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EVALUATION OF COST PERFORMANCE IN THE SUTOJAYAN DISTRICT SUBALI BRIDGE CONSTRUCTION PROJECT (D.G.008), BLITAR REGENCY USING EARNED VALUE ANALYSIS METHOD

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Abstract

One of the project types is the Construction Project. The main activity components of this type of project consist of feasibility assessment, engineering design, procurement and construction. In construction projects very often delays occur where the realization in the field does not match the schedule of the implementation plan, due to several factors that occur, even though a careful plan has been prepared but in practice in the field there are still many problems in implementation. The purpose of this study was to determine the cost and time performance in the implementation that took place from week -1 to week 17 on the Subali Bridge Construction project, Sutojayan Kec. (D.G.008), Blitar Regency using Earned Value. From the results of the analysis it can be seen that the costs incurred are lower than the planned costs, this can be seen in the CPI value of 1.28 while the implementation time is slower than the planned schedule indicated by the SPI value of 0.71. The results of the calculation of the estimated project cost of Rp. 8,214,904,015.36 with a budget plan of Rp. 10,502,000,000.00 there is an efficiency of Rp. 2,287,095.64 (21.78%). with an estimated completion time of 19.43 weeks, indicating that the project is delayed for 2.43 weeks from the planned 17 weeks.

Keywords: *Earned Value, Cost, Time, Delay*

1. INTRODUCTION

One of the project types is the Construction Project. The main activity components of this type of project consist of feasibility assessment, engineering design, procurement and construction. The product is the construction of bridges, buildings, ports, highways, and so on. These construction projects are increasingly complex and sophisticated and involve the use of resources in the form of human labor, materials, equipment and funds that are increasing in number. In a construction project, there are several parties involved in it (Dimyati & Nurjaman, 2014).

Project cost management is a control on the project to ensure project completion can be in accordance with the cost budget that has been provided. While project time management is a process of planning, compiling, and controlling the schedule of project activities, where in planning and scheduling specific guidelines have been provided to complete project activities more quickly and efficiently (Source: PMBoK, 2008).

One of the project control methods is the Earned Value Method. This Earned Value concept is a concept of calculating the cost budget according to the work that has been completed. In other words, this concept measures the amount of work that has been

completed, at a certain time, when assessed based on the amount of budget available for the work. For this reason, the relationship between what has been achieved physically and the amount of budget that has been spent can be known.

Project delays usually come from service providers or from the use of services or other parties that have an impact on adding time and costs beyond the plan. If the delay comes from the contractor (service provider), the contractor can be fined, as well as if the delay comes from the service user, the service user will pay the losses incurred by the service provider, the amount of which is determined in the contract in accordance with applicable legislation. Many studies have been conducted to determine the factors of project completion delays. Everything in a project that does not add value, but instead adds costs is called waste. Some things that need to be done to avoid this are the delivery of materials based on the work schedule. To avoid traffic hours, the action of finding the shortest route from the transportation place to the location is taken. From the results of the application of the Fishbone Diagram carried out on several work items on the Usilimo Karubaga Mulia II Road Implementation Project, there was a delay in the graded pavement work and the percentage of project delay was 11.42%. while the final completion time of the work was 210 days (Wardah, Hanafi, Iskandar 2017).

Based on the results of the calculation of the Screen Venue Development project planning in DKI Jakarta using Microsoft Project software, and analysis of the project evaluation discussion, the cause of the delay in the Screen Venue Development project in DKI Jakarta is due to delays in the arrival of tools and materials, unfavorable weather conditions, and less and unproductive labor and equipment available and based on calculations using Microsoft Project, the maximum acceleration of the Screen Venue Development project in DKI Jakarta on the critical path is carried out for 12 days. However, the project is still experiencing delays. So that the work that has not been completed, is done during maintenance (Ariane and Dinariana 2018).

Project performance control using earned value is carried out at the beginning of the project until the end of the 15th month of project implementation. The results of this study indicate that until the end of the 15th month, the project implementation resulted in good cost performance, characterized by a CPI value of 1.10, but the project schedule performance was not good as indicated by the SPI value of 0.97. If the project continues to be implemented in accordance with the existing performance, the final cost of the project can achieve an efficiency of 8.9% of the planned cost but the project is delayed by 5.8% of the planned schedule. This research shows that the application of the earned value concept to the case study project can provide a comprehensive overview of the project performance status. (Betty Susanty, Melisa, Ika Juliantina, 2019).

In a construction project there are various stages related to construction management, in which there are various problems regarding the management of costs and time for work implementation, so that in its implementation a system is needed for cost management (Cost Management) and time management (Time Management) so that in its implementation, the project can be completed on time as planned and the costs incurred according to the needs of the project being carried out. In writing this article, the main studies are, how is the project performance in terms of cost and time, how is the application of EVA (Earned Value Analysis) to forecast the final cost and time of completion on the project, is there any profit or loss that may occur in the completion of

the PT Graha Praja Kencana Residential Building Construction project in Ceguk Village, Tlanakan District, Pamekasan Regency? To answer this problem, research was conducted with a qualitative approach with a descriptive type. Data sources were obtained through interviews, observations, and documentation with respondents, namely consultants, contractors, and the Director of PT Graha Praja Kencana. From the results of data analysis, it can be concluded that it shows that the costs incurred are lower than the planned budget, the project implementation time is on schedule from the initial planning, the costs incurred each week from week 1 to week 9 have increased very significantly, and the profit obtained by the contractor until the end of the project from week 1 to week 9 amounted to Rp. 8,978,737.20. (Dedy Asmaroni, Aldi Setiawan, 2020).

Based on the results of the BCWS calculation, it is found that with the increase in work time, the cost of implementation also increases. For the results of the BCWP calculation, it is found that the time taken has been 97% of the planned time, and the budget has almost touched the budget of Rp.19,000,000,000.00. For the ACWP results, there is a difference in budget, where the total budget at BCWS is greater than the total BCWP budget, it illustrates that the work that has been done is less than the plan, from these results it illustrates that the project does not experience losses. For SV results, it can be seen that the project has been carried out for 37 weeks, it has not run optimally in terms of time, because 15 weeks of them are not in accordance with the planned schedule. Budget deviations also occurred for 37 weeks, not too large, namely -0.9704% of the initial contract value. For the SPI results, it shows that the project has been running for 37 weeks, but in week 2 to week 4, week 14 to week 15, and week 21 to week 37 is not good. Therefore, it is necessary to accelerate so that the project can be completed according to the planned time. However, when viewed from the initial project work contract, based on information in the field, the project completion is still according to plan, namely 37 weeks (Pranata MH 2021).

In knowing the results of performance performance on project implementation can use analysis starting with getting the value of the various indicators needed in each review, from the results of the analysis in the 13th week the results of BCWS = Rp. 1. 108,129,005; BCWP = Rp. 1,002,241,315; ACWP = Rp. 955,926,447, and CV = Rp. 46,314,868; SV = - Rp. 105,887,689; CPI = 1.05; SPI = 0.90; etc = Rp. 992,399,101; EAC = Rp. 1,948,325,548.36; ETS = 139.312 Days; EAS = 231 Days. And the results of the Earned Schedule (ES) indicator in week 13 = 12.145 Weeks; SV(t) = -0.855 Weeks; SPI(t) = 0.93. The project studied using the EV (Earned Value) method has a late status with an initial planned duration of 217 days and the final duration of the work being 236 days. from the results of this analysis, the planned completion time is slower and the cost is less than the contract value and the calculation of the EV (Earned Schedule) is that the project is running worse than originally planned. The result of the performance index value < 1 then the project needs to make performance improvements (Sakinah 2021)

The General Ahmad Yani Semarang Airport Access Flyover Construction Project has a contract value of Rp. 149,394,103,000, - with a work duration of 46 weeks. The progress of the work until this research is made has reached the 37th week with a deviation of -8.574%, based on this it is necessary to control the implementation of the project so that it is carried out on time and at the right cost. The method used in the control is the earned value method, which is the control of cost and time to determine the delays and cost overruns that occur. The data needed includes general project data (contract value),

S curve, and HSPK Semarang City in 2020. From the analysis, it can be seen that the costs incurred are lower than the planned costs, this can be seen in the CPI value of 1.105 while the implementation time is slower than the planned schedule indicated by the SPI value of 0.893. The results of the calculation of the estimated project cost of Rp 135,258,208,412.97 with an estimated completion time of 52 weeks, showed that the project was delayed for 6 weeks from the planned 46 weeks (Junaidi et al. 2022).

The East Java Provincial Inspectorate Building Phase II Project has an important role in the implementation of government affairs. Therefore, this project is expected to be completed on time and can be used by the local government. To achieve this, a method is needed that can control an ongoing project. Earned Value Method is one of the methods that can be used to control a project. The application of the Earned Value Method can integrate aspects of cost, time and work performance. Project performance is analyzed based on cost and time performance indices. Calculations are based on plan value (BCWS), earned value (BCWP), and actual cost (ACWP). Control is reviewed for 18 weeks, namely week 1 to week 18. After analyzing using the Earned Value Method, the results obtained in week 18 show that the costs incurred are greater than the planned costs and the implementation time is longer than planned with a value of CPI = 0.910346 (CPI < 1) and SPI = 0.71278826 (SPI < 1). The results of the calculation of the estimated final cost of the project amounted to Rp 24,749,232,344.50 with a project completion time of 227 days which means it is later than the planned schedule. (Nurafand, 2023).

One way to control cost and time is to use Earned Value Analysis, whose data informs cost and time precisely and clearly. The method used in this study is the concept of Earned Value (Earned Value Analysis) examines the tendency of schedule variance and cost variance in a period during the project, by conducting a study with Earned Value, an evaluation of project completion is carried out with BCWS = Rp. 964,452,972.78 (Numbered: Nine Hundred Sixty Four Million Four Hundred Fifty Two Thousand Nine Hundred Seventy Two Rupiah), BCWP = Rp. 716,145,387.29, and ACWP = Rp. 861,777. 786.18 in terms of negative Cost Variant (CV), negative Schedulle Variant (SV), with Cost Performance Index (CPI) < 1, Schedulle Performance Index (SPI) < 1 so that it can be Estimated At Completion (EAC) = Rp. 1,538,434,845.27 while from the aspect of the project schedule experiencing a shortage of time to 25 weeks indicated by the SPI value < 1 (Ismail, Darkasyi, 2023).

Based on the above background, this paper will discuss the analysis of cost and time performance using the earned value method and its case study on one of the Subali Bridge Construction projects in Sutojayan Subdistrict (D.G.008), Blitar Regency in East Java, it was found that the contract value was Rp. 10,502,000,000, the project was planned to be completed in 17 weeks. However, in its implementation based on interviews with the supervisory consultant, this project indicated a delay in its work. Therefore, to monitor so that there is no cost overrun or delay in the project, a method for project control is needed, one of which is by using the Earned Value method. The Earned Value method can detect if there are delays and cost overruns. So that it can help the relevant parties in deciding what steps to take so that the project can be completed on time with the remaining costs.

2. RESEARCH METHODS

In this study, the project being analyzed is the Subali Bridge Construction project, Sutojayan Kec. (D.G.008), Blitar Regency. Budget year 2023 and research time, in 2023. This research was conducted on the Subali Bridge Construction Project, Sutojayan Subdistrict (D.G.008), Blitar Regency, for data collection as research material obtained from parties related to this work, the data collection method used in this research is secondary data and literature study. The following is the data data needed in the preparation of this study, as for the data in question is the Cost Budget Plan (RAB), the planned and actual Time Schedule, the Weekly Report or Progress Report.

The stages in data analysis are a sequence of steps carried out systematically and logically according to the theoretical basis of the problem so that an accurate analysis is obtained to achieve the author's objectives. The steps taken are to determine the problems that occur in the Subali Bridge Construction Project, Sutojayan Kec. (D.G.008), Blitar Regency, collect the necessary data, analyze the performance and final project forecast based on weekly work reporting. Furthermore, calculating the estimated cost and time until the final achievement of the project with a forecast method based on data - data reporting every week on an ongoing basis and then making a new forecast method based on actual conditions and field application.

3. RESULTS AND DISCUSSION

Analysis and Discussion of this research is carried out every week starting from week 1 to week 11, where the calculation is highly dependent on the available S Curve data. from the results of monitoring the S Curve there is a minus deviation starting from week 9 to week 11, based on this the analysis is carried out in week 11.

Table 1. Recapitulation of the Work Progress

NO.	URAIAN	PROGRES PEKERJAAN			RENCANA ANGGARAN BIAYA (RAB)	REALISASI ANGGARAN PELAKSANAAN
		Rencana (%)	Realisasi (%)	Devisiasi (%)		
1	MINGGU KE 1	0.20	0.41	0.21	42,533,100.00	41,527,479.23
2	MINGGU KE 2	0.64	1.06	0.42	111,008,830.27	104,612,298.45
3	MINGGU KE 3	0.71	1.25	0.54	130,984,264.15	119,349,852.73
4	MINGGU KE 4	1.20	2.58	1.38	270,870,904.15	218,592,798.54
5	MINGGU KE 5	3.17	5.04	1.87	529,220,104.15	400,062,068.44
6	MINGGU KE 6	8.07	10.93	2.87	1,148,347,530.07	832,315,260.79
7	MINGGU KE 7	13.25	14.75	1.50	1,548,788,790.07	1,138,732,016.20
8	MINGGU KE 8	19.61	20.89	1.28	2,193,501,219.69	1,692,609,486.48
9	MINGGU KE 9	27.89	25.77	- 2.13	2,705,998,819.69	2,110,309,303.24
10	MINGGU KE 10	43.66	39.37	- 4.29	4,134,270,819.69	3,228,218,473.51
11	MINGGU KE 11	60.77	43.24	- 17.54	4,540,698,219.69	3,549,473,448.76

Source: Company data

Table 2 .Week 11 Work Details

NO.	JENIS PEKERJAAN	SAT	REALISASI PEKERJAAN (RAB)	REALISASI PEKERJAAN (RAP)
			JUMLAH HARGA (Rp)	JUMLAH HARGA (Rp)
DIVISI 1.	**UMUM**			
1.2	Mobilisasi	Ls	40,091,610.67	20,045,586.00
1.8.(1)	Manajemen dan Keselamatan Lalu Lintas	Ls	7,886,874.23	5,757,180.00
1.19	Keselamatan dan Kesehatan Kerja	Ls	9,201,353.27	6,900,630.00
1.21	Manajemen Mutu	Ls	19,312,823.34	9,656,333.33
			76,492,661.50	**42,359,729.33**
DIVISI 2.	**DRAINASE**			
2.1.(1)	Galian untuk Selokan Drainase dan Saluran Air	M3	-	-
2.3.(35)	Pengadaan & Pemasangan U-Ditch 60.80-120cm + Cover (BG. 20 Ton)	M1	-	-
2.5.(1)	Pengadaan dan Pemasangan BC 600.600.100.12.5 CM (G. 20 Ton)	Bh	-	-
			-	**-**
DIVISI 3.	**PEKERJAAN TANAH DAN GEOSINTETIK**			
3.1.(1)	Galian Biasa	M3	4,689,032.80	4,616,600.00
3.1.(4)	Galian Struktur dengan kedalaman 0 - 2 meter	M3	59,641,498.91	59,197,600.00
3.1.(9)	Galian Perkerasan berbutir	M3	525,067.38	520,000.00
3.2.(2a)	Timbunan Pilihan dari sumber galian	M3	-	-
3.3.(1)	Penyiapan Badan Jalan	M2	-	-
			64,855,599.10	**64,334,200.00**
DIVISI 5.	**PERKERASAN BERBUTIR**			
5.1.(1)	Lapis Pondasi Agregat Kelas A	M3	-	-
			-	**-**
DIVISI 6.	**PERKERASAN ASPAL**			
6.1 (1)	Lapis Resap Pengikat - Aspal Cair/Emulsi	Ltr	-	-
6.1 (2a)	Lapis Perekat - Aspal Cair/Emulsi	Ltr	-	-
6.3(5b)	Laston Lapis Aus (AC-WC)	Ton	-	-
6.3(6a)	Laston Lapis Antara (AC-BC)	Ton	-	-
			-	**-**
DIVISI 7.	**STRUKTUR**			
7.1 (5a)	Beton struktur, fc'30 MPa (untuk Pelat Lantai)	M3	-	-
7.1 (5a)	Beton struktur, fc'30 MPa (untuk Pelat Injak)	M3	-	-
7.1 (5a)	Beton struktur, fc'30 MPa (Beton Volume Besar untuk Abutmen)	M3	414,694,599.08	314,930,000.00
7.1 (5a)	Beton struktur, fc'30 MPa (untuk Wingwall)	M3	-	-
7.1 (5a)	Beton struktur, fc'30 MPa (untuk Pile Cap Dinding Penahan Tanah)	M3	-	-
7.1 (7a)	Beton strukur, fc'20 MPa	M3	-	-
7.1 (10)	Beton, fc'10 Mpa	M3	7,912,222.31	6,323,200.00
7.3 (1)	Baja Tulangan Polos-BjTP 280	Kg	14,300,196.47	12,285,999.30
7.3 (3)	Baja Tulangan Sirip BjTS 420A	Kg	991,917,624.36	852,205,021.51
7.4 (3)	Penyediaan Struktur Jembatan Rangka Baja Standar 50 m	Kg	1,373,310,190.56	1,083,561,481.99
7.4 (4)	Pemasangan Jembatan Rangka Baja Standar Panjang 50 M	Kg	-	-
7.6.(11b)	Penyediaan Tiang Pancang Beton Bertulang Pracetak ukuran 200 mm x 200 mm	M1	-	-
7.6.(17b)	Pemancangan Tiang Pancang Beton Bertulang Pracetak ukuran 200 mm x 200 mm	M1	-	-
7.6.(19a)	Tiang Bor Beton, diameter 800 mm	M1	1,129,800,165.15	790,560,000.00
7.9.(1)	Pasangan Batu	M3	-	-
7.14.(1)	Papan Nama Jembatan	M1	-	-
7.15.(1)	Pembongkaran Pasangan Batu	M3	17,435,858.32	15,664,800.00
			3,949,370,856.24	**3,075,530,502.80**
DIVISI 9.	**PEKERJAAN HARIAN & PEKERJAAN LAIN-LAIN**			
9.2.(1)	Marka Jalan Termoplastik	M2	-	-
9.2.(5)	Patok Pengarah	Buah	-	-
9.2.(14)	Unit Lampu Penerangan Jalan Lengan Tunggal, Tipe LED	Buah	-	-
			-	**-**
	JUMLAH :		**4,090,719,116.84**	**3,182,224,432.14**
-	**BIAYA TIDAK LANGSUNG**			
1	Biaya Satpam / Flagman	org/hari	-	5,937,010.96
2	Biaya Tenaga Teknis Administrasi	org/hari	-	6,592,384.62
3	Biaya Makanan dan Minuman Aktivitas Lapangan (Rapat)	Pkt	-	2,970,000.00
			-	**15,499,395.58**
	JUMLAH :		**-**	**15,499,395.58**
	JUMLAH TOTAL :		**4,090,719,116.84**	**3,197,723,827.71**
	JUMLAH TOTAL + PPN 11%:		**4,540,698,219.69**	**3,549,473,448.76**

Source: Company data

Table 3. Indication of Analysis Based on CV and SV

Minggu ke	BCWP	BCWS	ACWP	CV	SV	Indikasi
				BCWP-ACWP	BCWP-BCWS	
1	42,533,100.00	20,924,750.03	41,527,479.23	1,005,620.77	21,608,349.97	*Pekerjaan terlaksana lebih Cepat dari pada jadual rencana, biaya lebih rendah dari pada rencana anggaran. (a head schedule, under cost)*
2	111,058,650.00	67,350,530.10	104,778,798.45	6,279,851.55	43,708,119.90	*Pekerjaan terlaksana lebih Cepat dari pada jadual rencana, biaya lebih rendah dari pada rencana anggaran. (a head schedule, under cost)*
3	130,984,264.15	74,572,968.67	119,782,752.73	11,201,511.43	56,411,295.48	*Pekerjaan terlaksana lebih Cepat dari pada jadual rencana, biaya lebih rendah dari pada rencana anggaran. (a head schedule, under cost)*
4	270,870,904.15	126,068,487.08	218,692,698.54	52,178,205.61	144,802,417.07	*Pekerjaan terlaksana lebih Cepat dari pada jadual rencana, biaya lebih rendah dari pada rencana anggaran. (a head schedule, under cost)*
5	529,220,104.15	333,347,587.07	400,494,968.44	128,725,135.71	195,872,517.08	*Pekerjaan terlaksana lebih Cepat dari pada jadual rencana, biaya lebih rendah dari pada rencana anggaran. (a head schedule, under cost)*
6	1,148,347,530.07	846,991,556.07	834,746,160.79	313,601,369.28	301,355,974.00	*Pekerjaan terlaksana lebih Cepat dari pada jadual rencana, biaya lebih rendah dari pada rencana anggaran. (a head schedule, under cost)*
7	1,548,788,790.07	1,391,535,288.00	1,236,307,895.03	312,480,895.04	157,253,502.07	*Pekerjaan terlaksana lebih Cepat dari pada jadual rencana, biaya lebih rendah dari pada rencana anggaran. (a head schedule, under cost)*
8	2,193,501,219.69	2,059,502,922.75	1,695,439,986.48	498,061,233.21	133,998,296.95	*Pekerjaan terlaksana lebih Cepat dari pada jadual rencana, biaya lebih rendah dari pada rencana anggaran. (a head schedule, under cost)*
9	2,705,998,819.69	2,929,204,813.67	2,112,906,703.24	593,092,116.46	- 223,205,993.98	*Pekerjaan terlaksana lebih lambat dari pada jadual rencana, biaya lebih rendah dari pada rencana anggaran. (behind schedule, under cost)*
10	4,134,270,819.69	4,585,190,393.88	3,230,649,373.51	903,621,446.18	- 450,919,574.19	*Pekerjaan terlaksana lebih lambat dari jadual rencana, biaya lebih rendah dari pada rencana anggaran. (behind schedule, under cost)*
11	4,540,698,219.69	6,382,389,900.42	3,551,837,748.76	988,860,470.93	- 1,841,691,680.73	*Pekerjaan terlaksana lebih lambat dari pada jadual rencana, biaya lebih rendah dari pada rencana anggaran. (behind schedule, under cost)*

Source: Author's data, 2023

The results of the above calculations in week 11 are as follows:

BCWP = Rp. 4,498,165,119.69
BCWS = Rp. 6,382,389,900.42
ACWP = Rp. 3,551,837,748.76
CV = Rp. 988,860,470.93
SV = Rp. - 1,841,691,680.73

From the results of CV and SV, it can be seen that the indications that occur are: the implementation of the above work is slower than the plan schedule, while the costs incurred are lower than the plan.

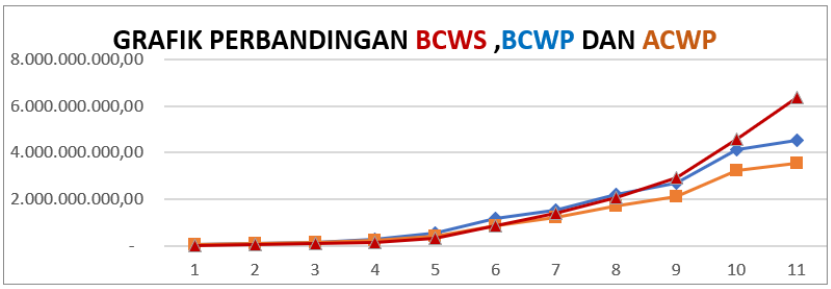

Figure 1. Comparison Chart of BCWS, BCWP and ACWP
Source: Processed by Researchers, 2023

The Project Cost Performance Index value can be seen from the results of the following calculations:
CPI = BCWP: ACWP
SPI = BCWP: BCWS

Table 4. Calculation Indications Based on CPI and SPI

CPI BCWP/ACWP	Indikasi	SPI BCWP/BCWS	Indikasi
1.02	Memperoleh Keuntungan	2.03	Mengalami Kecepatan
1.06	Memperoleh Keuntungan	1.65	Mengalami Kecepatan
1.09	Memperoleh Keuntungan	1.76	Mengalami Kecepatan
1.24	Memperoleh Keuntungan	2.15	Mengalami Kecepatan
1.32	Memperoleh Keuntungan	1.59	Mengalami Kecepatan
1.38	Memperoleh Keuntungan	1.36	Mengalami Kecepatan
1.25	Memperoleh Keuntungan	1.11	Mengalami Kecepatan
1.29	Memperoleh Keuntungan	1.07	Mengalami Kecepatan
1.28	Memperoleh Keuntungan	0.92	Mengalami Keterlambatan
1.28	Memperoleh Keuntungan	0.90	Mengalami Keterlambatan
1.28	Memperoleh Keuntungan	0.71	Mengalami Keterlambatan

Source: Processed by Researchers, 2023

In Week 11 it can be seen that the project is profitable. This can be seen from the positive Cost Variant (CV) value of Rp. 988,860,470.93 or the Performance Index Value of 1.28> 1.

While the project is experiencing delays in implementation, this is indicated by the negative Schedule Variant (SV) indicator of Rp. - 1,841,691,680.73 or the Schedule Performance Index (SPI) = 0.71> 1.

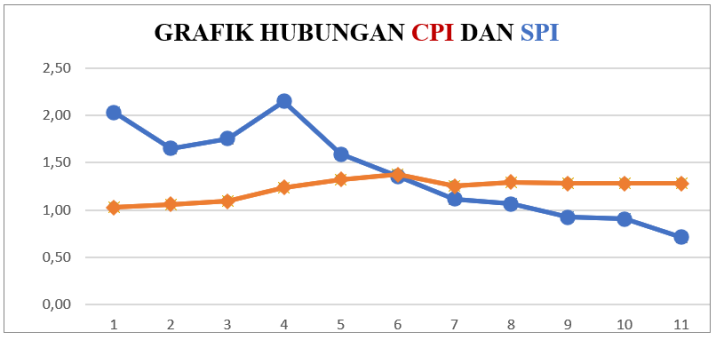

Figure 2. Graph of CPI and SPI Relationship
Source: Processed by Researchers, 2023

If the Project Implementation Performance at week 11 of the study remains the same until the project is completed, the estimated cost required can be calculated as follows:
ETC = (Budget Plan - BCWP) : CPI
EAC = ACWP + ETC

Table 5. Indication of Calculation Based on ETC and EAC

ETC	EAC ACWP + ETC	Indikasi	
10,212,171,096.61	10,253,698,575.85	Keuntungan sebesar	248,301,424.15
9,803,381,811.91	9,908,160,610.37	Keuntungan sebesar	593,839,389.63
9,484,107,281.53	9,603,890,034.25	Keuntungan sebesar	898,109,965.75
8,260,293,729.71	8,478,986,428.26	Keuntungan sebesar	2,023,013,571.74
7,547,045,432.19	7,947,540,400.63	Keuntungan sebesar	2,554,459,599.37
6,799,270,503.24	7,634,016,664.04	Keuntungan sebesar	2,867,983,335.96
7,146,827,104.97	8,383,135,000.00	Keuntungan sebesar	2,118,865,000.00
6,421,952,690.65	8,117,392,677.13	Keuntungan sebesar	2,384,607,322.87
6,087,298,720.33	8,200,205,423.56	Keuntungan sebesar	2,301,794,576.44
4,975,944,050.18	8,206,593,423.69	Keuntungan sebesar	2,295,406,576.31
4,663,066,266.60	8,214,904,015.36	Keuntungan sebesar	2,287,095,984.64

Source: Processed by Researchers, 2023

It can be seen that the EAC value of Rp. 8,214,904,015.36 means that the project will experience a profit because it is below the budget plan of Rp. 10,502,000,000.00.

Meanwhile, from the schedule aspect, the estimate for completing the project can be calculated in the following way:
ETS = Remaining Time: SPI
EAS = Finish Time + ETS

Table 6. Calculation Indications Based on ETS and EAS

ETS	EAS	Indikasi		
Sisa Waktu/SPI	Waktu Selesai + ETS			
7.87	8.87	Kecepatan selama	8.13	Minggu
9.10	11.10	Kecepatan selama	5.90	Minggu
7.97	10.97	Kecepatan selama	6.03	Minggu
6.05	10.05	Kecepatan selama	6.95	Minggu
7.56	12.56	Kecepatan selama	4.44	Minggu
8.11	14.11	Kecepatan selama	2.89	Minggu
8.98	15.98	Kecepatan selama	1.02	Minggu
8.45	16.45	Kecepatan selama	0.55	Minggu
8.66	17.66	Kelambatan selama	-0.66	Minggu
7.76	17.76	Kelambatan selama	-0.76	Minggu
8.43	19.43	Kelambatan selama	-2.43	Minggu

Source: Processed by Researchers, 2023

4. CONCLUSION AND SUGGESTIONS

4.1 Conclusion

From the results of the above analysis, it can be concluded that the condition of the project implementation with the EV (Earned Value) method can be known:

1. Cost performance with a review until the end of the 11th week period, the Project Cost Performance Index value can be seen from the results of the calculation of CPI = 1.28> 1 the project gained 21.78% efficiency, SPI implementation time = 0.71> 1 the project experienced delays in implementation.
2. Estimated cost until the project is completed Rp. 8,214,904,015.36 with a budget plan of Rp. 10,502,000,000.00 there is an efficiency of Rp. 2,287,095.64 (21.78%). The estimated time until the project is completed is 19.43 weeks, while the plan is 17 weeks, so the project will experience a delay of 2.43 weeks.

4.2 Suggestions

Seeing the results of the above conclusions, we can suggest that the control process should be carried out from the beginning of the project, which if this is done, will result

in the work being faster than the planned time (Schedule) and the implementer will benefit from the budget plan (RAB) that has been set.

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