

# THE ANALYSIS OF FINANCIAL PERFORMANCE MEASUREMENT OF GLOBAL CASH MANAGEMENT PROJECT USING EARNED VALUE ANALYSIS AT PT. APRISMA INDONESIA

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## ABSTRACT

*Many components in a software house company can be used in controlling and measuring its information technology projects. The financial component is not only the numbers that tells how a company generates its profits. It also can tell how a project performance related to its scope, cost, schedule, and quality. For example, many information technology projects' budget increases as more work time needed to complete the planned schedule due to problems occurred whilst project execution. These correlations between cost, schedule and the execution performance can be measured from a project financial component using a method called as Earned Value Analysis.*

*The purpose of the research is to help PT. Aprisma Indonesia to properly and comprehensively analyze the Global Cash Management financial performance and find the most feasible recommendation to improve the projects performance in the future.*

*The result of the research is to measures on how the Global Cash Management project performed according to the time and budget plan at PT. Aprisma Indonesia. Hopefully by knowing the components that influencing the Global Cash Management project cost and understand how to measure them, PT. Aprisma Indonesia would be able to quickly execute management strategies to address specific project problems.*

**Keywords:** *Earned Value Analysis, Project Management, Information Technology Project, Information Technology Project Evaluation, Information Technology Project Financial Performance, Cost Control*

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## INTRODUCTION

In a Standish Group study of software projects in both the public and private sectors, nearly 90% of the studied projects failed due to cost and time overruns. In addition, more than 33% were cancelled before they ever came to completion. Nearly one third of the small, medium, and large companies studied experienced cost overruns of 150-200%, with project costs coming in with an average overrun of 189% of the original cost estimate. Likewise, time overruns experienced similar difficulties. Over one third of all the companies in the study reported time overruns of 200-300%, with the average overrun being 222% of the original time estimate (Chaos 1995). In 2003, with sample of 13,522 Information Technology projects, project success rates have increased by one third or 34% of all projects, showing failures have declined to 15% of all projects, more than half the 31% in 1994 and for the remaining 51% still suffering from cost, time and scope overruns. Statistics above show how important a project should be systematically and methodically managed to avoid losses that possibly incur directly or indirectly. That's why it is very important to practice specific management principles and steps are put in practice that usually known as Project Management.

“Project management is a specialized approach to managing business. The traditional view of management is that we plan, organize, lead, and control the business process. Project management includes these functions but also includes project initiation and termination” (Taylor, 2004, p12). Project management can be defined as the art and science of managing projects to a specific schedule, at or below a predetermined budget, to the customer's performance requirements and within the resources available (Taylor 2004).

As a software house, PT. Aprisma Indonesia main business is to provide application service to meet the needs of banking business. Project in IT industry can be categorized as a success project based on criteria for time, budget and scope. Like any other IT company which has significant project portfolio, the challenge of PT Aprisma Indonesia is to deliver project on time, within the scope, of quality and within budget. To achieve the goal, control mechanism in project must use a systematic and accurate measurement tool in the project monitoring process.

Schulte (2001) noted that EVA is very suitable to answer questions that are related to budget, schedule, and cost such as:

1. The project's actual costs are less than its budget. Is the project doing well, or is it behind schedule?
2. The project actual costs are now higher than budgeted, and it is only halfway complete. What's it likely to cost at completion?

The Project Management Institute emphasizes the use of EVA in its project management guide as EVA provides organizations with the methodology needed to integrate the management of project scope, schedule, and cost. It can help the project manager to identify problems related to the project, whether they are critical or not, and get the project back on track.

## STATEMENT OF PROBLEMS

This research will be based on the following statements of problems:

1. Is PT Aprisma Indonesia Global Cash Management project plan doing well, or is it behind schedule in line with the realization?
2. Is PT Aprisma Indonesia Global Cash Management project budget plan doing well or over budget in line with the budget realization?
3. Is EVA a suitable method that can be used as a measurement tool to prove that the Global Cash Management project at PT Aprisma Indonesia is doing well?

## THEORETICAL FRAMEWORK

Every project is constrained in different ways by its scope, time and cost goals. These limitations are sometimes referred to in project management as the described in figure 2.1. To create a successful project, a project manager must consider scope, time, and cost and balance these three often-competing goals and must consider the following:

- *Scope*: what work will be done as part of the project? What unique project, service or result does the customer or sponsor expect from the project? (Schwalbe 2006)
- *Time*: How long should it take to complete the project? What is the project's schedule? (Schwalbe 2006)
- *Cost*: What should it cost to complete the project? What is the project's budget? (Schwalbe 2006).

Managing the triple constraint involves making trade-offs between scope, time and cost goals for a project. In managing project with these constraints, a project manager might need to increase the budget for a project to meet scope and time goals. Alternatively, he or she might have to reduce the scope of a project to meet time and cost goals. Because projects involve uncertainty and limited resources, it is rare to complete many projects according to the exact scope, time, and cost plans originally predicted (Schwalbe 2006).

Project management is "the application of knowledge, skills, tools and techniques to project activities to meet project requirements" (PMI, 2004, p8). Project management is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing. The four core knowledge areas of project management include project scope, time, cost, and quality management. These are core knowledge areas because they lead to specific project objectives.

Project scope management describes the processes involved in ascertaining that the project includes all the work required, and only the work required, to complete the project successfully (Milosevic 2003).

Project time management includes time estimating how long it will take to complete the work, developing an acceptable project schedule, and ensuring timely completion of the project (Milosevic 2003)

"Project Cost Management includes the processes involved in planning, assessment & evaluation, and controlling costs so that the project can be completed within the approved budget" (PMI, 2004, p157).

Project Quality Management processes include all the activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken. It implements the quality management system through the policy, procedures, and processes of quality planning, quality assurance, and quality control, with continuous process improvement activities conducted throughout, as appropriate (PMI 2004).

Scope measurement is a process that emphasizing on the comparison between the scope defined by the project team in functional model with the project scope itself. The commonly used model in project management is the Work Breakdown Structure. WBS can be used to define the project deliverables into detailed work levels. A project is more manageable by breaking it down into individual components that together are known as a Work Breakdown Structure (WBS). The WBS represents a clear description of the project's deliverables and scope. It is not a description of a process or schedule that defines how or when the deliverables will be produced, but rather is specifically limited to describing and detailing the project's outcome or scope. The WBS organizes and defines the total scope of project. The WBS subdivides the project work into smaller, more manageable pieces of work, with each descending level of the WBS representing an increasingly detailed definition of the project work. The planned work contained in the lowest level WBS components, which are called work packages, can be scheduled, cost estimated, monitored, and controlled. (PMI 2004)

Project time measurement is a process that emphasizing on the time difference between the actual total time needed and the scheduled timeline. With the timeline presented in Gantt chart for each deliverable activity, a measurement can be done to identify which activities that affect a project delivered in time or behind schedule.

The basic to measure a project cost performance is still based on the WBS because it defines the project scope and describes the effort necessary to accomplish the project objectives. It can facilitate to find out where are project costs derived from. One of the costs assigning method is the Activity-Based Costing (ABC). Activities described in WBS can be used as the source for ABC approach. According to Cokins (2001), the cost measurement process will consist on two major steps, which are Collecting Cost Data and Assigning Cost. Each of these steps is explained below:

- **Collecting Cost Data**

This is where measuring and managing costs begins. The source for data can be financial (i.e., strategic) or operational (i.e., shorter-term tactical costs).

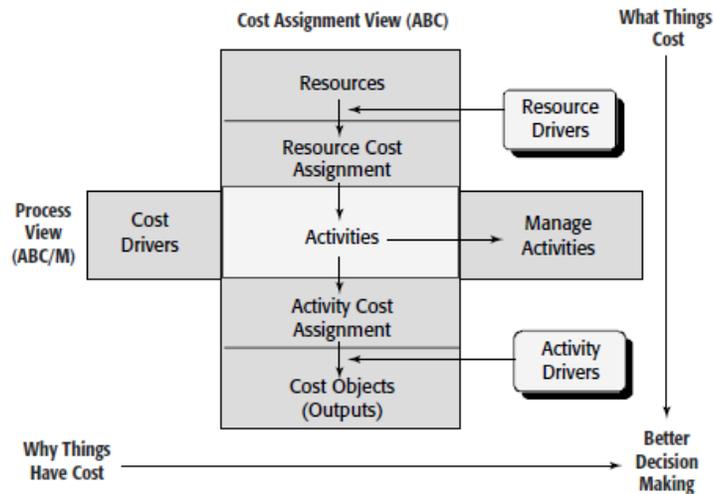
- **Financial data collection** is an exercise populating expenses that were initially cash equivalents directly tied to cash payments for employee wages or to suppliers and contractors.
- **Operational data** are non-financial. This information is measurable in the form of units such as minutes, pounds, gallons, or number of events. These are units of inputs or outputs that are consumed in making and delivering a product or service. Operational data are combined with financial data to produce cost data.

- **Assigning Costs**

The assignment of costs depends on the managerial use of the data, which usually depends on the more pressing management problems. There is complexity in the assumptions and factors related to the use of cost data. Figure 2.6 displays the methods for assigning costs with some of the assumptions applied for assigning costs or considered when making decisions.

- **Assignment Methods:** In *period costing*, costs are accumulated at fixed time intervals, and they are linked to a calendar, such as a week, a month, or a year. All the product, service line, and customer costs are reported regardless of whether they had intra-period starts or stops. In period costing, the time frame matters the most, and the focus is the spending for process.

Activity-Based Costing Management is one of the cost assigning technique that can be use to define the cost measurement process. ABC/M captures a summary of transactions that occur during a period of time.



**Figure 1.** Activity-Based Costing Management

The vertical cost assignment view explains *what specific things cost*, whereas the horizontal process view demonstrates *why things have a cost*, which provides insights into *what causes costs* and *how much processes cost* (Cokins 2001).

Earned Value Analysis (EVA) is a method that commonly used by project managers as performance measurement and feedback tool for managing projects. “EVA uses the fundamental principle that patterns and trends in the past that can be good predictors of the future” (PMI, 2005, p1). EVA provides organizations with the methodology needed to integrate the management of project scope, schedule, and cost. If the application of EVA to a project reveals that the project is behind schedule or over budget, the project manager can use the EVA methodology to help identify:

- Where problems are occurring
- Whether the problems are critical or not
- What it will take to get the project back on track.

#### **Planned Value (PV)**

PV describes how far along project work is supposed to be at any given point in the project schedule. It is the approved budget for accomplishing the activity, work package, or project related to the schedule. It can be viewed as the value to be earned as a function of project work accomplishments up to a given point in time.

**Actual Cost (AC)**

This parameter shows the cumulative cost spent to a given point in time to accomplish an activity, work package, or project and to earn the related value.

**Earned Value (EV)**

EV is the cumulative earned value for the work completed up to a point in time. It represents the amount budgeted for performing the work that was accomplished by a given point in time.

**Schedule Performance Index**

The Schedule Performance Index (SPI) indicates how efficiently the project team is using its time.

**Cost Performance Index**

The Cost Performance Index (CPI) is an indicator of the cumulative cost efficiency of a project.

## RESEARCH METHODOLOGY

Cooper et al (2006) explained that a research framework was defined by the management dilemma that usually a symptom of an actual problem such as rising costs, large number of product defects etc. The process framework from Cooper et al (2006) can be adopted using the framework used by Project Management Institute in controlling scope, cost and schedule by dividing the work process into three main activities – Input, Process, and Output. These activities are the steps to identify and analyze the data related to the cost and schedule performance of the GCM project.

As projects always constrained by three main components – the scope, time, and cost constraints – the process of measuring the GCM project will also based on those constraints. The very first thing to do to start the measurement process is collecting the data needed to be used with the measurement tool, in this thesis, the writers use the Earned Value Analysis (EVA).

In the process work level, the collected data will be used and mapped as data components in EVA. At the end, as the output of the research, the variances and indices produced by EVA will be presented into a data presentation that show the GCM project overall performance.

## CASE ANALYSIS

**Project Scope Planning**

PT Aprisma Indonesia clearly understands that defining and managing the project scope will determine the overall success of a project. That is why PT. Aprisma Indonesia broke down the work elements to be undertaken to produce required deliverables in the GCM project into Work Breakdown Structure, a definitive decomposition of the work elements.

**Project Time Planning**

After the work elements decomposition had been done, PT. Aprisma Indonesia estimated the time effort to complete each activity in the WBS. The scheduled WBS was drawn in a Gantt chart.

### Project Cost Planning

With the available resources in the project team having been developed in the project initiation, PT. Aprisma Indonesia correlated the activities defined with each of the team member according to their roles and responsibilities in the team.

**Table 1.** Project Cost Planning

| Month  | Labor Cost | Labor Dependent Cost | Project Dependent Cost | Planned Value  |
|--------|------------|----------------------|------------------------|----------------|
| Nov-06 | 26,250,000 | 378,408.33           | 19,663,861.24          | 46,292,269.58  |
| Dec-06 | 10,000,000 | 194,055.56           | 20,698,801.31          | 30,892,856.86  |
| Jan-07 | 11,500,000 | 213,461.11           | 22,768,681.44          | 34,482,142.55  |
| Feb-07 | 10,000,000 | 194,055.56           | 20,698,801.31          | 30,892,856.86  |
| Mar-07 | 17,250,000 | 922,621.33           | 21,733,741.37          | 39,906,362.71  |
| Apr-07 | 19,000,000 | 1,288,132.44         | 20,698,801.31          | 40,986,933.75  |
| May-07 | 17,250,000 | 283,714.00           | 22,768,681.44          | 40,302,395.44  |
| Jun-07 | 27,750,000 | 164,947.22           | 20,698,801.31          | 48,613,748.53  |
| Jul-07 | 2,250,000  | 9,702.78             | 1,034,940.07           | 3,294,642.84   |
| Total: |            |                      |                        | 315,664,209.13 |

### Project Cost Control

Cost control is not only monitoring costs and recording data, but also analyzing the data in order to take corrective action before it is too late. In the execution process, the GCM project was started in Nov 2006 and completely done in July 2007.

**Table 2.** EVA Calculation for November 2006

| PV            | EV            | AC            | SPI | EACt | EAC            | CPI   | ETC            | CR    |
|---------------|---------------|---------------|-----|------|----------------|-------|----------------|-------|
| 46,292,269.58 | 46,292,269.58 | 45,491,996.15 | 1   | 165  | 310,207,192.67 | 1.017 | 264,715,196.52 | 1.017 |

for Nov 2006:

- PV = EV, it is favorable because the project is on schedule. The Schedule Performance Index (SPI) is 1 and it indicates that for the first month, the project is on time.
- The estimated days at completion (EACt) is 165 days and they are same as the scheduled planning because all tasks were completed as they have been planned.
- EV > AC, it is favorable. It means that the project is under budget.
- Until Nov 2006, Cost Performance Index (CPI) shows 1.017. From this index, the project total cost at completion (EAC) can be estimated to be as much as Rp. 310,217,222.82 and this is lower than its budget. The remaining work cost needed to complete the whole project (ETC) can also be estimated to be as much as Rp. 270,172,212.98.

**Table 3.** EVA Calculation for December 2006

| PV            | EV            | AC            | SPI   | EACt    | EAC            | CPI   | ETC            | CR    |
|---------------|---------------|---------------|-------|---------|----------------|-------|----------------|-------|
| 77,185,126.44 | 76,526,831.12 | 75,542,459.94 | 0.991 | 166.419 | 311,603,793.40 | 1.013 | 236,061,333.45 | 1.004 |

For Dec 2006:

- PV > EV, it is unfavorable because the project is behind schedule. The SPI, which is equal to 0.991, also signals the same indication of the project schedule. The schedule lagging was caused by the task completion in the project planning phase lesser than it should be. The project progress is 99.15%.
- As the SPI can give estimation about the project schedule (EACt) if current trend continues, the project will be completed in 166.419 days or 1.419 additional days needed than the planned schedule.
- Even though EVA tells from schedule overview that the project is lagging, the comparison between EV and AC tells that the project is still under budget.
- With the fact that the CPI is 1.013, project total cost at completion (EAC) can be estimated to be Rp. 311,603,793.40 and it is still lower than the total budget. With remaining work cost of the project (ETC) is Rp. 236,061,333.45.

**Table 4.** EVA Calculation for January 2007

| PV             | EV            | AC             | SPI   | EACt    | EAC            | CPI   | ETC            | CR    |
|----------------|---------------|----------------|-------|---------|----------------|-------|----------------|-------|
| 111,667,268.99 | 94,235,048.27 | 107,597,970.11 | 0.844 | 195.523 | 360,426,707.08 | 0.876 | 252,828,736.97 | 0.739 |

For January 2007:

- The Schedule Performance Index (SPI) is 0.884, it indicating that the project needs more time to complete the tasks due to the fact that the task completion progress was only 84.39% from the planned schedule. The uncompleted task is still in project planning phase.
- The above conditions resulting in the estimated days at completion (EACt) is 195.523 days or more than 1 (one) month working day needed to complete the whole project compared to its schedule planning. The schedule extensions in January 2007 affect the budget as the EV is lower than AC, indicating that the project is over budget. The project needs extra expense to finance the uncompleted tasks.
- From the CPI (0.876), the project total cost at completion (EAC) is Rp. 360,426,707.08. Additional expense as much as Rp. 44,762,497.95 is used to pay salaries and overhead cost.
- Remaining work cost of the project (ETC) is Rp. 252,828,736.97 which is higher than the previous month's.

**Table 5.** EVA Calculation for February 2007

| PV             | EV             | AC             | SPI   | EACt    | EAC            | CPI   | ETC            | CR    |
|----------------|----------------|----------------|-------|---------|----------------|-------|----------------|-------|
| 142,560,125.86 | 122,571,536.78 | 138,638,731.12 | 0.859 | 191.908 | 357,042,805.88 | 0.884 | 218,404,074.76 | 0.760 |

For Feb 2007:

- The February's SPI (0.859) is better than that of January 2007. It indicates that the project task completion progress is only 85.98% from the planned schedule. The uncompleted task is in technical architecture design phase.
- The above conditions resulting in the estimated days at completion (EACt) is 191.908 days or 27 working days more than planned before.
- The schedule extensions in February 2007 still affected the budget and caused the project to become over budget. The project's total cost at completion (EAC) can be estimated based on the CPI (0.884) to be as much as Rp. 357,042,805.88 or Rp. 41,378,596.70 over the budget.
- Remaining work cost of the project (ETC) is Rp. 218,404,074.76.

**Table 6.** EVA Calculation for March 2007

| PV             | EV             | AC             | SPI   | EACt    | EAC            | CPI   | ETC            | CR    |
|----------------|----------------|----------------|-------|---------|----------------|-------|----------------|-------|
| 182,466,488.57 | 137,800,212.72 | 169,691,718.10 | 0.755 | 218.483 | 388,719,298.27 | 0.812 | 219,027,580.17 | 0.613 |

For March 2007:

- The SPI is 0.755 and it indicates that the project is in serious need of additional time to complete the tasks. The task completion progress was only 75.52% from the planned schedule. The uncompleted task is still in project technical analysis and design phase.
- The estimated days at completion (EACt) is 218.483 days or more than 50 working days from the planning. This schedule extension is significant enough, equivalent to 32.41% of the planned schedule (165 days).
- As the task completion was getting worse, the CPI also dropped to 0.812 and the estimation for the project's total cost at completion (EAC) is Rp. 388,719,298.27. It is Rp. 73,055,089.14 or 23.14% over the budget.
- Remaining work cost of the project (ETC) is Rp. 219,027,580.17. It is higher than previous month's.

**Table 7.** EVA Calculation for April 2007

| PV             | EV             | AC             | SPI   | EACt    | EAC            | CPI   | ETC            | CR    |
|----------------|----------------|----------------|-------|---------|----------------|-------|----------------|-------|
| 223,453,422.32 | 209,834,092.91 | 211,527,102.33 | 0.939 | 175.709 | 318,211,090.20 | 0.992 | 106,683,987.87 | 0.931 |

For April 2007:

- With 11 days overtime on non-working days and 164 hours overtime on working day (equal to 19 days), the SPI rose to 0.939. It indicates the task completion progress was 93.91% from the planned schedule.
- The delay of the project schedule was accelerated in project execution especially in system development task. It resulted in the estimated days at completion (EACt) to 175.709 days. This estimation is improving by more than 40 working days from the last month's estimation.
- The project schedule improvement has affected the CPI. It improved CPI from 0.812 to 0.992, and project total cost at completion (EAC) can be estimated to be as much as Rp. 318,211,090.20. It is Rp. 2,546,881.07 or only 0.81% over the budget.

- Remaining work cost of the project (ETC) is Rp. 106,683,987.87.

**Table 8.** EVA Calculation for May 2007

| PV             | EV             | AC             | SPI   | EACt    | EAC            | CPI   | ETC           | CR    |
|----------------|----------------|----------------|-------|---------|----------------|-------|---------------|-------|
| 263,755,817.76 | 257,101,427.86 | 250,814,984.05 | 0.975 | 169.270 | 307,945,833.82 | 1.025 | 57,130,849.77 | 0.999 |

For May 2007:

- With 4 days overtime on non-working days and 112 hours overtime on working days (equal to 12 calendar days), the SPI improved to 0.975. It indicates the task completion progress was 97.48% from the planned schedule.
- The project was getting better as its estimated days at completion (EACt) is 169.20 days or just needing 5 additional working days than the planning.
- This is the first time that schedule improvement has changed the CPI to a favorable value as it increased to 1.025. It was indicated from the fact that  $EV > AC$ , which tells that the achievement of the task completion progress exceeded the actual cost disbursement. The overtime applied gave a valuable improvement in project allowing the task completion progress to increase significantly while the project cost increased slightly due to low overtime expense.
- Remaining work cost of the project (ETC) is Rp. 57,130,849.77.

**Table 9.** EVA Calculation for June 2007

| PV             | EV             | AC             | SPI   | EACt    | EAC            | CPI   | ETC           | CR    |
|----------------|----------------|----------------|-------|---------|----------------|-------|---------------|-------|
| 312,369,566.29 | 287,578,330.87 | 297,489,311.73 | 0.920 | 179.224 | 326,543,130.10 | 0.967 | 29,053,818.38 | 0.890 |

For June 2007:

- As the SPI is 0.920, the task completion progress showed an indication of to be 92.06% from the planning.
- The estimated days at completion (EACt) is 179.22 days or more than 2 weeks from what it has been planned.
- The CPI is 0.967 and indicates that the project budget is back to unfavorable budget. It can be estimated that project total cost at completion (EAC) is Rp. 326,543,130.10. It is Rp. 10,878,920.97 or only 3.45% over the budget.
- Remaining work cost of the project (ETC) is Rp. 29,053,818.38.

**Table 10.** EVA Calculation for July 2007

| PV             | EV             | AC             | SPI   | CPI   | CR    |
|----------------|----------------|----------------|-------|-------|-------|
| 315,664,209.13 | 315,664,209.13 | 318,058,011.13 | 1.000 | 0.992 | 0.992 |

For July 2007:

- For the last month of project the SPI has been 1,000. The actual completed task should actually conform to the planned completed task. It indicates the task completion progress is 100 % from the planned schedule.

- The CPI is 0.992 and the final project total cost is Rp. 318,058,011.13. The project budget is unfavorable because the actual project cost exceeds the budget of Rp. 2,393,802.00 or 0.76% over the budget.

In summary, the project cost controls of the GCM project are presented as follows:

**Table 11.** Summary Project Cost Controls of the GCM Project

| Month/<br>Year | PV             | EV             | AC             | SPI   | EACt    | EAC            | CPI   | ETC            | CR    |
|----------------|----------------|----------------|----------------|-------|---------|----------------|-------|----------------|-------|
| Nov/2006       | 46,292,269.58  | 46,292,269.58  | 45,491,996.15  | 1.000 | 165.000 | 310,207,192.67 | 1.017 | 264,715,196.52 | 1.017 |
| Dec/2006       | 77,185,126.44  | 76,526,831.12  | 75,542,459.94  | 0.991 | 166.419 | 311,603,793.40 | 1.013 | 236,061,333.45 | 1.004 |
| Jan/2007       | 111,667,268.99 | 94,235,048.27  | 107,597,970.11 | 0.844 | 195.523 | 360,426,707.08 | 0.876 | 252,828,736.97 | 0.739 |
| Feb/2007       | 142,560,125.86 | 122,571,536.78 | 138,638,731.12 | 0.859 | 191.908 | 357,042,805.88 | 0.884 | 218,404,074.76 | 0.760 |
| March/2007     | 182,466,488.57 | 137,800,212.72 | 169,691,718.10 | 0.755 | 218.483 | 388,719,298.27 | 0.812 | 219,027,580.17 | 0.613 |
| April/2007     | 223,453,422.32 | 209,834,092.91 | 211,527,102.33 | 0.939 | 175.709 | 318,211,090.20 | 0.992 | 106,683,987.87 | 0.931 |
| May/2007       | 263,755,817.76 | 257,101,427.86 | 250,814,984.05 | 0.975 | 169.270 | 307,945,833.82 | 1.025 | 57,130,849.77  | 0.999 |
| June/2007      | 312,369,566.29 | 287,578,330.87 | 297,489,311.73 | 0.920 | 179.224 | 326,543,130.10 | 0.967 | 29,053,818.38  | 0.890 |
| July/2007      | 315,664,209.13 | 315,664,209.13 | 318,058,011.13 | 1.000 | -       | -              | 0.992 | -              | 0.992 |

### Project Lesson Learned

In a project life cycle, it is necessary to monitor and control the project so that it can be on schedule, within the scope and on budget. In this analysis as EVA was used as the measurement tool for the GCM project, some lesson learned about EVA and the GCM project can be grasped as follows:

- The GCM project execution starts to suffer schedule lagging on its second running month after its planning phase is need of more working days to complete the tasks.
- Using EVA, the project performance can be found out by comparing the earned value with planned value and with actual cost.
- The management team can easily use the variances and indices to monitor the project's cost and schedule.
- Project manager can take immediate action to prevent the cost and schedule from being out of control missed too far from what has already been planned.
- Management can monitor the project in monthly basis as well as and analyze how much money they have spent, how the schedule is going along, and how much the total cost they need until this project completely done and how long the project will need to finish.

## CONCLUSION AND RECOMMENDATIONS

### Conclusion

Based on Project Management Institute, an IT project should be managed using the resource, schedule, and cost components. PT. Aprisma Indonesia, however uses only the resource and schedule components of the project. Unfortunately, the company is likely to consider that managing the cost component is not important. Truly, a good insight into how to control the cost component will certainly be of great help to the IT project management team

in order to maintain the project financial performance. It will, as a result, give the utmost cost to benefit payoffs for the company.

This thesis is applying the Earned Value Analysis as a project post-evaluation framework to assess financial performance of the project and to provide information for management team in order to be capable of addressing the problems arising in the project life cycle.

The data presentation and analysis in chapter 4 can be summarized as follows:

- PT. Aprisma Indonesia is a company in which most of its projects are in the research and development (R&D) areas. The management team merely focuses on the project resources and schedules monitoring and controlling, but not on the financial components since the R&D project does not have any obligation and financial risk associated with other third party institutions.
- Earned Value Analysis as a standard control tool that can be used as a management tool to measure the project performance from the cost component angle.
- The measurement of the GCM project using Earned Value Analysis covers the whole project life cycle, from the project initiation phase until the project close out phase.
- The GCM project was behind schedule because it took more time to complete the project planning phase as indicated by its SPI. However due to additional work time in system development, the project schedule significantly improved.
- Due to the fact that the project planning phase took more working days, this resulted in the increase the cost of the project. Fortunately these extra expenses could be absorbed by having the developer team spend more working hours, enabling the company to spend less money for labor cost.
- Earned Value Analysis is a proven measuring tool based on the following arguments:
  - SPI and CPI can provide accurate information about the GCM project schedule performance,
  - The project's life cycle can be predicted via SPI and CPI, because these indices can be used to provide information about the estimated time at completion (EACt) as well as the estimated cost at completion (EAC),
  - When used in executing a project, EVA can be a reliable indicator used by the management team to find out problems to be solved.

### **Recommendations**

Based on the analysis, the recommendations for this project are as follows:

- PT. Aprisma Indonesia needs to manage the project by monitoring and controlling the cost component because it affects the company's profitability.
- PT. Aprisma Indonesia can do a cost management by implementing the EVA method so that it can monitor, control and forecast the expenses needed in a system development project.
- The project management team can implement a variance of approaches which are able to hasten the project development schedule when it is temporarily lagging. To avoid the cost increase due to the additional working hours needed to complete the project, the project management team can implement a strategy by taking advantage of the low cost overtime.
- The EVA implementation should be started since the project initiation until the expenses of the project are completely obtained.

- PT Aprisma Indonesia should enhance its human resource business and technical capabilities in Banking and Information Technology industries in order to have the project planning process completed on time.
- Relying on the EVA's indices and variances, the management team should take decisive and quick steps to assess the problems arising in a project which have unsatisfying performance indications, then take immediate actions to keep the project on track. Meanwhile, for a well performing project, the management team can find out and learn the project key work components that produce the good performance and implement them in the future projects.

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