alpha
$\mathbf{k}$ is the number of question items
$\sum \mathbf{s^2}$ is the number of grain variants
$\mathbf{s^2_{total}}$ is the total variance.

The Concept of Factor Analysis Using the Severity Index (SI) Method

Abdurrahman (2012) explains that the severity index methodused to find the probability and impact of risk and able to categorize based on the level of probability. The Severity Index method is able to combine the opinions of respondents and produce percentage weights. Results issued byseverity indexin the form of a percentage. The higher the percentage of a variable, the more reliability it affects the variable.
severity index calculated using the following formula:

$$\mathbf{SI} = \frac{\sum_{i=0}^{s} \mathbf{Ai.Xi}}{\mathbf{n}\sum_{i=0}^{s} \mathbf{Xi}}(\mathbf{100}\%)$$

Modeling Concept with Partial Least Square (PLS)

[Sari, 7(9): September 2020] ISSN 2348 – 8034
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According to Jogiyanto and Abdillah (2009) PLS (Partial Least Square) is: Variant-based structural equation analysis (SEM) which can simultaneously test the measurement model as well as test the structural model. The measurement model is used to test the validity and reliability, while the structural model is used to test the causality (hypothesis testing with predictive models).

Furthermore, Jogiyanto and Abdillah (2009) state that Partial Least Squares (PLS) analysis is a multivariate statistical technique that makes comparisons between multiple dependent variables and multiple independent variables.

III. RESEARCH METHODS

Based on the formulation of the problem, the following is an overview of the framework for researching the factors that influence the unit price, as in Figure III.1. :

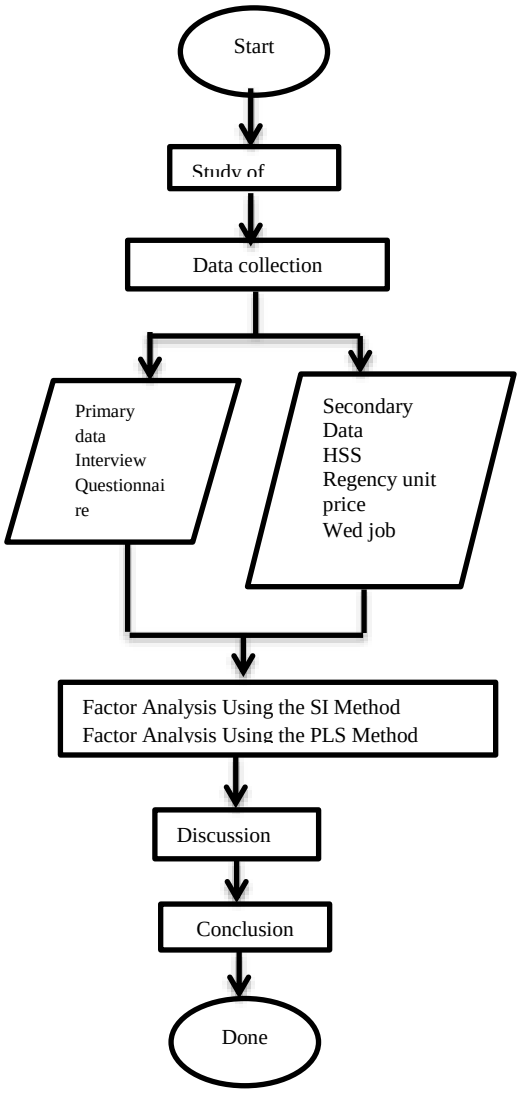

Figure III.1 Research Flowchart

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IV. RESULTS OF ANALYSIS AND DISCUSSION

Explanation of Research Data

Data for the purposes of this study consist of primary data and secondary data. Primary data is the result of filling out questionnaires from respondents. Meanwhile, secondary data is in the form of unit price lists in Hulu Sungai Selatan district and RAB for development activities in the village.

Proportion of Respondents Category in Research

The number of villages in Hulu Sungai Selatan district is 144 villages consisting of 11 sub-districts. For Hulu Sungai Selatan District, the regional conditions vary, some are in the form of highlands (mountains), lowlands (swamps) and urban areas. Of the 144 existing villages that were used as samples, two villages in a sub-district, one village closest to the capital of the sub-district and one village that is farthest from the sub-district as representatives.

Table IV.1 Proportion of respondents' categories

No.	Category	total	Percentage
1	Village government	22	50
2	Activity Management Team	22	50
Total number		44	100

Respondents' Experience in Village Infrastructure Projects

The respondents' experience is assumed to be directly proportional to the respondent's level of knowledge of the problems in a desperate infrastructure project in the village government. The experiences of respondents in this study are shown in Table IV. 2

Table IV.2 Respondents' Experiences on Village Infrastructure Projects

No.	Respondents' Experience	total	Percentage
1	> 5 Years	9	20
2	3-5 Years	20	45
3	<3 Years	15	34
Total number		44	100

Characteristics of the Hulu Sungai Selatan District

Hulu Sungai Selatan has an area of approximately 1,703 km² and has a population of around 212,485 people (Indonesian Population Census 2010) and in years 2019 totaled 237,702 inhabitants.

Geographical location of Hulu Sungai Selatan district is located between 2 ° 29 ′ 59 ″ - 2 ° 56'10 ″ South Latitude and 114 ° 51 ′ 19 ″ - 115 ° 36'19 ″ East Longitude. Geologically, this area consists of mountains extending from east to south, but from west to north it is an alluvial lowland which is sometimes swampy. This topographical condition causes the air in this area to feel cold and slightly damp with rainfall in 2002 of 2,124 mm.
Hulu Sungai Selatan is divided into 11 districts, 4 sub-districts and 114 villages

For remote villages in Hulu Sungai Selatan District, based on the category of accessibility facilities (roads and bridges), there are four villages in West Daha District, namely Bajayau Lama, Bajayau Baru, Siam Gantung, and Samuda Villages. Two villages in Daha Utara Subdistrict are Murung Raya and Hakarung Villages. One village in Daha Selatan District is Muning Dalam. One village in Telaga Langsat District, namely Riam Tajam Village and three villages in Loksado District, namely Tumingki, Kamawakan and Haratai Villages which can only be accessed by wheeled vehicles, boats and on foot.

For remote villages in Hulu Sungai Selatan Regency, based on the category, they have geographic isolation because the area is mountains of all villages in Loksado District, namely Halunuk, Haratai, Hulu Banyu, Kamawakan, Lok Lahung, Loksado, Lumpangi, Malinau, Muara Kembali, Panggungan, and Tumingki. Six villages in the Padang Batung sub-district are Batu Laki, Batu Bini, Mawangi, Malilingin, Malutu, and Madang. Three villages in Telaga Langsat District, namely Hamak, North Hamak and East Hamak. Geographical isolation is due to its area in the form of lowlands or swamps, namely all villages in Daha Barat, Daha Utara, Daha Selatan Districts.

Examination of the Validity and Reliability of Research Instruments

After the questionnaire data is collected, the results need to be tested / checked for validity and reliability. In this test the author uses the Microsoft exel program as a tool in data processing.

Examination of the Validity of Research Instruments

According to Misbahudin and Hasan (2014) that the minimum requirement to be considered an instrument item declared valid is if the validity index value, rmin ≥ 0.3. Example of calculating statement number 1 for the economic part of cement materials

1. The validity index is calculated using the Pearson correlation,

$$r = \frac{N\ \sum(X.Y)-\{(\sum X)(\sum Y)\}}{\sqrt{(N\sum(X^2)-(\sum X)^2)\ (N\sum(Y^2)-(\sum Y)^2)}} \qquad r = \frac{(44.2169)-(178.519)}{\sqrt{(44.772)-178^2)((44.6337)-519^2)}}$$

$$r = 0{,}656 \approx 0{,}66$$

Since, r is greater than rmin ≥ 0.3, the statement of item 1 on the economic section for cement material is declared valid.

2. Search for the coefficient (r11) using the methodAlpha Cronbach, as follows :

a. From the table r value for the moment product with a significant level (α) = 5% and N = 44-2 = 42, it is obtained that the critical value is 0.304

b. with the Cronbach Alpha method the value was calculated r11 as follows:

$$r_{11} = \left[\frac{k}{k-1}\right]\left[1 - \frac{\sum s^2}{s^2_{total}}\right]$$

Where k is the number of items in the economic part of the statement, namely 3 items, so that

$$r_{11} = \left[\frac{3}{3-1}\right]\left[1 - \frac{3{,}55}{4{,}89}\right]$$

$$r_{11} = 0{,}41$$

c. From the calculation that r11 = 0.41 is greater than the valuer table= 0.304 then the items of the economic section statement for cement materials are reliable.

Analysis of the factors that affect the basic unit price of the material using the severity index (SI) method

The data that has been provided by the respondents in the questionnaire will be analyzed using the Serevity Index (SI) method to determine the percentage of factors that are assumed to affect the price of construction materials. The following is an example of calculating the severity index of the transport wage speculation factor by market players for cement material:

1. From the results of the questionnaire it is known that

- There were no respondents who chose 1 (very unaffected)
- Respondents who choose 2 (do not affect) as many as 8 respondents
- Respondents who chose 3 (less influence) were 7 respondents
  - Respondents who choose 4 (influence) as many as 10 respondents
  - Respondents who chose 5 (very influencing) were 21 respondents
  - The total respondents were 44 respondents

2. Calculated severity index (SI) using the formula

$$SI = \frac{\sum_{i=1}^{i=n} Ai.Xi}{Xi} \text{ x } 100\% \qquad SI = \frac{((0x0)+(1x6)+(2x7)+(3x10)+(4x21))}{4x44} x100\%$$

$$SI = \frac{134}{176} x100\%$$

$SI = 76{,}14\%$

From this classification, SI = 76.14% is in the "influence" category.

The influencing factors starting from rank 1 onwards, are determined based on the high severity index value first, then if the same SI value is found, then the smallest variance value will be ranked in the top. Based on the calculation, the "material price speculation by market players" factor for cement material ranks first in the category of economic factors

From the results of the factor analysis using the severity index (SI), it can be seen the factors that influence the basic unit price of the material being reviewed. And from the results of this analysis, it is known that the category of influence of these factors, such as "highly influencing" and "influencing" will be used in the prediction model analysis of the effect of these factors on the unit price of the material.

Analysis of the Basic Unit Price Prediction Model for Materials Using the Partial Least Square (PLS) Method

Analysis of modeling is carried out on cement, gravel, concrete sand, mountain rock, and gravel, respectively. Modeling is done based on the consideration that each material has different physical characteristics and factors that influence it based on the value of the analysis severity index.

In this study, the modeling analysis used will be the Partial Least Square (PLS) method with the help of Smart PLS 3.2.8 software. In the PLS analysis technique, there are calculation components, namely the dependent latent variable and the independent latent variable indicator. In this study, the dependent latent variable is material price, the independent latent variable is a group of identified factors (economy, location of material resources, transportation, and government policy regulations) and the identified factors are indicators of each independent latent variable according to its group. .

In the concept of the factor model that affects the basic unit price of this material, the relationship between the dependent latent variable and the independent latent variable is a formative construct, while the relationship of each latent variable to its indicators is a reflective construct. The independent latent variable indicators are the factors identified based on the results of the severity index analysis for each type of material.

Refer between practical models pls that each latent variable construct has at least three indicators. The basic concept of the construct model for the basic unit price of cement can be seen in Figure IV.2

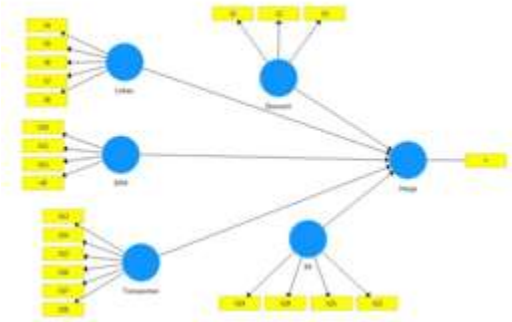

Figure IV.2 Basic Concept Models Affecting the Unit Price of Cement

Based on the model concept previously described, for modeling the cement base unit price for cement, the following hypothesis is proposed.

1. H1, namely the factors in the economic aspect which directly affect the base unit price of cement
2. H2, namely the factors in the location aspect which directly influence the base unit price of cement
3. H3, namely factors in the aspect of material resources that have a direct effect on the base unit price of cement
4. H4, namely the factors in the transportation aspect that have a direct effect on the base unit price of cement
5. H5, namely factors in the regulatory aspects of government policies that directly affect the base unit price of cement

Testing the Validity of the Cement Base Unit Price Model

The convergent validity test of the reflective construct was carried out by looking at the loading factor score, AVE score and communality score. Using Smart PLS 3 as in appendix D, it is obtained that the scores smaller than 0.5 are X1, X2, X4, X5, X9, X19, and X20. These indicators are removed from the construct because they do not fit into the representative construct. The calculation is done again, so that all the loading factors of the reflective construct indicators are greater than 0.5. The next step is to look at the AVE and community scores in the algorithm overview output

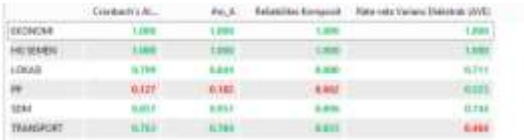

Figure IV.3 Output overview algorithm of the Smart PLS 3 application

Based on the results of the calculation of the third model algorithm, the basic unit price of cement as shown in Figure IV.3, it is found that the transport variable does not meet the convergent validity requirements because the AVE and communality scores are smaller than 0.5. To continue the analysis process, indicators with a loading factor score less than 0.6 on these variables are removed from the construct. The indicators that were removed were X15, X16 and X22. Then the recalculation was carried out, it was obtained that all the loading factors for the reflective construct indicators were greater than 0.5. The next step is to see the AVE score and communality in the algorithm overview output

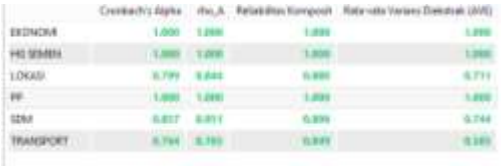

Figure IV.4 Output overview algorithm of the Smart PLS 3 application

Based on the results of the calculation of the third model algorithm, the basic unit price of cement as shown in Figure IV.4, it is found that all variables have AVE and communality scores greater than 0.5. This shows that the probability of each indicator is greater (above 50 percent) to enter the construct compared to other constructs. So theoretically the analytical model can be continued.

Testing the Discriminant Validity of the Unit Price Model for Cement

The discriminant validity test relates to the principle that the gauges (indicators) of different constructs should not be highly correlated. This test is done by looking at the results of the cross loading score

In Figure IV.5, it can be seen that each indicator in a construct will be different from indicators in other constructs and will collect in its own construct. This shows that these indicators have a higher correlation with the construct than other constructs.

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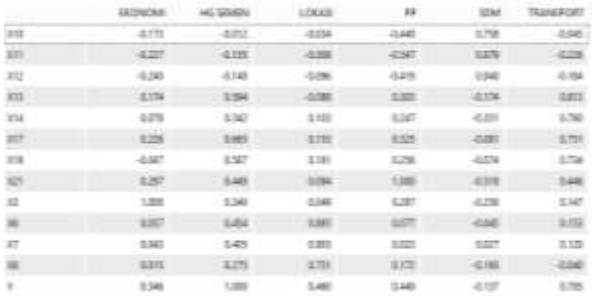

Figure IV.5 Output Cross Loading Algorithm for the Third Model of HG Cement

Structural Testing of Cement Base Unit Price Model

Testing the predictive structural model in this study was conducted to predict the causal relationship between economic variables (EKO), location (LOK), material resources (HR), transportation (TRANS) and government policy regulations (PP) with the variable cement price model (HG. CEMENT)). The structural test of the basic unit price model for cement is to test the hypothesis as mentioned above. The structural test of the formative construct (inner model) is carried out at the bootstrapping stage, with the test results can be seen in Figure IV.6

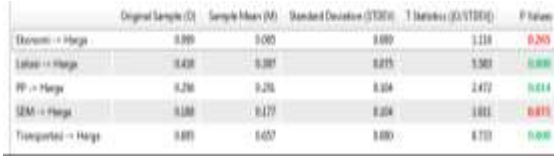

Figure IV.6 Path Coefficients (Mean, STDEV, T-Values) Fourth Model Model Cement Base Unit Prices

From the results obtained from Figure IV.6, it can be concluded that:

1. Economy has no effect on prices. This can be seen from the Path Coefficient output which shows the value of t count <t table (1.116 <1.96), so that Ho is accepted.
2. Location affects the price. This can be seen from the Path Coefficient output, which shows the value of t count> t table (5,583> 1.96), so that Ho is rejected.
3. PP has an effect on prices. This can be seen from the Path Coefficient output, which shows that the value of t count> t table (2,472> 1.96), so that Ho is rejected.
4. HR has no effect on prices. This can be seen from the Path Coefficient output obtained by the t count <t table (1,811 <1.96), so that Ho is accepted.
5. Transportation has an effect on prices. This can be seen from the Path Coefficient output, which shows the value of t count> t table (8,733> 1.96), so that Ho is rejected.

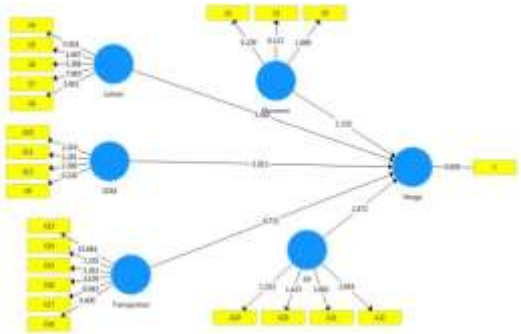

Figure IV.7 Prediction Model of Factors Affecting the Unit Base Price of Cement in HSS District

[Sari, 7(9): September 2020] ISSN 2348 – 8034
DOI: https://doi.org/10.29121/gjesr.v7.i9.2020.1 Impact Factor- 5.070

Discussion of the Cement Base Satan Price Model

Based on the original sample score, the results of the analysis of the prediction model for the cement material price are obtained sequentially, the priority variables (aspects) to be considered in determining the cement base unit price, namely,

1. The first priority is the transportation aspect with the original sample score of 0.695
2. Locations with an original sample score of 0.418
3. The third priority is the PP aspect with the original sample score of 0.256,
4. The fourth priority is the human resource aspect with an original sample score of 0.188
5. The fifth priority is the economic aspect with an original sample score of 0.099 Based on Figure IV.6, the results for the equation model are:

The mathematical equation model for the basic unit price of cement is as follows:

$$\text{HG. SEMEN} = 0{,}099\ \text{EKO} + 0{,}418\ \ \text{LOK} + 0{,}256\ \text{PP} + 0{,}188\ \text{SDM} + 0{,}695\ \text{TRANS}$$

Factors affecting the unit price of Hulu Sungai Selatan Regency

The existing road projects in the village consist of farm roads and neighborhood roads. For environmental roads, it can usually be easily reached by 4-wheeled transportation while farming roads are more difficult for 4-wheeled roads because they are located far from sub-district roads and some are even in the mountains, so they require additional transportation, namely carts or 2 wheels. in the form of siring, the materials needed are mountain rock, cement and gravel, and for a cast-concrete farming road the materials needed are cement, concrete sand and gravel.

Based on the results of calculations using the Severity Index (SI) method, the percentage of transportation is obtained for the factor "distance of material sources and the condition of the road through which the transportation means to the project site" as well as the factor of "manual haulage" above 87% which means it is included in the "very influencing" category. From the analysis model, it is obtained that the most influencing results of cement, the value for transportation is 0.695, for gravel the transportation value is 0.527, for gravel the transportation value is 0.566, for mountain stone the transportation value is 0.476, and for concrete sand the transportation value is 0.496. With these results it can be seen that transportation is very influential in determining the unit price.

So with these results the authors conducted interviews with executors in the field and those who determined the price of BAKEUDA as material for validation, the authors asked questions about the basis they used in determining the district unit price and obtained the results from the interview, namely the price in the district unit was the material price. there is in the procurement and local retribution taxes as well as for transport transportation wages only to the extent that can be passed by 4-wheeled vehicles.

What happens in the field is because the village project is in an area that is difficult to reach by 4-wheeled vehicles and some are even in the mountains so what happens in the transportation process is that you have to use additional transport such as carts and 2-wheeled vehicles so that it requires additional costs. Based on the results of the interview, it was found that the cost of transportation for those areas with low rates was around Rp. 25,000 to Rp. 50,000 per m3. For highland or mountainous areas, the cost for transportation is around Rp. 100,000-Rp. 150,000 per m3. Based on the results of the interview, it was obtained the material transportation transportation process scheme.

ISSN 2348 – 8034
Impact Factor- 5.070

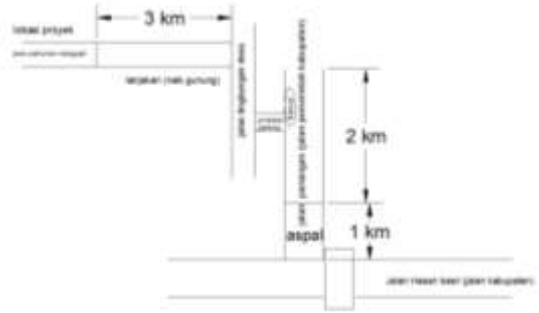

Figure IV.27 Existing Road Schematic in the village project

Figure IV.27 shows the material transportation scheme in one of the sample projects in the village of Hulu Sungai Selatan District. It takes two times the process of transporting materials. Based on the results of interviews with executors on existing projects on the Manggupil farm road, information was obtained:

- For the district price for concrete sand is Rp. 106,250 with delivery costs until the material can be reduced by Rp. 58,600 per cubic.
- For the price of concrete sand in the field, Rp.137,500 is delivered until the material can be unloaded at a location where trucks can still pass. To reach the village project location, the material must be transported again at a return wage of 3000 / return for 1m3, it is approximately 50 back, so for 1m3 it takes IDR 150,000 for the material to reach the village project location. So the total material cost is Rp. 287,500 / m3
- For the regency price of gravel is Rp.193,100 with delivery costs until the materials can be reduced by Rp.58,600 per cubic.
- For the price of gravel in the field, Rp. 145,000 is delivered so that the material can be unloaded at a location where trucks can still pass. To reach the village project location, the material must be transported again at a reported fee of 3000 / return. For 1m3 it is approximately 50 back, so for 1m3 it takes IDR 150,000 for materials to reach the village project location. So the total material cost is Rp. 295,000 / m3
- The district price for cement is Rp. 72,500 along with VAT and PPh taxes
- For the price of cement in the field, Rp. 70,000 is delivered so that the material can be unloaded at a location where trucks can still pass. To reach the village project location, the material must be transported again at a reported wage of 5000 / zak. So the total material cost is IDR 75.00 / zak

Discussion

Based on the discussion of the results of the research carried out, the following things can be explained:

1. The model of the factors that influence the unit price obtained is a prediction of the dominant aspects affecting the unit price in the village government of Hulu Sungai Selatan Regency. With this relationship in mind, this model can be used as a guide to determine the dominant factor affecting the unit price for villages that have the same characteristics as those in Hulu Sungai Selatan Regency.
2. Taking into account the results of the model analysis of the factors that influence the unit price, it can be seen that the dominant factors are transportation and location factors. Where these two factors are the most dominant in causing the risk of cost overruns in the unit price of materials, it is hoped that this will be taken into consideration by the Regional Government to pay special attention to transportation costs for construction materials in the Village Government so that the village does not experience problems when being examined by APIP (Government Internal Supervisory Apparatus).

V. CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Based on the results of the research conducted, the following conclusions can be drawn:

1. Based on the results of the analysis with the severity index (SI) method, it was found that the dominant factors affecting the unit price were transportation and location factors. These factors are risk factors that can cause transportation costs to increase in determining the unit price of materials.
2. Based on the results of the analysis of the prediction model of the influencing factors using the partial least square (PLS) method, the priorities that are considered to determine the basic unit prices for cement, gravel, gravel, mountain stones, and concrete sand are
   1) The first priority is the transportation aspect
   2) The second priority is the location aspect
   3) The third priority is the regulatory aspect of government policy
   4) The fourth priority is the aspect of material resources
   5) The fifth priority is the economic aspect

Suggestion

Based on the results of the research conducted, it can be suggested to set the unit price for villages in Hulu Sungai Selatan Regency as follows:

1. It is suggested that the results of this study can be considered as input for other research for more specific freight or transportation wage modeling based on the location of different areas such as lowland and upland areas.
2. In this study the researchers only produced a predictive model of factors that influence in general such as transportation factors and location factors, while the transportation factor itself consists of elements of other factors because it is necessary to do more modeling analysis that is more specific to transportation and location factors in order to find out specific results.

REFERENCES

1. *Aan Komariah, Djam'an Satori, 2011, Qualitative Research Methods, Bandung: Alfabeta.*
2. *Abdurrahman. 2012. Analysis of Risk Management for Irrigation Projects. Research Journal of the Department of Civil Engineering, Faculty of Engineering, Hasanudin University, Makasar.*
3. *Abdillah., W and Jogiyanto. 2009. Partial Least Square (PLS) Alternative SEM in Business Research. Yogyakarta: Publisher Andi.*
4. *Arikunto, Suharsimi. 2010. Research Procedure A Job Training Approach. Jakarta: Rineka Cipta*
5. *Regent of Hulu Sungai Selatan, Province of South Kalimantan. 2015. Regulation of the Regent of Hulu Sungai Selatan District Number: 27 May 28, 2015 concerning Procedures for Procurement of Goods / Services in the Village*
6. *Ervianto, WI 2004. Construction Project Management Theory-Applications, Yogyakarta, Andi*
7. *Gitosudarmo, Indiryo. 2014. Marketing Management. Third Edition, Second Edition. Yogyakarta: BPFE.*
8. *Ghozali, Imam. 2012. Structural Equation Modeling-Alternative Method with Partial Least Square PLS.BPUNDIP. Semarang*
9. *Haryono, Siswoyo, 2017, "SEM Method for Management Research with AMOS Lisrel PLS". Prints I. Luxima Metro Media Publisher, Jakarta. Pp. 394, 405.*
10. *Himbawan, Rio. 2015. The Model of Basic Unit Pricing for Murung Raya Regency. Master Thesis of Civil Engineering, Lambung Mangkurat University. Banjarmasin.*
11. *Ibrahim, H. Bachtiar. 1993. Plans and Estimate Real Of Cost. 2. Jakarta: Earth Literacy.*
12. *Kalnadi, D. 2013, Measuring Acceptance and Use of Technology in MSMEs Using the UTAUT Method. Department of Business Administration, Faculty of ISIP, University of Lampung*
13. *Decree of the Minister for Disadvantaged Regions and Transmigration No. 16 of 2018 concerning the Priority of Using Village Funds in 2019. Jakarta: Minister of Development of Disadvantaged Areas and Transmigration*
14. *Moleong, LJ 2010. Qualitative Research Methodology, Bandung: Youth Rosda Karya*

15. *Misbahuddin and Iqbal Hasan, Analysis of Research Data with Statistics. (Jakarta: PT Bumu Aksara. 2013)*
16. *Sugiono. 2010, Qualitative and Quantitative Research Methods R & D, Publisher CV Alfabeta, Bandung.*
17. *Indonesian government. 2014. Village Law No. 6/2014 on Villages. State Gazette of the Republic of Indonesia of 2014 Number 7. Jakarta: State Secretariat*
18. *Technical Instructions. 2005 Identification of Remote Villages Locations Underdeveloped Villages and Small Islands No.7. Jakarta: Directorate General of Human Settlements*
19. *Regulation of the Minister of Public Works No. 11 / PRT / M / 2013 concerning Guidelines for Analysis of Unit Prices for Public Works Works. Jakarta: Ministry of Public Works of the Republic of Indonesia*
20. *Priyatno, Duwi, 2013, "Independent Learning Data Analysis with SPSS", Yogyakarta: Media Kom.*
21. *Widarjono, Agus, "Applied Multivariate Analysis" Second Edition, Publisher UPP STIM YKPN, Yogyakarta, 2015.*