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The Role of Variance Analysis as a Project Costs Controlling Tool

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Keywords:

Analysis of Variance;
Controlling;
Project Cost.

Abstract: The Role of Variance Analysis as a Project Costs Controlling Tool

Purpose: *To find out whether variance analysis can be used as a cost control tool for the Road Rehabilitation project*

Method: *Quantitative with a case study approach.*

Result: *Variance analysis can be used as a cost control during the Covid-19 pandemic. The pandemic affected the company's operating costs, indicated by the presence of unfavorable and favorable projects.*

Novelty: *Variance analysis can be used to identify areas where project cost deviations occurred during the Covid-19 pandemic.*

Contribution: *Management can use variance analysis to anticipate significant cost changes in the construction sector.*

Kata kunci:

Analisis Varians;
Biaya Proyek;
Pengendalian.

Abstrak: Peran Analisis Varians sebagai Alat Pengontrol Biaya Proyek

Tujuan: mengetahui apakah *variance analysis* bisa digunakan sebagai alat pengendalian biaya

Metode: Kuantitatif dengan pendekatan studi kasus.

Hasil: *Variance analysis* dapat digunakan sebagai alat pengendalian biaya pada saat pandemi Covid-19. Pandemi telah memengaruhi biaya operasional perusahaan ditunjukan dengan adanya hasil menguntungkan dan tidak menguntungkan dalam pelaksanaan proyek.

Kebaruan: *Variance analysis* dapat mengidentifikasi area mana yang terjadinya penyimpangan biaya proyek saat pandemic.

Kontribusi: Pihak manajemen bisa menggunakan *variance analysis* untuk mengantisipasi terjadinya perubahan biaya yang signifikan di sektor konstruksi.

1. Introduction

The construction sector, in 2021 was in third place as a source of economic growth in Indonesia with a contribution of 10.48 percent after the manufacturing sector and the trade sector [1]. The construction sector is able to absorb around 5 million direct workers per year. Thus it can be said that the world of construction has an important and strategic role in the national

development system. In addition to having great potential in contributing to the availability of employment, support various areas of community life and improve the national economy. In construction service companies, there is often a discrepancy between the project budget and actual project costs. The role of the company leadership is required to carry out inspections and review project cost plans by comparing budget realization [2], [3].

Budgeting and control functions in the management of a company play a very important role in the process of achieving company goals [4]. However, several research results suggest that the application of the budget as a planning and cost-control tool is still not running optimally [5]–[7]. Latunggamu, et al [8] state that the budget is one of the control tools in the company at the time of realization and whether the difference that arises is considered unfavorable or considered favorable. The budget function is needed as a guide to determine what steps must be implemented in achieving the stated goals. While the control function is needed to see how the steps that have been carried out do not deviate from the predetermined budget. A good planning and control function will be able to create efficiency in its operations, for this reason efficiency can be implemented by controlling these costs [9], [10]. Control is carried out with the aim of monitoring so that each budget made does not experience a discrepancy with the realization of its implementation, and achieves goals efficiently and effectively [10], [11].

One of the right ways that can be used to find out whether the budget is functioning properly as a cost control tool is to use a variance analysis that compares the budgeted costs with their realization [4], [5], [12], [13]. Variance analysis is an important tool for any business trying to control costs. Variance analysis is a technique used to compare actual results to budgeted amounts, usually for the purpose of identifying areas where costs can be reduced. They can help managers identify areas where costs need to be reduced and take action to increase profitability.

Basically, a construction project will definitely face many challenges in the process starting from the engineering side, supplying materials up to the construction period with the aim of maintaining costs, quality, and time can be achieved properly. However, currently the world of construction is facing new challenges with the emergence of the Covid-19 pandemic [14]. The Covid-19 pandemic can be categorized as a construction risk that arises from outside or external factors and cannot be predicted by all parties involved in construction projects [14].

Two main problems related to the construction process throughout the Covid-19 pandemic. *First*, government regulations changed during the Covid-19 pandemic. *Second*, the constraints on material and labor mobilization [2]. The problems that occurred were several causes that significantly affected the delay in the completion of building tasks during the Covid-19 pandemic [15]. The problems faced by construction projects will affect the availability of infrastructure. Even though the availability of infrastructure will be a solution to basic problems related to poverty and inequality that have been shackled by some of the Indonesian population [16].

PT Sarana Doa Bersama is a construction company based in Tanah Laut Regency, specifically at Jalan A. Yani No. 18, Pelaihari City, South Kalimantan Province. PT Sarana Doa Bersama works on national projects in the field of construction services. In general, the turnover of PT Sarana Doa Bersama is obtained from project basis. For each project that is obtained, a budget will be prepared in advance. Budgeting is used as a reference for cost control, this is done to see how far the results have been achieved. During the Covid-19 pandemic, the budget

Tabel 1. Comparison of the Budget Prepared by PT Sarana Doa Bersama with the realization of the Maluka Baulin – Tabanio Road Rehabilitation Project, Kurau District.

Information	Budget	Realization	Percentage Difference
Direct Raw Material	1.092.727.898	1.061.881.898	2,82%
Direct Labor	1.031.725.000	1.040.610.000	-0,86%
Overhead	100.822.975	98.759.000	2.05%

that had been made by PT Sarana Doa Bersama was often not in accordance with the realization of project implementation. Even though in implementing a project PT Sarana Doa Bersama prepares a project cost budget, it does not carry out a variance analysis. So, it is not known the cause of the deviation. A comparison of budget and realization data is shown in Table 1.

Table 1 present comparison of the budget and realization. For direct material costs and project overhead costs, the percentage difference is 2.82% and 2.05%, this is profitable for the company, but for direct labor costs the company experiences a loss difference of 0.86% from the budget that has been made. Therefore, PT Sarana Doa Bersama requires a project cost budget analysis to control project costs. This study tries to use the variance analysis method to trace deviations that occur in road rehabilitation projects under the conditions of implementation during the Covid-19 pandemic. This condition was chosen to see whether it was one of the causes of project budget deviations. Based on the previous description, The goal of this study is to determine whether variance analysis can be used as a cost control tool for PT Sarana Doa Bersama's Maluka Baulin Road Rehabilitation project - Tabanio, Kurau District in 2021, which was implemented during the Covid-19.

2. Method

The author's research method is quantitative research with a case study approach. A case study is a research study that employs or investigates one or more cases in a specific context and situation [17]. The research conducted by the author focused on matters related to the 2021 project budget plan, the realization of the 2021 budget, and the work on the PT Sarana Doa Bersama development project with the Maluka Baulin Road Rehabilitation project - Tabanio, Kurau District, Pelaihari City, South Kalimantan Province throughout the Covid-19 pandemic. The method of analysis uses variance analysis as a means of cost control.

Data collection techniques using interviews and documentation. Depending on the problem to be investigated, interviews were conducted with the company's leadership or employees. Documentation is done by collecting data related to the company's production budget that is considered related to this research. The stages of data analysis carried out in the study, first collected data through question and answer with the company related to the problem to be studied. The second is to collect the necessary data, namely the budget plan for the rehabilitation work for the Maluka Baulin-Tabanio Road, Kurau District. The third performs calculations on the standard project cost budget and its realization using variance analysis including analysis of differences in raw material or material costs, analysis of variance in direct labor costs, analysis of variance in project overhead costs (BOP). The fourth analyzes the causes of the difference in project costs PT Sarana Doa Bersama.

Tabel 2. Analysis of Variants of Direct Raw Material Prices for the Road Rehabilitation Project of Maluka Baulin – Tabanio, Kurau District.

No.	Description	Unit	Hst (Rp)	HS (Rp)	Hst – HS (Rp)	KS	Varian (Rp)	Information
1.	Asphalt	Kg	12.800	12.400	400	1.360	544.000	*Favorable*
2.	Kerosene	Liter	13.029,5	13.000	29,5	8.739	257.800,5	*Favorable*
3.	Mount Sand	m^3	174.700	165.000	9.700	379	3.676.300	*Favorable*
4.	Cement	Kg	1.300	1.250	50	192.100	9.605.000	*Favorable*
5.	River stone	m^3	193.000	187.000	6.000	237	1.422.000	*Favorable*
6.	Aggregate	m^3	209.566	198.450	11.116	1.360	15.117.760	*Favorable*
7.	Urug Sand	m^3	141.500	140.275	1.225	279	341.775	*Favorable*
8.	Split Stone	m^3	191.700	189.000	2.700	120	324.000	*Favorable*
9.	Sirtu	m^3	149.200	152.000	(2.800)	1.592	(457.600)	*Unfavorable*
10.	Fillers	Kg	1.300	2.000	(700)	162	(113.400)	*Unfavorable*
11.	Mark Paint	Kg	34.000	30.194	3.806	253	962.918	*Favorable*
12.	Thinner	Liter	18.000	17.680	320	157	50.240	*Favorable*
Total Variant Price of Raw Materials *(Favorable)*								**32.301.793,5**
Total Variant Price of Raw Materials *(Unfavorable)*								**4.571.000**

3. Results and Discussion

Analysis of Variations in Direct Material Costs and Their Causes. In analyzing the difference (variance) of direct material costs, there are two kinds of difference used, namely the difference in the price of raw materials and the difference in the quantity of raw materials. To calculate the two differences, it is obtained from a comparison of the direct material cost budget and the actual directmaterial cost [18]. The cause of the variance in direct material costs is due to changes in the price and quantity of direct materials used in the road rehabilitation project. To find out the difference in raw material prices, it is said to be profitable or unfavorable for the company if the standard price/quantity is greater than the actual price/quantity, whereas if the standard price/quantity is less than the actual price/quantity, it can be said that the difference it is unfavorable. The results of the calculation of the price variance analysis of direct raw materials for the rehabilitation project Jalan Maluka Baulin – Tabanio, Kurau District, as shown in the Table 2. It is spotted from Tabel 2 that in making estimates/budgets for direct material costs, errors still occur, causing unfavorable differences, this can be seen in the raw materials for sirtu and filler. But overall, from the results of the calculation, the variance of favorable direct goods price is greater than the variance of unfavorable direct goods price. The total calculation of the favorable direct material price variant is IDR 32,301,793.5 and the unfavorable direct material variant is IDR 4,571,000. Overall, for direct raw material prices, there is a variant that benefits the company, IDR 27,730,793. Based on interviews with management, there was a difference between the price of each unit for materials that are raw had been budgeted by the company and the price of the unit for the raw materials that actually occurred because the budget/standard unit price setting was not the same as the unit price during the project implementation process. In preparing the budget, the company takes data from the Central Statistics Agency (BPS) and also based on market prices at that time. The project implementation process lasted for 3 months after setting the budget coupled with

Table 3. Analysis of Quantity Variant Analysis of Direct Raw Materials for the Maluka Baulin – Tabanio Road Rehabilitation Project, Kurau District.

No.	Description	Unit	KSt	KS	KSt – KS	HSt (Rp)	Varian (Rp)	Information
1.	Asphalt	Kg	1.357	1.360	(3)	12.800	(38.400)	*Unfavorable*
2.	Kerosene	Liter	8.732	8.739	(7)	13.029,5	(91.206,5)	*Unfavorable*
3.	Mount Sand	m^3	387	379	8	174.700	1.397.600	*Favorable*
4.	Cement	Kg	191.500	192.100	(600)	1.300	(780.000)	*Unfavorable*
5.	River stone	m^3	249	237	12	193.000	2.316.000	*Favorable*
6.	Aggregate	m^3	1.344	1.360	(16)	209.566	(3.353.056)	*Unfavorable*
7.	Urug Sand	m^3	283	279	4	141.500	566.000	*Favorable*
8.	Split Stone	m^3	124	120	4	191.700	766.800	*Favorable*
9.	Sirtu	m^3	1.610	1.592	18	149.200	2.685.600	*Favorable*
10.	Fillers	Kg	156	162	(6)	1.300	(7.800)	*Unfavorable*
11.	Mark Paint	Kg	246	253	(7)	34.000	(238.000)	*Unfavorable*
12.	Thinner	Liter	151	157	(6)	18.000	(108.000)	*Unfavorable*
Quantity Variant Quantity of Raw material *(Favorable)*								**7.732.000**
Quantity Variant Quantity of Raw material *(Unfavorable)*								**4.616.462,5**

delays in completion, resulting in a difference in the price of direct raw materials in the budget and its realization.

The occurrence of a direct material price variance that benefited the company amounted to Rp. 27,730,793, due to a decrease in the realized price from the budgeted price. The condition of falling material prices for construction projects is contrary to the conditions of increasing prices of materials and services amid the pandemic of Covid-19. The increase in construction costs is not only due to material prices, but due to increased costs related to Covid-19. This research is in line with research conducted by Soviana et al and Henong which stated that the cost factor was considered to have the most influence on project implementation due to additional costs due to health protocols and delays in implementation. This is influenced by the waiting time due to the scarcity of materials arriving at the project site [15], [19].

The results of the calculation of the variance analysis of the quantity of direct raw materials for the rehabilitation project Jalan Maluka Baulin – Tabanio, Kurau District, are shown in the table 3.

Table 3 shows that in estimating the quantity or volume of direct raw materials there are still unfavorable differences. But in the overall calculation most of the difference is still favorable. The number of favorable direct material quantity variants favorable is IDR 7,732,000 and the unfavorable direct material variants are IDR 4,616,462.5. 115,537.5.

Based on interviews with management, the variance in the quantity of raw materials that is unfavorable is probably due to the wasteful use of raw materials or the use of a quantity of raw materials that is larger than the standard quantity that has been budgeted for. There is a change in the use of the quantity of direct raw materials that is greater than the budget for the use of raw materials resulting in the occurrence of direct material cost variances. Therefore, it is better for the project management to pay close attention to the direct material requirements that will be used and in the implementation of the project and to monitor the implementation of the project continuously so that the waste that

occurs can be prevented. What also needs to be considered is the quantity budgeting process, so that there are not too many differences between budgeting and realization.

The existence of differences in raw material unit prices and raw material usage is due to differences in budget preparation. Even though there was a delay in the implementation of the project during the Covid-19 pandemic, the existence of the Covid-19 pandemic had no direct impact on changes in the price and quantity of raw materials. As for the delay in project completion during the Covid-19 period, one of them was due to the limited distribution of materials due to the large-scale social restriction (PSBB) policy implemented in Tanah Laut Regency, South Kalimantan Province. This condition is consistent with the findings of Clarita and Anondho, as well as Nugroho et al [14], [20].

States the availability of materials and equipment is the most influential factor. The failure to contain the spread of the corona virus has led to an increase in the supply of building materials in the country. Due to the inability of suppliers to deliver materials to the desired location. At the same time, bringing in material supplies will also face a similar problem, namely, unpredictable price fluctuations. However, in the long run, the price of building materials may rise due to supply chain bottlenecks [21].

Besides that, the factor of fluctuations in material prices and the factor of material accumulation are also the dominant factors that affect project delays during the Covid-19 pandemic [22]. Factors that affect the delay in implementation is the inaccuracy in ordering materia [23]. Another factor that influences the occurrence of price differences in tackling Covid-19, is the government adopting policies to limit community activities so that there is a slowdown in the movement of the community's economy [24]. This policy affects the world of construction because it is impossible for the construction process to run normally like before Covid-19. Disturbances that occur in the world of construction are delays in project implementation to complete on time [25], [26].

Analysis of Direct Labor Cost Variances and Their Causes. The variance in direct labor costs occurs because the actual direct labor costs do not match the amount of direct labor costs that have been set in the budget. In analyzing the variance of direct labor costs, there are two kinds of differences that are used, namely the difference in wage rates and the difference in wage efficiency. To calculate the difference based on the budget and actual direct labor costs. The calculation results show that there is a total realization of direct labor costs for the rehabilitation project Jalan Maluka Baulin – Tabanio, Kurau District, amounting to IDR 1,040,610,000 lower than the total budgeted costs of IDR 1,031,725,000.

From the comparison of the budget and the realization there is an unfavorable difference or variant.To see the cause of the variance, it is necessary to calculate the change in the wage rate/standard working hour as well as the direct wage/hour rate used. The results of the calculation of the variance analysis of the direct labor wage rate for the rehabilitation project Jalan Maluka Baulin – Tabanio, Kurau District, can be seen in table 4. The number of favorable direct labor wage rate variants is IDR 860,000 and the unfavorable direct labor wage rate variants are IDR 4,209,000. unfavorable of IDR 3,349,000. This variant occurs when the actual wage rate is higher than the standard wage rate that has been made. The result of discussions with the head of the project lead to the occurrence of an unfavorable variant due to an increase in direct labor wages at high rates. One of the reasons for the increase in labor wages is that it was triggered by the presence of Covid-19, which resulted in a shortage of workers [27]. The increase in labor wages was one of the triggers due to the Covid-19 which resulted in a shortage of workers.

Table 4. Analysis of Variants of Wage Rates for Direct Labor Rehabilitation Projects on Jalan Mauka Baulin – Tabanio, Kurau District

No.	Description	TUSt (Rp)	TU (Rp)	TUSt - TU (Rp)	JKS (Hari)	Varian (Rp)	Information
1.	Worker	140.000	145.000	(5.000)	155	(775.000)	*Unfavorable*
2.	Craftsman	150.000	150.000	-	145	-	*Favorable*
3.	Foreman	180.000	182.000	(2.000)	110	(220.000)	*Unfavorable*
4.	Operator	290.000	300.000	(10.000)	130	(1.300.000)	*Unfavorable*
5.	Operator's Assistant	190.000	195.000	(5.000)	60	(300.000)	*Unfavorable*
6.	Driver	140.000	140.000	-	155	-	*Favorable*
7.	Driver Assistant	120.000	123.000	(3.000)	45	(135.000)	*Unfavorable*
8.	Mechanic	200.000	190.000	10.000	86	860.000	*Favorable*
9.	Mechanic Assistant	130.000	132.000	(2.000)	86	(172.000)	*Unfavorable*
10.	Foreman	170.000	177.000	(7.000)	155	(1.085.000)	*Unfavorable*
11.	Light Equipment Operators	145.000	148.000	(3.000)	74	(222.000)	*Unfavorable*
Total Variants of Direct Labor Wage Rates *(Favorable)*							**860.000**
Total Variants of Direct Labor Wage Rates *(Unfavorable)*							**4.209.000**

This factor became one of the causes of delays in project completion during the Covid-19 pandemic, namely the inadequate number of workers [28]–[30]. There is anxiety due to covid and Large-Scale Social Restrictions (PSBB) resulting in limited space for movement which has an impact on the workforce [31]. Availability of labor is the most influential factor for delays during the Covid-19 pandemic [25], [32].

To overcome project delays due to the covid pandemic, management can consider accelerating project implementation by adding working hours or a shift work system. However, the acceleration of project work implementation from the duration of project work under normal conditions will have an impact on direct costs and indirect costs. The acceleration of implementation will have an impact on increasing direct costs. Whereas indirect costs will generate costs that are directly proportional to the reduction in project duration, the faster the project duration, the fewer indirect costs incurred [33].

In addition to calculating the direct labor wage rate to find out the cost of the variance that occurs in the project's direct labor, the calculation of the efficiency of direct labor wages is also an influencing factor. The results of the calculation of the variance analysis of the efficiency of direct labor wages for the rehabilitation project Jalan Maluka Baulin – Tabanio, Kurau District, can be seen in the table 5.

The number of favorable direct labor wage efficiency variants of Rp. 4,950,000 is greater than the unfavorable direct labor wage efficiency variance of Rp. 7,335,000. Overall, labor wage efficiency directly the company has an unfavorable variance of IDR 2,385,000.

Table 5. Analysis of Efficiency Variants of Wages for Direct Labor in the Road Rehabilitation Project of Maluka Baulin – Tabanio, Kurau District.

No.	Description	JKSt (Hari)	JKS (Hari)	(JKSt - JKS)	TUSt (Rp)	Varian (Rp)	Information
1.	Worker	150	155	-5	140.000	(700.000)	*Unfavorable*
2.	Craftsman	150	145	5	150.000	750.000	*Favorable*
3.	Foreman	100	110	-10	180.000	(1.800.000)	*Unfavorable*
4.	Operator	135	130	5	290.000	1.450.000	*Favorable*
5.	Operator's Assistant	65	60	5	190.000	950.000	*Favorable*
6.	Driver	150	155	-5	140.000	(700.000)	*Unfavorable*
7.	Driver Assistant	60	45	15	120.000	1.800.000	*Favorable*
8.	Mechanic	80	86	-6	200.000	(1.200.000)	*Unfavorable*
9.	Mechanic Assistant	80	86	-6	130.000	(780.000)	*Unfavorable*
10.	Foreman	150	155	-5	170.000	(850.000)	*Unfavorable*
11.	Light Equipment Operators	65	74	-9	145.000	(1.305.000)	*Unfavorable*
Total Variants of Direct Labor Wage Rates *(Favorable)*							**4.950.000**
Total Variants of Direct Labor Wage Rates *(Unfavorable)*							**7.335.000**

Based on the results of interviews with management, the occurrence of this unfavorable variance was caused by the actual number of working hours not in accordance with the standard working hours that had been budgeted for, as well as changes in labor wage rates. Based on the results of interviews with management, the occurrence of this unfavorable variance is due to the actual number of working hours not in accordance with the standard working hours that have been budgeted. due to discrepancies in the implementation of working hours this will affect changes in labor wage rates.

The Covid-19 pandemic resulted in delays in the project work process, this made the implementation of project work increase the number of working hours. Changes to the budget that increase the number of working hours will have an effect on increasing labor costs, so that the additional number of working hours is used for inefficient production activities [34].

This condition is in line with research conducted by Utari and Samad, Sujarwo and Oetomo stated that the impact of Covid-19 is higher expenditure costs [35], [36]. This is due to the increase in the number of workers and overtime hours [10], [37], [38]. Juniari et al. [39] stated that the impact of Covid-19 was that many jobs were hampered.

Analysis of Factory Overhead Cost Variances and their Causes. Variants of project overhead costs can be analyzed using the three differences method, namely differences in spending, capacity, and efficiency. Prior to using the three-difference methods, the budget and actual preparation and completion costs for the Maluka Baulin Road Rehabilitation project - Tabanio, Kurau District were classified into fixed costs and variable costs to calculate fixed and variable project overhead rates in Table 6.

The number of normal labor hours is the same as the budgeted labor hours which is 1,050 hours, while the actual direct labor hours is 1,040 hours. Based on table 8, the overhead rate for the Maluka Baulin - Tabanio Road Rehabilitation project will be calculated in, Kurau District:

Fixed Project Overhead Rate

$$= \frac{15.046.000}{1.050} \quad = \text{Rp}14.329{,}52$$

Variable project overhead rate

$$= \frac{85.776.975}{1.050} \quad = \text{Rp}81.692{,}36$$

Total Overhead Rate = Rp96.021,88

Table 6. Budget and Realization of Overhead Costs for the Maluka Baulin Road Rehabilitation Project – Tabanio, Kurau District

No.	Types of Overhead Costs	Project Overhead Budget		Realized Project Overhead Costs	
		Constantly	**V**ariable	**Constantly**	**V**ariable
1.	Indirect Wages/Salaries	2.346.000	-	2.600.000	-
2.	Project administration	-	2.500.000	-	2.000.000
3.	Survey Fees	-	4.300.000	-	4.000.000
4.	Material Costs	-	350.000	-	300.000
5.	Contract Documents	-	1.102.620	-	884.000
6.	Diesel fuel	-	13.800,000	-	14.000.000
7.	Gasoline Fuel	-	11.934.355	-	12.010.000
8.	Lubricant	-	22.500.000	-	21.000.000
9.	Directors Keet	12.000.000	-	11.340.000	-
10.	As-Built Drawing	-	5.000.000	-	4.850.000
11.	Data Back Up	200.000	-	175.000	-
12.	Project Board	500000	-	600.000	-
13.	Mobilization	-	24.290.000	-	25.000.000
	Total	**15.046.000**	**85.776.975**	**14.715.000**	**84.044.000**

The calculation of project overhead variance analysis uses the three-difference method. The *first* is the difference in expenses, the *second* is the difference in capacity, and the *third* is the difference in efficiency.

Expenditure difference

Real overhead cost	Rp98.759.000
Fixed overhead costs are budgeted	-Rp15.046.000
Actual variable overhead	Rp83.713.000
Variable overhead cost (1.040 jam x Rp81.692,36)	=Rp84.960.051,43

Expenditure Difference Rp1.247.051,43

Capacity difference. Capacity difference = (normal capacity – actual capacity) x rate BOP permanent

= (1.050 – 1.040) x Rp14.329.52

= 10 x Rp14.329,52

= Rp 143.295,2

Efficiency difference. Efficiency difference = (standard working hours - actual working hours) x total BOP rate.

= (1.050 – 1.040) x Rp96.021,88

= 10 x Rp96.021,88

= Rp960.218,81

The results of the analysis of project overhead costs in the calculation of the difference in expenses show an unfavorable difference of IDR 1,247,051.43. On the difference in capacity, there is a favorable difference of Rp. 143,295.24 and on the difference in efficiency, there is also a favorable difference of Rp. 960,218.81. The overall variance of project overhead costs with the three differences method can be seen in Table 7.

Table 7 shows that there is an unfavorable difference in project overhead costs. This difference occurs due to project overhead costs that are greater than the budgeted costs. The biggest difference is in the component of project overhead expenses, which is the realization of Indirect Wage/Salary.

Table 7. Variants of Overhead Costs for the Maluka Baulin – Tabanio Road Rehabilitation Project, Kurau District.

No.	Difference Type	Information	Total Difference (Rp)
1	Expenditure Difference	*Unfavorable*	1.247.051,43
2	Capacity Difference	*Favorable*	143.295,24
3	Efficiency Difference	*Favorable*	960.218,81
Project Overhead Cost Variants		***Unfavorable***	**143.537,38**

Based on the results of interviews with management, the increase in indirect salary costs was due to the fact that when budgeting did not calculate labor costs that occurred during the Covid-19 pandemic. These costs include health costs and others. The realization of indirect labor costs during the Covid-19 pandemic is quite large, this requires being taken in to other consideration in the preparation of a budget in during Covid-19 global epidemic. The existence of variants that occur shows the need for cost control to be carried out especially but during Covid-19 global epidemic.

Determining the project budget plan, of course the company's management must plan the appropriate budget and realization [40], [41]. However, the company still cannot estimate the budget used by the company precisely, namely that there are advantages and disadvantages in the realization or use of funds that are greater than the budget/target set by the company. Even though the nature of the budget is only in the form of estimates, the preparation of the company's budget should be carried out more thoroughly. Because the budget can be used as a tool to increase the effectiveness of project cost control in construction companies.

the implementation of all activities must be kept to a minimum if there is a deviation between the budget and the realization [42]. One of these efforts is to carry out the control process. The control process includes activities: *first* measuring performance with work programs and budgets that give rise to irregularities. *Second*, analyzing deviations and finding the causes of deviations. *Third*, take action to eliminate the causes of deviations or take corrective action.

The existence of the Covid-19 Pandemic has influenced the company's operational expenses, this is indicated by the adverse and positive variations in the cost of the PT Sarana Doa Bersama project. The factors that influence charge overruns during implementation of the project during the Covid-19 Global epidemic for small-scale construction service actors include inaccurate cost estimates, low labor productivity, frequent work delays, and schedule delays due to weather influences [43]–[46].

4. Conclusion

According to the findings of this study, variance analysis can be used as a cost-cutting tool for the Maluka Baulin Road Rehabilitation project during the Covid-19 pandemic. By using variance analysis, it is clear that the presence of the Covid-19 pandemic has had an impact on the company's operating costs, this is shown by the existence of unfavorable and favorable variants in project implementation. In the implementation of the PT Sarana Doa Bersama project, unfavorable variances occur in direct labor costs and project overhead costs.

Factors that cause unfavorable variances in direct labor costs are caused by the actual number of working hours not in accordance with the standard working hours that have been budgeted, as well as changes in labor wage rates. This change occurred because the work process was hampered due to the Covid-19 pandemic. In project

overhead costs, the most dominant factor is the increase in indirect salary costs. Delays in project work by reducing the duration of the project will increase indirect costs. This occurs when the budget excludes indirect labor costs associated with the Covid-19 pandemic, such as health care costs and others.

This research is expected to contribute to management in anticipating significant changes in costs amid a pandemic. Variance analysis can be used as a tool to control project costs within the construction industry when the Covid-19 pandemic occurs. For further research, it is hoped that it will be able to conduct deeper digging into the factors that influence the presence of variation in project costs and research related to project cost performance.

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