INFORMATION SYSTEM COST AND TIME MANAGEMENT OF PROJECT AT CV. LIKKA UTAMA

Teuku Muhammad Shalahuddin1, Irfan Maliki2

[1.2]Informatic Engineering – Indonesia Computer University
Dipatiukur St. Number 112-114 Bandung
E-mail: teuku.ahmad69@gmail.com1, irfan.maliki@email.unikom.ac.id2

ABSTRACT

CV. Likka Utama is one of the contractors engaged in the construction and procurement services. Based on interviews and data recapitulation of the 2015-2017 project found that the project has been delayed reached 66.67% of the 6 projects that have been studied. The problems that occurred in this company due to the Project Manager difficulty in determining what actions to take when a deviation occurs when the project is done, because it has no reference to whether the project will be completed on time and costs in accordance with the plan or not, the effect is often delayed project. Then the second problem that the project manager difficulty in determining when it is appropriate to accelerate when there is a delay when the project is running. it can cause the project duration be increased. So, we need additional time and cost to complete such delay. Solution of the problems outlined, namely with the establishment of a management information system costs and project time. The system is designed to enable project managers in managing the project. Based on the test results it can be concluded that the existence of a management information system project costs and time, facilitate the project manager in action in the event of deviation costs and time as well as facilitate in providing information that resulted in a recommendation to accelerate the project manager in project activities. Solution of the problems outlined, namely with the establishment of a management information system costs and project time. The system is designed to enable project managers in managing the project. Based on the test results it can be concluded that the existence of a management information system project costs and time, facilitate the project manager in action in the event of deviation costs and time as well as facilitate in providing information that resulted in a recommendation to accelerate the project manager in project activities. Solution of the problems outlined, namely with the establishment of a management information system costs and project time. The system is designed to enable project managers in managing the project. Based on the test results it can be concluded that the existence of a management information system project costs and time, facilitate the project manager in action in the event of deviation costs and time as well as facilitate in providing information that resulted in a recommendation to accelerate the project manager in project activities.

KeywordsProject Management, Cost Control and time, acceleration of project activity

1. INTRODUCTION

1.1 Background

CV. Likka Utama at Jl. Kingdom Base - Loji 9 RT 002/001 Cinta Asih Village, Sub Base, Karawang, West Java, is one of the contractors and services specifically engaged in the construction and procurement of goods and other services.

Based on the interview with the Project Manager, CV. Likka Utama often experience problems when project. One of the problems that occur are on the Project Plastering Road Kp. Simasari - Kp. Bakansirasimah which is planned for completion during the 60 days there is a mismatch between the weight percentage of the plan and the weight percentage of realization of the work in week 6, the intent of the weight percentage of the plan of work is a value derived from the weighted achievement of project work that will be done, and the weight of realization of the work is value obtained based on the weight of the completed work performance, resulting in

a delay in the work being done. When the existence of a delay jobProject Manager difficulty in determining what action should be performed when a deviation occurs when the project is running, because it has no reference to whether the project is done can be completed at a cost and time in accordance with the plan or not, the effect is a project under construction was delayed. If the project continues to experience delays, the company gradually becomes a loss. The project manager also told that her difficulty in acceleration when there is a delay. Acceleration is usually done at the end when the project is nearing completion on a schedule plan, it was done so that the project is completed on time and no additional duration. The way diarasa less effective because if there is more than one job has been delayed, and to be accelerated at a time, it will cause an increase in the duration of projects, and also increased costs. The impact of such delays can be seen at the recapitulation data 2015-2017 project year, from 6 project there are 4 projects have additional duration of the work.To avoid the problems that were outlined above, it is required a management information system costs and timing of the project, which can be used to control and estimate the time and cost of the end of the project, using CPM (Critical Path Method) can be used to make the scheduling and capable in analyzing the efficiency of planning and scheduling, According to Dada Sharif Sihabudin Sahid [1]. EVM (Earned Value Method) suitable for use in controlling the cost and time for being able to show the performance of the project, the project's final time and the final cost of the project, According to Chris Sandy and Djoni irianto [2]. TCTO (Time Cost Trade Off) is useful for handling delays and expedite the completion and accelerate project activities [3]. System so that this information can help the chief executive, project manager, and director of the integrated Facebook and is expected to be the solution to the company's CV. Likka Utama in helping to resolve problems that occur during project implementation. This study entitled " Information System Cost And Time Management of Projects at CV. Likka Utama ".

1.2 Identification of problems

Based on the background of the problems described above, the following is the identification of problems in the review in this study:

1. How to help the project manager to determine what actions to take when teradi deviations in terms of cost and time when the project is done?
2. How to help release information to the project manager in the decision making when there work will be accelerated in the event of a delay?

1.3 Purpose and objectives

The purpose of this study is to establish a management information system costs and project time in the CV.Likka Utama. While the purpose of this study are as follows:

1. Make it easier for project managers to determine what actions to take when problems occur deviations in terms of cost and time when the project is done.
2. Help inform the project manager in the decision making at the time he would do if teradi delay the acceleration of activity when the project is done.

1.4 Research methods

The research methodology is a process used to solve a logical problem, which requires data to support research. The methodology used is descriptive analysis method. Methods descriptive study aims to gather real-time information that describes in detail the existing symptoms, identify problems, check the conditions, making comparisons, determine the action to face the same problem as well as the decision to set a plan in the future.

1.4.1 Method Data collection

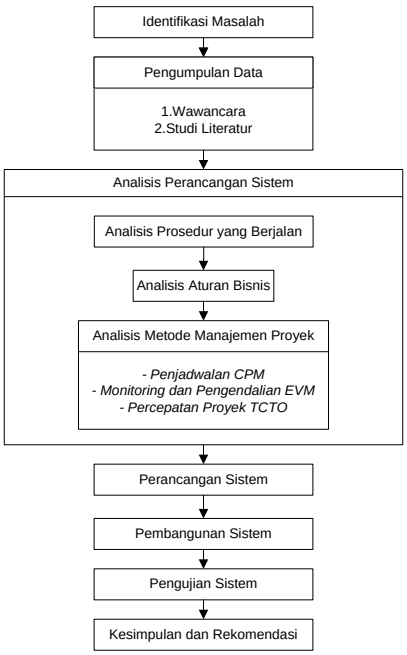


Figure 1. 1 Research methods

2. RESEARCH

2.1. Project management

Project management consists of activities based planning and control as project objectives, information and data used, as well as the correct use of resources and in accordance with the needs required [3].

There are four stages of project management including:

a. Planning
b. Organizing
c. Implementation
d. Control

2.2. Analysis of the Critical Path Method (CPM)

*Critical Path Method*is oriented methods that lead to the determination time and the estimated time schedule is diterministik or uncertain [4]. Project scheduling an activity set a start date, duration, date of completion, and resource requirements for each activity in the project [4].

2.2.1. Work Time Analysis

CPM stages require critical components such as the list of activities required to complete the project.

Table 2.1 Road Construction Schedule

No.	Uraian Pekerjaan	Bobot %	WAKTU PELAKSANAAN							
			Minggu ke-				Minggu ke-			
			I	II	III	IV	I	II	III	IV
I.	PEKERJAAN PERSIAPAN									
1	Direksikeet	1.279	1.279							
2	Pas. Papan Nama Proyek	0,170	0.170							
II	PEKERJAAN TURAP JALAN									
1	Galian Tanah	2.17	2.17							
2	Pas. Batu 1.4	87.782		17.606	17.606	17.606	17.606	17.606		
3	Timbunan Tanah Pilihan	0,434							0,436	
4	Ampar LPA Klas B Tb. 20 Cm	7.891								7.914
		100,00								
Kemajuan Pekerjaan	Rencana	Mingguan	3.619	17.606	17.606	17.606	17.606	17.606	0,436	7.914
		Kumulatif	3.619	21.225	38.825	56.431	74.037	91.643	92.079	100
	Realisasi	Mingguan	3.619	17.606	17.606	17.606	17.606	13.720	4.322	7.914
		Kumulatif	3.619	21.225	38.831	56.431	74.037	87.757	92.079	100

Table 2.2 Activity Road Construction

No.	Uraian Pekerjaan	Kode Kegiatan	Kegiatan Pendahulu	Durasi (hari)
1.1	Direksikeet	A	Start	7
1.2	Pasang Papan Nama Proyek	B	Start	1
2.1	Galian Tanah	C	Start	7
2.2	Pasang Batu 1:4	D	1.1,1.2,2.1	35
2.3	Timbunan Tanah Pilihan	E	2.2	7
2.4	Ampar LPA Klas B Tb.20 Cm	F	2.3	3

2.2.2. Forward calculation

Advanced calculations carried out starting from the beginning until the end of the network of mobile networks. The formulas used are as follows:

E .... (2.2)$F = ES + lama\ kegiatan$

Table 2.3 Calculation of Forward

Kode Kegiatan	Kegiatan		Waktu(t) dalam hari	Paling awal	
	i-node	j-node		Mulai(ES)	Selesai(EF)
A	-	1.1	7	0	7
B	-	1.2	1	0	1
C	-	2.1	7	0	7
D	1.1	2.2	35	7	42
E	2.2	2.3	7	42	49
F	2.3	2.4	3	49	52

2.2.3. Backward calculations

Countdown done starting from the end of the mobile network until the beginning of the network. The formulas used are as follows:

$LS = LF - lama\ kegiatan$..... ..... (2.3)

Table 2.4 Calculation of Backward

Kode Kegiatan	Kegiatan		Waktu (t) dalam hari	Paling awal	
	i-node	j-node		Mulai(LS)	Selesai(LF)
A	-	1.1	7	0	7
B	-	1.2	1	6	5
C	-	2.1	7	0	7
D	1.1	2.2	35	7	42
E	2.2	2.3	7	42	49
F	2.3	2.4	3	49	52

2.2.4. Calculation of Total Float

Calculation of Total Float is a time delay that is allowed without affecting the total time of the project. The formulas used are as follows:

Table 2.5 Calculation of Total Float

Kode Kegiatan	Kegiatan		Waktu (t) dalam hari	Paling awal		Paling akhir		Total Float (TF)
	i-node	j-node		Mulai (ES)	Selesai (EF)	Mulai (LS)	Selesai (LF)	
A	-	1.1	7	0	7	0	7	0
B	-	1.2	1	0	1	7	6	5
C	-	2.1	7	0	7	0	7	0
D	1.1	2.2	35	7	42	7	42	0
E	2.2	2.3	7	42	49	42	49	0
F	2.3	2.4	3	49	52	49	52	0

Based on Table 3.9 it can be concluded that activities had a total value of float = 0 is a critical path among others, activitiesACDEFillustrated in Figure 3..6.

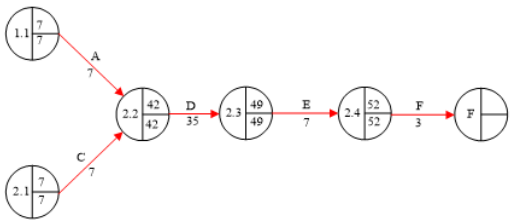


Figure 2.1 Critical Path Diagram

2.3. Analysis Earn Value Method (EVM)

In determining the performance of the project by means of earned value or the value of the results, in the form of information displayed in the form of quantitative indicators, which displays information about the progress of the project costs and time. This indicator to inform position project progress within a certain period and can estimate the projected progress of the project in the next period [5]. Indicators are as follows:

1. BCWS (Budgeted Costof Work Shedule) or Planned Value (PV), PV = (% progressrencana) xBAC .... (2.6)
2. BCWP (Budgeted Cost of Work Performed) or Earned Value (EV), EV = (% progressrealisasi) xBAC ... .. (2.7)
3. ACWP (Actual Cost of Work Performed) or Actual Cost (AC).

2.3.1. Percentage Weight Calculation ofWork

Job weight calculation used to find the weight of each job. The formulas used are as follows:

$$\text{Bobot} = \left(\frac{\text{Jumlah biaya setiap pekerjaan}}{\text{Nilai Proyek}}\right) x\ 100 \text{..... ... (2.5)}$$

The calculation result can be seen in the following table:

Table 2.6 Calculation of Weights Work

Kode Pekerjaan	Pekerjaan	Durasi	Biaya	Bobot (%)
1.1	Direksikeet	7 hari	2250000	1.279
1.2	Pas. Papan Nama Proyek	1 hari	300000	0.170
2.1	Galian Tanah	7 hari	3818941.28	2.170
2.2	Pasang Batu 1:4	35 hari	154917763.5	87.782
2.3	Timbunan Tanah Pilihan	7 hari	766517.38	0.434
2.4	Ampar LPA Klas B Tb.20 Cm	3 hari	13926549.11	7.891
TOTAL		60 hari	Rp175,979,771	100

2.3.2. Plan Analysis Value (PV)

The calculation of the value of identifying weighting planned weekly plan .planned value obtained from a weight plan each week multiplied by the actual budget cost (BAC), BAC is the value of the contract without VAT is Rp. 175,979,771.28. Here is the result of the calculation of Planned Value (PV) at week 1:

PV = (% progress plan) x BAC .... (2.6)

= 3.619% x Rp.175.979.771,28

= Rp.6.368.708

2.3.3. Earn Analysis Value (EV)

Calculation of earned value is to identify the actual weight every week .Perhitungan EV is only used in week 1. Earned value obtained from the weight of realization per week worked multiplied by the actual budget cost (BAC). Here is the result of the calculation of Earned Value (EV) at week 1:

EV = (% progress realization) x BAC .... (2.7)

= 3.619% x Rp.175.979.771,28

= Rp.6.368.708

2.3.4. Analysis Actual Cost (AC)

Calculation of Actual Cost is the total cost incurred during the project implementation. Here's the actual cost at week 1:

Project Value (BAC) = Rp.175.979.771,28
actual Cost = Rp.6,368,708

2.3.5. Analysis SV, CV, SPI and CPI

Then do an analysis of the irregularities that occurred in costsme schedule in a way to measure it, following below.

1. Deviations Schedule / Time
   a. SV (Scheduling Variance)

$$SV = EV - PV \text{..... ... (2.8)}$$

= Rp.6368708 - Rp.6368708

= 0

   b. SPI (Schedule Performance Index)

$$SPI = \frac{EV}{PV} \text{... ... . (2.9)}$$

= Rp.6368708 / USD.6368708

= 1

2. deviation Cost
   a. CV (Cost Variace)

$$CV = EV - AC \text{ .... (2.10)}$$

= Rp.6368708 - Rp.6368708

= 0

   b. CPI (Cost Performance Index)

$$CPI = \frac{EV}{AC} \text{..... ..... (2.11)}$$

= Rp.6368708 / USD.6368708

= 1

Table 2.7 Analysis Performance Index

CV	CV = 0, the work done within budget. CV> 0, the work done at a cost less than the budget. CV <0, the work done at a higher cost than the budget.
SV	SV = 0, get the job done right sesusai schedule. SV> 0, the work done ahead of schedule. SV <0, the work is completed late than plan
CPI	CPI = 1, the cost is the same as that obtained from work. CPI> 1, the cost is less than the jobs gained. CPI <1, the cost is greater than the value obtained jobs
SPI	SPI = 1, the work done on schedule. SPI> 1, get the job done faster than on a schedule. SPI <1, the work is completed late than plan

2.3.6. Analysis Estimate at Completion

EAC calculation is how to calculate the cost estimates based on the BAC shared with performance fees (CPI). Here is the result of calculation Estimate at Completion (EAC) at week 1. The formulas used are as follows:

EAC = BAC / CPI..... ..... (2.13)

= Rp175,979,771.28/ 1

= Rp175,979,771.28

2.3.7. Analysis Estimate Time to Completion

ETC calculations derived from the agreed contract period divided by the performance schedule (SPI). Here is the result of calculation Estimate Time to Completion (ETC) at week 1. The formulas used are as follows:

ETC = OTE / SPI..... ... ... (2:12)

= 60/1

= 60

By calculating indices like the above would seem that the project will be late or faster, and costs will be excessive or less than budgeted,

$EAC = BAC$(Value Project) / CPI ... (2:13)

2.3.8. Results Recap EVM Analysis

Here is a recap of the analysis results can be seen in the table EVM been below this:

Table 2.8 Analysis Results Recap EVM

\

Minggu Ke	Analisa Varian		Analisa Kerja		Analisa Estimasi	
	SV (Rp)	CV (Rp)	SPI	CPI	ETC (Hari)	EAC (Biaya)
1	Rp0	Rp0	1.00	1	60	Rp175,979,771.28
2	Rp0	Rp0	1.00	1	60	Rp175,979,771.28
3	Rp0	Rp0	1.00	1	60	Rp175,979,771.28
4	Rp0	Rp0	1.00	1	60	Rp175,979,771.28
5	Rp0	Rp0	1.00	1	60	Rp175,979,771.28
6	(Rp6,838,574)	Rp0	0.96	1	63	Rp175,979,771.28
7	Rp0	Rp0	1.00	1	60	Rp175,979,771.28
8	Rp0	Rp0	1.00	1	60	Rp175,979,771.28

From the analysis of the results of the analysis can be concluded recap of the project is not in accordance with the planned because the estimated value of the time of completion (ETC) was 63 days, longer than the duration of the project is 60 days and costs Rp. 175,979,771.28, equal to the total budget (BAC).

2.3.9. EVM graph

Here is a chart from which the EVM analysis at week-6 decreased performance so that work is not completed as planned.

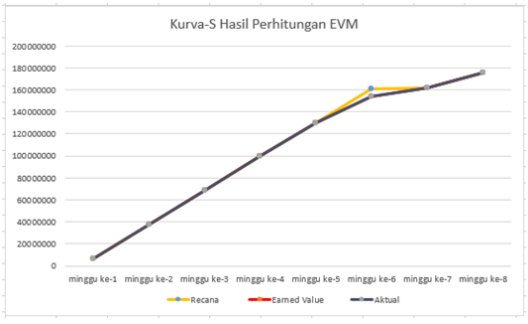


Figure 2.2 Chart (EVM)

2.4. *Time Cost Trade Off (TCTO)*

Method adjustment project duration Time Cost Trade Off (DCTO) function to cope with various problems - problems such as scheduling

process duration of projects that do not correspond to the initial planning, there is a delay in the implementation of project activities, in order to obtain the bonus if the project completion is accelerated, or accelerate the project schedule to avoid risks - other risks such as bad weather in the rest of the project. As a consequence of adjusting the duration of the project more quickly, usually with increasing costs, such as the cost of direct cost and indirect costs [3]. Acceleration causes changes to the costs and time, which includes:

1. Time Normal (Normal Duration) is the time required to perform the activities are done with the normal productivity levels.
2. Acceleration time (Crash Duration) is the fastest time to complete an activity.
3. Cost Normal (Normal Cost) is a direct cost needed to complete a period of normal activities.
4. Cost Acceleration (Crash Cost) is the amount of direct costs to complete the activities with the shortest period of time.
5. Additional Charges (Cost Slope) is the amount of direct costs per-unit time.

2.4.1. *Project Crashing*

Project Crashing done so that the work completed by the exchange of cross-time and cost and to increase the number of shift work, hours of work, number of employees, the availability of materials, and use the equipment more productive and faster installation method as a direct cost component cost. Crashing project done by using networkplanning schedule repairs that are on the critical path. Works that are in the critical path derived from the calculation method of the Critical Path Method (CPM) [3]. The following tables are in the flow of work critical of the calculation method of the CPM:

Table 2.9 Critical Works Project

No.	uraian pekerjaan	Kode kegiatan	Waktu (t) dalam hari	Status / Total Float
1.1	Direksikeet	A	7	Kritis
1.2	Pasang Papan Nama Proyek	B	1	---
2.1	Galian Tanah	C	7	Kritis
2.2	Pasang Batu 1:4	D	35	Kritis
2.3	Timbunan Tanah Pilihan	E	7	Kritis
2.4	Ampar LPA Klas B Tb.20 Cm	F	3	Kritis

Having obtained the jobs that are then further analyze the critical path project management using Earned Value Method (EVM) to get the project penjdawalan, from the calculation of EVM in the previous analysis there is a delay in week 6. Obtained job that is in weeks of 6 are as follows:

Description accelerated activity:

D = Replace Stone 1: 4

2.4.2. Calculation of Normal Daily Productivity

Normal daily productivity can be defined as the ability to finish the job with a certain volume each day based on normal volume without any additional or alternative business acceleration. In general, the daily productivity is calculated by the following formula:

$$\text{Produktivitas harian normal} = \frac{\text{Volume Pekerjaa.n}}{\text{Durasi Normal}} \ldots\ldots (2.15)$$

The following is a calculation of employment Replace Stone 1: 4which must be accelerated.

The volume of work = 129.60 M3 (Appendix C)
Normal duration = 35 days (table 3.6)
Productivity normal = 129.60 / 35 = 3.7 M3

2.4.3. Calculation Daily Productivity Acceleration

Based on discussions with the Project Manager, acceleration daily productivity derived from the number of normal daily productivity with productivity during hours of overtime per day in the CV.Likka Utama apply the rules of normal working hours is 8 hours / day. The addition of overtime hours is one hour / day with an increase of 1.5 wage / hour, while worker productivity is assumed to decline overtime hours and only accounted for 90% [6] of normal productivity, following the daily calculation of the acceleration Pas.Batu 1: 4 should be accelerated.

a. Normal working hours = 8 hours / day
b. Extra hours (overtime) = 1 hour / day
c. Overtime pay = 1.5 wage / hour
d. Worker productivity = 90%
e. Normal daily productivity = 3.7 M3
f. Normal daily productivity / hour = Normal daily productivity / Normal working hours
   = 3.7 / 8
   = 0:46 M3
g. Productivity overtime = (The addition of overtime hours x Productivity job) x normal daily productivity / hour
   = (1 x 0.9) x 0:46 M3
   = 0416 M3

h. Daily productivity acceleration = Productivity + Productivity normal daily overtime hours
= 3.7 + 0416
= 4.11 M3

2.4.4. Duration calculation Crash, Crash Cost and Cost Slope

Having in mind the amount of daily productivity by adding overtime, then the next step is to calculate the duration of the acceleration (Crash duration) and the direct costs of the acceleration (crash cost), while the calculation Crash cost aims to find cost slope on each job, the calculation of crash duration, crash cost and cost slope based on a formula as follows:

a. Job volume = 129.60 M3 (Appendix C recapitulation)
b. Normal duration = 35 days (table 3.6)
c. The normal cost = Rp. 154,917,763.51129.60 M3 (Appendix D)
d. The unit cost of wages =40000.00 (Appendix C AHS)
e. The unit cost of materials = 857,793.60(Appendix C Replace Stone)
f. The unit cost tool =88110.29(Appendix C Replace Stone)
g. Normal daily productivity = 3.7 M3
h. productivity acceleration = 4,11M3
i. *Crash duration* = the volume of work / productivity acceleration
= 129.60 / 4.11
= 31 532 days or 32 days
j. Normal wage / hour = 40,000 (Appendix C AHS)
k. Normal wage / day = (8 hours x normal wage / hour)
= 8 x 40,000
= Rp. 320,000
l. Overtime pay / day = (1.5 x 1) x normal wage / hour
= 1.5 x 320,000
= Rp. 480,000
m. Wage costs / day = (normal wage / day + overtime / day)
= Rp. 320.000+ Rp. 480,000
= Rp.800.000
= (32 days xm)
n. The total cost of wages = 32 (crash duration) x Rp.800.000 (wage costs / day)
= Rp. 25.6 million
o. Total cost matrial =857,793.60(Appendix C Replace Stone)
p. The total cost of the tool =88110.29(Appendix C Replace Stone)
q. *crash cost* = (Total cost of wages + total material cost + total cost of tools + normal fee)
= 25.6 million +857,793.60+ 88110.29 + 154,917,763.51
= Rp. 181,463,667.4
r. *cost Slape* = (Crash cost-normal expenses) / (35-32 difference between the normal duration and acceleration)
= (181.463.667,4-154,917,763.51) / 3
= Rp. Rounded 8,848,634.63 8.849 million

From the above calculation, the results obtained from the calculation of the value of duration crash, crash costs, and costs slope, from Pas.Batu Job 1: 4, with the value of the event of delay in Pas.Batu Job 1: 4 then for the duration of the acceleration (Crash duration) is 32 days from the normal duration is 35 days. With the direct cost acceleration (Crash Cost) Rp. 181,463,667.4. And the added cost (Cost Slope) to work Pas.Batu 1: 4 Rp. 8.849 million in units of time.

2.5. analysis System

2.5.1. Analysis of Software Requirements Specification

Software requirements specification for building system is divided into two, namely, the specification of functional and non-functional requirements. Specification of functional requirements for the management of information systems in the project cost and time CV.Likka Utama can be seen in Table 2.9.

Table 2.10 Functional Requirements

Nomor	Deskripsi Kebutuhan
SKPL-F-01	Sistem menyediakan fasilitas *login dan logout*
SKPL-F-02	Sistem menyediakan informasi proyek
SKPL-F-03	Sistem dapat membuat perencanaan pekerjaan dan anggaran biaya proyek
SKPL-F-04	Sistem dapat membuat jadwal proyek
SKPL-F-05	Sistem dapat membuat bobot rencana, bobot aktual dan biaya aktual proyek
SKPL-F-06	Sistem menyediakan informasi evaluasi progres pekerjaan
SKPL-F-07	Sistem menyediakan informasi percepatan kegiatan proyek
SKPL-F-08	Sistem dapat melakukan proses tambah, edit dan hapus

non-functional requirements specification can be seen in Table 2:10

Table 2.11 Non-Functional Requirements

Nomor	Deskripsi kebutuhan
SKPL-NF-01	Sistem berbasis *website*
SKPL-NF-02	Yang bisa mengakses sistem adalah Direktur, Manajer Proyek, dan Ketua Pelaksana
SKPL-NF-03	Sistem yang dibangun membutuhkan jaringan internet dan aplikasi *web browser*
SKPL-NF-04	Sistem yang dibangun menggunakan MySQL sebagai pengolahan database

2.6. Design

2.6.1. Database Design

Relationship scheme is a combination between data that has the same primary key, so the data is a union that is connected by that key.

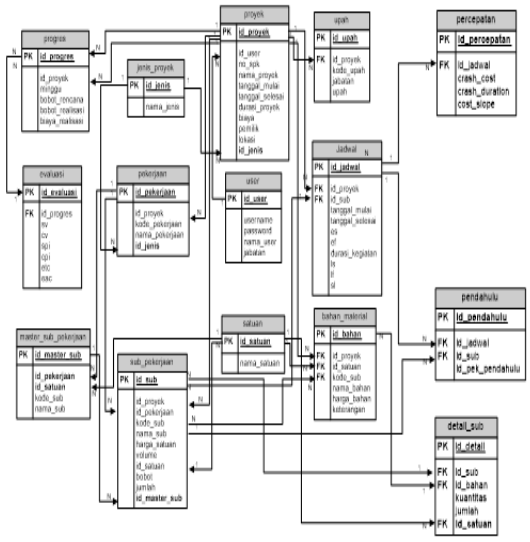


Figure 2.4 Relation Scheme

2.7. screenshot Program

Here are some screenshots taken from programs already running.

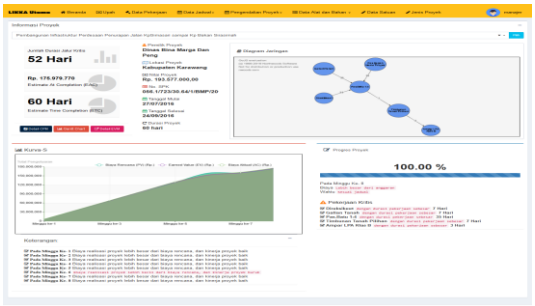


Figure 2.5 Home

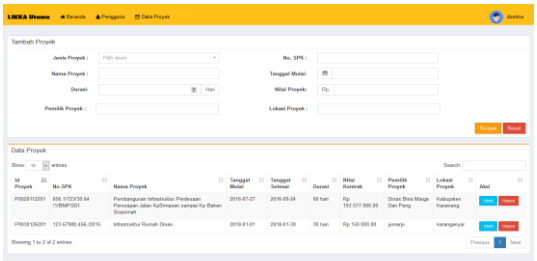


Figure 2.6 Project page

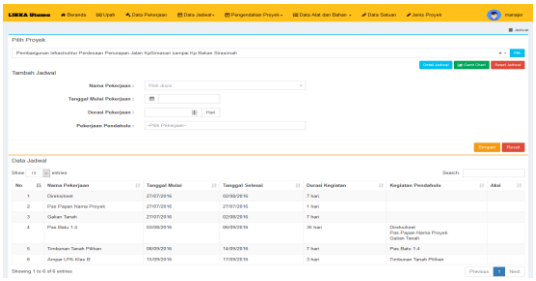


Figure 2.7 Schedule page

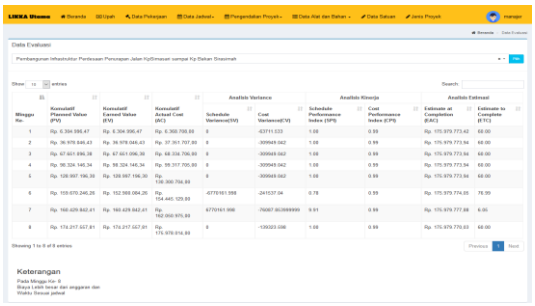


Figure 2.8 Evaluation Guide

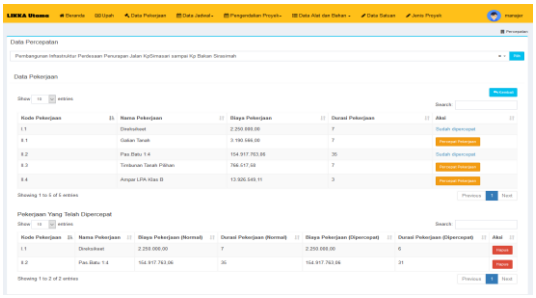


Figure 2.9 Acceleration Guide

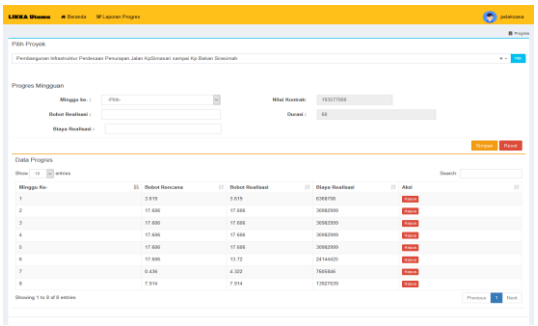


Figure 2.10 implementing progress page

2.8. testing Systems

Testing is a stage to find flaws in the software being tested. The purpose of the test is to determine whether the software is built in accordance with the initial planned objectives. Testing Black box consists of black box testing scenario, following one of the test results of data processing project on management information system costs and project time in the CV.Likka Utama.

Table 2.12 Black Box Testing Scenarios

No.	class test	test Item	This type of testing
1	Data processing project	Displaying data project	*Blackbox*
		Addition of project data	
		Changing the project data	
		Elimination of the project dat	

Black box test results that have been done, it can be concluded that if the entered data is appropriate, the system will issue an appropriate output with demand. If the data is entered incorrectly, the system will display an error message by giving notice to the user to enter the appropriate data, shingga can produce output in accordance with the user's request

3. CLOSING

3.1 Conclusion

From the research thesis on CV.Likka Utama Karawang District of Pangkalan through interviews with the director, manager and chief executive concluded that the cost of management information systems and web-based project time is expected to be a solution that can help in:

1. Project Manager makes it easy to determine what actions to take when there is a problem of misuse when projects are carried out.
2. Help provide information to project managers in the decision making at the time he would do if there is delay in the acceleration of activities when projects are carried out.

3.2 Suggestion

In the management information system cost and time project built still have features that are simple and could be developed by adding features that are more functional, which can assist the user in controlling risk, quality and better help the performance users, especially the project manager to do control using this system.

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