

## Value-based Approach on Project Management: Empirical Evidences on Indonesian Firms

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### ABSTRACT

The issues surrounding project management have been studied rather extensively in many schools around the world. Though the most common perspective may have been encircled around operational management issues as the leverage to build-up necessary guidance in ensuring the success of the project, there are other perspectives to view and/or otherwise measure the actual performance of projects. The original birth process of any kinds of projects is often started individually, or group of individuals, who once have dreams to achieve improvements. The world of project management has to be filled with idea and lots of creative thinking. For this reason, project management contains both science and art elements built-in. Nevertheless, though project management is often regarded as an important field in management studies and management practices, with lots of available measuring tools, it is often wondered if, in fact, accounting perspective used in evaluating project management has conformed to the notion of value-based management.

The purpose of this study is to evaluate the value-based perspective on project management, by analyzing the impact toward value creation, as prescribed in the theory of value-based management. Qualitative and quantitative methods are incorporated in this study to

understand underlying processes on project management, including project overrun. Primary and secondary data searches in this study would cover interview sessions and data attainment from numerous firms in Indonesia. The research attempts to formulate comparison between the actual and the planning of the project, including checking the conformation to the ingredients on value-based management. It is expected that the findings are able to support the notion on the organizational value creation through proper handling on the project management.

**Keywords:** project management, value-based management, value creation, performance measurements, Indonesian firms

## 1. INTRODUCTION

The term “project” is very common and often interchangeably used, particularly in manufacturing firms. Undoubtedly, not only that project must be well defined, projects must also be analyzed carefully. Sequences of processes, from project planning, project control and monitoring, represent the critical links toward the successfulness of a project.

Due to the dynamic nature, project evaluation becomes an interesting issue to study (Anantadjaya and Mulawarman, 2010). Although there are lots of varieties of projects in any automotive firms, the focus on this study is on overhauling project. This project is a part of the equipment or system installation project. In this particular project, two prominent activities include; examination of the vehicles’ engine, and physical repair of the vehicle. Although every project must have been well prepared prior to execution, it does not mean that the actual project run will always be under control without any sudden affecting modifications, either internally or externally. The accounting/finance perspective is used in this paper to find out the project controlling process on the overhauling project, including noting the likelihood of organizational value creation. Finding the overall impact on organizational value may help automotive firms in handling similar upcoming projects. It is expected that this study is able to enhance the comprehensive mindset of project committee members toward value-based management.

Relying on the overhauling project, the project analysis starts with planning analysis to ensure whether there could be any potential factors in planning process that may contribute to project delay. To ensure that the whole project is run properly, project evaluation is deemed necessary. Therefore, irrelevant factors (internal or external) could be recognized, and can be resolved appropriately and accounted for. Quality control and product availability are used as indications of relevant factors. Once the factors are identified, the organizational performance is projected based on the dimensions on value-based management; margin, turnover, leverage, pullover, and market value.

## 2. THEORETICAL REFERENCES

### 2.1. Project Management

Project management is regarded crucial for firms, including external parties, whose results are interdependent among divisions and available resources, particularly in terms of work integration between time, progress and cost management, which includes scope of work, procurement, quality, and risk (Valle and Soares, 2004). Team members and personnel are also regarded important for the successfulness of project completion (Ahsan and Gunawan, 2009; Anantadjaya and Mulawarman, 2010). The appropriate combination of individuals, from managers, contractors, sub-contractors, and vendors, hold important links toward the

timely completion. This is the reason why the study on project management becomes interesting since it covers a wide range of activities; from the planning process, organizing personnel, and managing competing tasks and available resources to achieve the minimum time, resources, and cost (Anantadjaya and Mulawarman, 2010; Kumar, 2005). Project delays push cost lines upward (Kumar, 2005; Nazeni, 2010). Customization works also push cost lines higher than usual. Combined with augmented human knowledge, project management becomes difficult than ever before (Meredith and Mantel, 2006). Hence, such forces suggest that every project management encounters its own intricacies in finding the best possible way toward completion.

The actual steps will undoubtedly vary across organizations. Nevertheless, as pointed out by Meredith and Mantel (2006), some key elements are worth noted. Those key elements include; objectives, general approach, agreements with internal personnel/division and external parties, schedules, resources (on-hand and to be ordered from vendors), personnel job descriptions and responsibilities on the project, risk management, and evaluation on project (Anantadjaya and Mulawarman, 2010; Kumar, 2005; Meredith and Mantel, 2006; Nazeni, 2010; Valle and Soares, 2004).

Aside from the actual steps in managing projects, the complexities in formulating project budgeting are also very much prominent. In this case, a thorough forecasting on what would be happening in the future is considered essentials (Meredith and Mantel, 2006). In essence, cost calculations are vital. The estimation of various costs drivers should be well predicted, by not only segregating fixed and variable costs, but also direct materials, overhead charges, direct labors, marketing costs, and administrative costs. Though all project elements are important, project budgeting and costing signify one issue that will substantially affect the overall project performance. The minimal project performance will hamper the firm's performance, as well.

Previous studies by Anantadjaya and Mulawarman (2010), and Kerzner (2001) have pointed out that cost variances are common incidents in project management. Such common incidents are due to; misunderstanding of the customer requirements, misappraisal of personnel capabilities, underestimating time requirements, inaccuracy of details in project planning, inappropriate used of techniques/approaches, inaccurate forecasting, inaccurate specifications, and other macroeconomic conditions that management control does not have control upon. Thus, it is obvious that project budgeting holds the ultimate position on importance scales. If the project budgeting were inaccurate, it would throw-off the project successfulness.

Material management (Anantadjaya and Mulawarman, 2010) is also considered as one key success factor in field of project management. This is simply due to the vast variations of resources. In lieu of the material management, it is vital to take into consideration the tangible and intangible resources, productive and unproductive resources, and most times, fast moving and slower moving resources. To add the intricacies, it is also vital to note the availability of labor, machinery, locations, capital, information, and entrepreneurship (Anantadjaya, 2007; 2009; Ebert and Griffin, 2005; Meredith and Mantel, 2006). This is the classic reason why project scheduling are just the next tricky issue to handle, particularly concerning the insertion of details of tasks and project elements (Anantadjaya and Mulawarman, 2010; Kumar, 2005).

Aside from those tricky issues on technicalities of the project and work-breakdowns, a project

control is important to monitor progress. This is easier said than done. Though a project control is a simple comparison between project planning and the actual run-down of the project, justifying any deviations toward the project's objectives are problematic, often times (Anantadjaya and Mulawarman, 2010; Cleland and Ireland, 2006; Flores and Chase, 2005; Valle and Soares, 2004).

According to Anantadjaya and Mulawarman (2010), and Meredith and Mantel (2006), notable elements of control measures should include; performance control<sup>1</sup>, cost control<sup>2</sup>, and time control<sup>3</sup>. Using different names, Anbari (2003), Brandon (1998), Fleming and Koppelman (1998), Valle and Soares (2004) also provide support toward the elements of control measures. Considering such control measures, a basic indicator in project performance can actually focus on earned value analysis<sup>4</sup> ("EVA"). The use of EVA means management attempts to control cost via "open eyes management" since management can notice the progress of the project as it develops from the planning stage (Valle and Soares, 2004). This measurement is used in this paper to represent the project control and monitoring. The main indicators are as follows (Anantadjaya and Mulawarman, 2010; Meredith and Mantel, 2006; Valle and Soares, 2004);

- Cost variance is defined as the difference between earned value of the budgeted cost of work performed and the actual cost of work performed. A negative cost variance signifies project overrun. In terms of cost variance, there are also few indicators to note, such as;
  1. Budgeted cost of work scheduled ("BCWS") – planned value ("PV")
  2. Budgeted cost of work performed ("BCWP") – earned value ("EV")
  3. Actual cost of work performed ("ACWP") – actual cost ("AC")
  4. Cost performed index ("CPI") =  $EV/AC$ . When CPI equals to 1, it means that the project is on budget. When CPI is less than 1, it means that the actual spending on the project is more than it was planned. When CPI is more than 1, it means that the actual spending on project is less than it was planned.
- Schedule variance is defined as the difference between earned value of the budgeted cost of work performed and the planned value of the budgeted cost of work scheduled. A negative schedule variance indicates that the project falls behind schedule. In terms of schedule variance, there are also few indicators to note, such as;
  1. Variance planned ("VP") =  $EV - PV$
  2. Variance cost ("VC") =  $EV - AC$
  3. Scheduled performed index ("SPI") =  $PV/EV$ . When SPI equals to 1, it means that the project is on time. When SPI is less than 1, it means that the project performance is less than it was planned. When SPI is more than 1, it means that the project

<sup>1</sup> Performance control refers to any potentials that might reduce the overall performance of the project, which may be due to unexpected technical problem, insufficient resources, technical difficulties, client requires changes in system specifications, and technological advancement ((Anantadjaya and Mulawarman, 2010; Cleland and Ireland, 2006; Flores and Chase, 2005; Meredith and Mantel, 2006; Valle and Soares, 2004).

<sup>2</sup> Cost control refers to any potentials that might throw-off the actual project costs in comparison to the project budgeting, which may be due to technical difficulties, the expansion of scope of work, relatively low bids/estimates, and untimely reporting (Anantadjaya and Mulawarman, 2010; Cleland and Ireland, 2006; Flores and Chase, 2005; Meredith and Mantel, 2006; Valle and Soares, 2004).

<sup>3</sup> Time control refers to any potentials that might delay the project completion, which may be due to technical difficulties, optimistic time estimates, incorrect tasks sequencing, unavailability of materials, personnel, or equipment, incomplete preceding tasks, and customer requests toward modifications (Anantadjaya and Mulawarman, 2010; Cleland and Ireland, 2006; Flores and Chase, 2005; Meredith and Mantel, 2006).

<sup>4</sup> EVA was originated in the Department of Defense in USA since 1967. From its former name of 35 cost/schedule control systems criteria, it was modified into EVA to evaluate better costing and scheduling control (Fleming, 1998; Valle and Soares, 2004). According to Valle and Soares (2004), EVA is used interchangeably today with other terminologies, such as; earned value management ("EVM"), earned value management system ("EVMS"), and earned value technique ("EVT").

performance is more than it was planned.

- Time variance is defined as the difference between scheduled time for work performed and the actual time of work performed. A negative time variance shows that there are delays during the project actual run-down.

## 2.2. Value-Based Management

Despite numerous alternatives in improving organizational performance, such as; total quality management, flat organization, empowerment, continuous improvement, re-engineering, kaizen, team building, and many other performance measurements, the field of Value-Based Management (“VBM”) attempts to provide a much clearer target on what firms should be striving for (Anantadjaya and Yudha, 2010; Koller, 1994), by simply make things simpler.

To-date, the understanding and scope of coverage of value-based management (“VBM”) has transformed itself numerous times since the 1950s (Nasmul, 2011). In the beginning, it focused more on merely determining cost and financial control through budgeting and cost accounting systems. Though monitoring through budgeting and cost accounting systems remain the focal points, by the mid 1960s, modifications have targeted more into providing valuable information for management toward planning and project control (Nasmul, 2011). The emergence of contingency theories in the mid 1970s, which argued that planning and control were different, the approach on VBM has shifted again to emphasize more onto managerial planning and control (Ittner and Larcker, 2001; Nasmul, 2011). By the 1980s, as thoughts in activity-based costing and strategic management emerged, the main concern of VBM shifted toward waste reduction in business processes. Since then, VBM has evolved for the fourth time. By the 1990s, VBM emphasized on creating value of the firm via identifying, measuring, and managing the customer value, innovation, and shareholder returns (Anantadjaya and Yudha, 2010; Ittner and Larcker, 2001; Mansour, 2004; Nasmul, 2011).

To ensure the successful implementation of VBM, management may have to engage, motivate, and reward people who can bring about shareholder value into the organization. It should be implemented in all hierarchical levels of the firm. Also, it should be recognized as part of the firm’s culture. If all business units were to implement VBM simultaneously, it may push the organization performance (Chopp and Paglia, 2002). Though there are numerous frameworks, VBM generally includes these steps (Ittner and Larcker, 2001); (1) identification of the overall objective for shareholder’s value improvement, (2) selecting strategies and organizational design, (3) identifying the value drivers or the performance variable that create value, (4) developing action plan, (5) selecting measurements/indicators, (6) focusing on target, (7) evaluating the successfulness of the action plan and strategies, and (8) assessing the organization’s objective, strategies, and plans and revise them if needed.

As mentioned, organizations now use VBM to observe the value creation activities. Relying on various metrics, the daily practices in measuring the company’s operational performance becomes possible. The superb ideas in mid 1980s from Alfred Rappaport to focus on financial and shareholder value creation has sparked the thought on VBM, even until today ([www.valuebasedmanagement.net](http://www.valuebasedmanagement.net), 2012). The suggestions was seven value drivers; sales growth, operating profit margin, tax rate, working capital investment, fixed asset investment, weighted average cost of capital, and competitive advantage period. This suggestion can also be summarized in economic value added (“ECVA”), shareholder value analysis (“SVA”), and cash flow return on investment (“CFROI”) (Francis and Minchington, 2000; Ittner and

Larcker, 2001; Nasmul, 2011). In the simplest form, VBM can also be inferred to from DuPont analysis to evaluate the level of operating efficiency<sup>5</sup>, asset efficiency<sup>6</sup>, capital structure efficiency<sup>7</sup>, tax efficiency<sup>8</sup>, and growth opportunity<sup>9</sup> (Anantadjaya and Yudha, 2010; Nasmul, 2011).

Hence, the hardcore of VBM is focused on discounted future cash flows, and the real re-shaping of mindsets of management toward maximizing the shareholders' value. In a way, as stated by Koller (1994), VBM combines value creation mindset and management processes and systems. Taking these down into a more operational level, VBM attempts to balance long-term and short-term needs. It means harmonizing between high firm's profitability and capital intensity. Though heavy reliance remains on generic value drivers, such as; sales growth, operating margins, leverage, and turnovers, VBM translates further to increase specificity for the operational level (Copeland, et al, 1995; Koller, 1994). For instance, return on invested capital<sup>10</sup> ("ROIC") and economic profit<sup>11</sup> are used as the basic formula to approach the VBM perspective in building up more detailed specification in trying to measure operational activities within the firm. Hence, Koller (1994) suggests that management should focus on the firm's value by noting gross margin (gross margin per transaction, and number of transaction), warehouse costs (stores per warehouse, and costs per warehouse), and delivery costs (trips per transaction, cost per trip, and number of transactions).

### 3. RESEARCH METHOD

#### 3.1. Research Model

For the purpose of this study, data was gathered previously, immediately following the preliminary studies in project management and entrepreneurship

(Anantadjaya and Mulawarman, 2010). The period of coverage in this study spans from 2009-2012 (only the first quarter). As noted in the preliminary studies, Firm A is an automotive firm in Indonesia that manufactures vehicles, distributes vehicles and spare-parts. Its production plant is located in the outskirts of Jakarta. Firm A is a foreign direct investment firm, and it is the sole agent, assembler, and manufacturer of a certain brand of vehicle. For the purpose of this paper, after-sales services (spare-parts) become the focus in trying to learn the causes of project overrun, including the likelihood on operational and asset inefficiency. In addition, this study also relies on information obtained from locally owned automotive firms, mainly focusing in body shops and engine overhaul works. Those locally owned firms are; Firm B, Firm C, and Firm D, which are all located in Jakarta and Bandung. Aside from noting the differences in handling project management in a foreign direct investment firm and

FIGURE 1: Research Model



<sup>5</sup> Operating efficiency refers to "margin", which is calculated based on the firm's net income divided by total sales (Anantadjaya and Yudha, 2010; Copeland, et al, 1995; Koller, 1994; Nasmul, 2011).

<sup>6</sup> Asset efficiency refers to "turnover", which is calculated based on the firm's total sales divided by total assets (Anantadjaya and Yudha, 2010; Copeland, et al, 1995; Koller, 1994; Nasmul, 2011).

<sup>7</sup> Capital structure efficiency refers to "leverage", which is calculated based on the firm's total asset divided by total equity (Anantadjaya and Yudha, 2010; Copeland, et al, 1995; Koller, 1994; Nasmul, 2011).

<sup>8</sup> Tax efficiency refers to ways of reducing tax legally for firms, perhaps, via combining debts and equity in the firm's capital structure. The use of debt would likely provide tax shields (Anantadjaya and Yudha, 2010; Copeland, et al, 1995; Koller, 1994; Nasmul, 2011).

<sup>9</sup> Growth opportunity refers to ways of maximizing the price-earning ratio of the firm's shares, regardless of negative earnings and/or the level of profitability (Anantadjaya and Yudha, 2010; Copeland, et al, 1995; Koller, 1994; Nasmul, 2011).

<sup>10</sup> According to Copeland, et al (1995), and Koller (1994), "ROIC" is equal to  $M * IC = (\text{revenue} - \text{cost}) * (\text{WC} - \text{FC}) = \text{NOPLAT}/\text{IC}$ , whereby "M" represents margin, "IC" denotes invested capital, "WC" signifies working capital, "FC" symbolizes fixed capital, "NOPLAT" indicates net operating profit less adjusted taxes.

<sup>11</sup> According to Copeland, et al (1995), and Koller (1994), "economic profit" is equal to  $\text{invested capital} * (\text{ROIC} - \text{WACC}) = \text{NOPLAT} - \text{CC} = \text{NOPLAT} - (\text{IC} * \text{WACC})$ , whereby "WACC" denotes weighted average cost of capital, and "CC" stands for capital charge.

locally owned firms, it is essential to evaluate the value, which follows the project completion. Mimicking the focal point in the preliminary studies, particular overhauling projects were chosen to show the deviations in terms of costs, schedule, and time, in those firms.

Research activities were conducted directly in the premises of Firm A, Firm B, Firm C, and Firm D, including direct observations of common practices in project management, and attainment of secondary data to support the objectives of this study (Anantadjaya and Mulawarman, 2010). As prescribed, it is important for managers to minimize the odds on project overrun. Based on this notion, variables chosen to measure the project management are; “cost variance”, “schedule variance”, and “time variance”. Concerning organizational performance, variables chosen in this paper utilizes any available financial data from those organizations to symbolize VBM. It is undoubtedly expected that this study would able to reveal the influencing factors on project variances, and the relatedness to operational and asset level of efficiency.

Aside from the internal aspect of the firm, this study attempts to include externalities. Since the macroeconomic indicators often use to provide the big picture of the country’s economy (Frederica, 2012), such as; full employment, inflation, and growth, it is expected that those indicators also show evidence of influence toward managing projects. The general state of the country’s economy served as the buffer, which often times provided signal to firms during good and bad times. The good times and bad times of the country’s economy are expected to show some levels of significance (Frederica, 2012).

### 3.2. Research Variables and Measurements

As indicators, in terms of project management, variables chosen are; “cost variance”, “schedule variance”, and “time variance” (Anantadjaya and Mulawarman, 2010; Meredith and Mantel, 2006; Valle and Soares, 2004). Continuing on the findings on preliminary studies (Anantadjaya and Mulawarman, 2010), (1) “cost variance” is used to show the comparison between earned value of the budgeted cost of work and actual cost. It is expected that this cost variance is positive to indicate a successful project management (no overrun), (2) “schedule variance” is used to show the comparison between earned value of the budgeted cost of work and planned value of the budgeted cost of work. It is expected that this schedule variance is positive to indicate a successful project management (not behind schedule), and (3) “time variance” is used to show the comparison between scheduled time for work performed and actual time. It is expected that this time variance is positive to indicate a successful project management (no delay).

As mentioned earlier, in this study, variables chosen to proxy value-based management are mainly; “margin” to note the “operational efficiency”, and “turnover” to show the “asset efficiency”. Through the calculation on margin, it is expected that the operational activities are able to show the level of operational efficiency. As noted previously, given the simple formula of margin, as a proxy to firm’s operational efficiency, it becomes apparent that to have an increase in margin, *ceteris paribus*, net income has to rise, and total sales slide, or net income slides, and total sales rises, or both net income and total sales rise at different rates. Likewise, it is expected that the calculation on turnover can reveal the firm’s asset efficiency. Again, as noted, the simple formula of turnovers as a proxy to firm’s asset efficiency shows that total sales has to rise, *ceteris paribus*, and total assets slide, or total sales slide, and total asset increases, or both total sales and total asset jump at different rates.

As indicators of macroeconomic conditions, this study relies on the country's gross domestic product ("GDP"), interest rates, and inflation rates. It is expected that as GDP rises, the results of project management would be closer to the ideal situations; on time, and on budget. As the level of interest and inflation rates rise, it is expected that the results of project management would require overtime and may face over-budget.

## 4. RESULTS & DISCUSSIONS

### 4.1. Overview of Study

The comparison study between the project planning and actual shows that the project overrun happened because particular materials and spare parts were unavailable. Based on the interviews with the overhauling project managers of those firms, the unavailability occurred since the vehicle to be re-manufactured was relatively old vehicles. The non-readiness of material and spare-parts for old vehicles put those re-manufactured projects into delay.

Based on the comparison analysis and discussions with the project managers, the summaries of differences on each of the tasks within the project run-down and project planning are shown below;

- Dismantling processes in the actual project were taken approximately five more days as compared to the initial planning. This was mainly due to the inaccurate risk assessment on dismantling work.
- Evaluation processes in the actual project occurred during the actual project because the project members execute the project based on experience of mechanics and technicians, instead of fully conforming to the planning guide.
- The actual cleaning and finishing processes took longer than it was originally expected. This was mainly due to the total amount of resources during the actual run-down of projects were less than it was originally estimated. Originally, the cleaning processes were only estimated with an average of three resources. However, during the actual project run-down, project members used only two resources for cleaning processes. The finishing processes were estimated with an average of two resources. Nonetheless, during the actual project run-down, project members used only one resource. Undoubtedly, this was decided to reduce cost. Such cost reductions were expected to provide cushion toward the possibilities on project overrun at the end.
- The actual engine modification processes<sup>12</sup> took longer time than it was originally expected as the project included semi-skilled workers, including interns and newly hired personnel. The project planning did not rely on semi-skilled mechanics and technicians, or interns, or newly hired personnel. This has pushed the time required toward project completion. The available data and interview sessions revealed that the project planning was far too different from the actual project run-down. The combinations of skilled workers and semi-skilled workers were not fully conformed. The main reason was simply due to the overlapping projects during particular periods. For instance, the transmission overhaul was originally planned with an average of one skilled worker. However, during the actual transmission overhaul, there was one semi-skilled worker, who was accompanied by one skilled worker, who was handling multiple projects simultaneously. The axle overhaul also experienced the similar situation. Originally

<sup>12</sup> Based on the interview with project managers, the engine modification processes include multiple tasks, such as; transmission overhaul, axle overhaul, new engine installation, steering mechanism overhaul, braking mechanism overhaul.

planned with three skilled workers, it ended up with three semi-skilled workers, who constantly required assistance and guidance.

- Based on the interview sessions and analysis of available data, an average of two additional days for quality control was required due to substandard project members in handling the actual project run-down. To ensure satisfactory quality as per clients' requests, extra quality audit prior to finishing and approval processes by the management were unavoidable.

#### 4.2. The Evaluations on Project Management

Based on the analysis and comparisons between project planning and the actual project run-down, the schedule overrun had occurred due to:

- Unavailability of spare parts, particularly axles, engine parts, brakes mechanism, had proven that project overrun occurred in the phase of production stage. On top of the unavailability of spare parts, investigation on physical checking on spare parts on-hand took longer than usual. There were times that such physical checking were delayed by personnel absences due to sickness and/or family matters, personnel paid-leaves of absences, shortages of personnel due to accompanying interns and/or newly-hired staff, public holidays, blackout/power down, or long-queue of projects.
- Upon designing the project planning, each of the workers is assigned to perform specific tasks in a day. Nonetheless, the reality showed that workers would have to do multitasking everyday to improve efficiency on each of the projects.
- During the course of project run-down, the work sequences were not following the working instructions on the original planning. The completions of each of the step were substantially longer due to the delay of previous processes. In fact, the potential delay had already been recognized since the commencement of the project. This may be the major contributor to the overall time efficiency.
- The schedule comparisons between time schedules in initial working instruction, project planning, and actual project run-down are shown below;

**Table 1: Comparisons on Time Schedule**

Working Instruction (average)		Project Planning (average)	Actual Project (average)
Pessimistic	45 days	15 days	<b>60 days</b>
Optimistic	30 days	7 days	

Source: Firm A, Firm B, Firm C, Firm D, 2009-2012, modified

Table 1 shows the comparisons on the project timeline. It is clearly shown that the working instructions were not followed in the formulation of the project planning. Using the most pessimistic approximation, the working instructions were developed based on semi-skilled workers. The optimistic approximation was developed based on the skilled labors for both working instructions and project planning period. Of course, the pessimistic-based approach was the safest means to approximate the project budgeting. Nonetheless, using the perspective of pessimistic approach, the actual project run-down was beyond the most conservative approximation, anyhow. The main difference was due to assumptions used in the level of experience of technicians and mechanics. Also, the interview sessions revealed

that the actual project run-down missed the pre-calculated approximation due to inadequate numbers of personnel, who can manage the projects as they received.

Those average results indicate the intricacies in managing projects. The customized orders also have added the level of difficulties toward project completions. The interview sessions and direct observations revealed that project members were independently trying to take on a more optimistic approach in handling the project. Aiming for a total of 45 days, the project members have taken multiple steps forward by cutting the working instructions into a mere 15 days. If this were realized, the actual project would have saved 30 days. This should have been a remarkable achievement. Nonetheless, the actual project run-down missed the mark by 50%. As mentioned previously, delays occurred due to shipments of materials and spare parts. As the shipment was beyond the management control, it would have been difficult to forecast accurately on the actual day of arrivals. The difference cost and duration of the project planning and actual are shown below;

**Table 2: Comparisons on Project Planning and Actual**

Project	Total Duration (in days)	Total Cost	Average Cost (per day)
Planning (pessimistic assumption)	15 days	Rp. 25,785,600	Rp. 1,719,040
		US\$2,865	US\$191
Actual	60 days	Rp. 48,825,350	Rp. 813,756
		US\$5,425	US\$90.42
<b>Difference</b>	<b>45 days</b>	<b>Rp. 23,039,750</b>	<b>Rp. 511,994</b>
		<b>US\$2,560</b>	<b>US\$56.88</b>

Note: the conversion into US dollars is based on the exchange rate of Rp. 9,000/US\$1

Source: Firm A, Firm B, Firm C, Firm D, 2009-2012, modified

The above table shows that the difference in total duration of the project is 45 days, at a total cost of US\$2,560. The above table shows the cost inefficiency of about US\$56.88 per day. This table reveals another important issue. Looking at the average cost per day, the initial project planning was estimated at about Rp. 1.7 million/day, for an estimated of 15 days. The actual project lasted for 60 days, but at approximately 47% lower than it was originally budgeted. This indicated cost savings. Nonetheless, despite the cost savings at a rate of 47% lower than it was originally budgeted, the average project run-down missed the target.

### 4.3. EVA

Earned value analysis in this study is very useful to measure the overall performance of the project. Based on the interview sessions with the project managers, EVA can be calculated while the firms had only completed about two-thirds of all project phases. Hence, following table provide such calculations;

**Table 3: Comparisons on Variance**

<b>EV</b> = Rp. 25,785,600 (2/3) = Rp. 17,190,400	<b>ST</b> = 15 days
<b>AC</b> = Rp. 48,825,350	<b>AT</b> = 60 days
<b>PV</b> = Rp. 25,785,600	
<b>Cost Variance</b> = EV – AC = Rp. 25,785,600 (2/3) - Rp.48,825,350 = <b>Rp (31,634,950)</b>	
The negative cost variance means that the actual project had been <b>overrun</b>	
<b>Schedule Variance</b> = EV – PV = Rp. 25,785,600 (2/3) - Rp. 25,785,600 = <b>Rp (8,595,200)</b>	

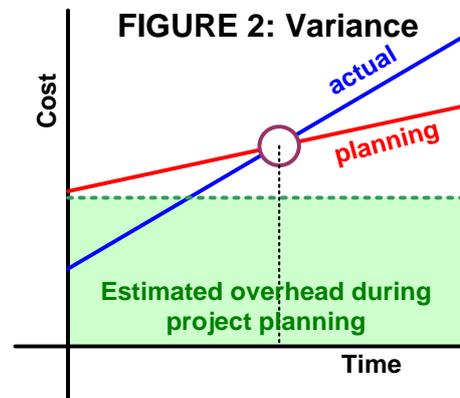
The negative schedule variance means that the actual project had been **behind schedule**

$$\text{Time Variance} = \text{ST} - \text{AT} = 15 \text{ days} - 60 \text{ days} = (45) \text{ days}$$

The negative time variance means that the actual project had been **delayed**.

Source: Firm A, Firm B, Firm C, Firm D, 2009-2012, modified

Table 3 provides financial evidence that the average projects had been overrun, behind schedule, and delayed. The graphical illustration may provide easier visualization on what has happened with the actual project run-down. It appeared that the project planning was pretty much calculated using a more “lenient” slope. This was particularly obvious with reliance on skilled workers to begin with. For this reason, the estimated overhead was significantly higher. During the actual project run-down, nevertheless, the slope was a bit steeper due to the heavy reliance on semi-skilled workers. Though the initial overhead may appear lower than what it was planned, yet, the running cost became faster at a steeper rate.



#### 4.4. Project Control and Monitoring

In all projects, management has inserted the control and monitoring activities. The average planning toward control and monitoring activities were designed at least once a week. Usually, following the first and/or second week of controlling and monitoring, the project members have come to realize that there were issues concerning materials requirements, unavailability of spare-parts, for instance. Though the lead-time required for ordering process and delivery have been taken into account, nonetheless, these processes experienced delay that put other work breakdowns on-hold. On average, it was also apparent that contingency planning was not carefully formulated. Or, contingency plans were only documented, but they were not readily executed when need arose.

Considering the performance indexes, the following table shows the comparisons between cost and schedule of the average projects.

**Table 4: Average Performance Indexes**

	Calculations on Indexes (average)
CPI = EV/AC	Rp. 17,190,400/Rp. 48,825,350 = <b>0.35</b>
SPI = PV/EV	Rp. 25,785,600/Rp. 17,190,400 = <b>1.50</b>

Source: Firm A, Firm B, Firm C, Firm D, 2009-2012, modified

From the above table, it is apparent that CPI is significantly less than 1. With a CPI of 0.35, it indicates that the actual spending on project run-down was more than it was originally planned for. Nonetheless, SPI shows 1.50, which means that the project performance is actually more than it was originally planned for. Hence, the average of projects that firms have worked-on appeared to be performing beyond the planning, and/or standards. This may be due to the highly customized orders, whose materials and spare-parts may not be readily available in the market. Firms may have to put them in special orders as well. Undoubtedly, this has considerably influenced the timeframes on project completion.

Such findings were confirmed with some insights on controlling and monitoring processes during interview sessions and data evaluation;

- Issue on performance control occurred unexpected due to parts unavailability, though originally special orders have been lodged well in advance. The continuations of projects were compromised since project members must put the progress on-hold.
- Issues on cost control occurred upon cost overrun during the production phase.
- Though minimal, but, executions of contingency planning were attempted. However, such contingency plans were unable to patch-up the sequencing problem. This was mainly due to the sequencing during the actual project run-down was inefficient.

#### 4.5. VBM

In terms of VBM, there were evidence that operational efficiency and asset efficiency were recognized. As stated, one way to evaluate value in organizations was based on VBM (Nasmul, 2011). This approach has been widely used in many firms following the expansion of traditional management planning and control. It integrates recent innovations in the practice, and focuses on emerging trends in managerial accounting, which were beneficial for analytical and empirical researches in managerial accounting (Ittner and Larcker, 2001). DuPont analysis has been considered to have substantial relationship to performance of organizations (Hubbard, 2008; Soliman, 2007; Weaver and Weston, 2003).

As mentioned earlier, in this study, variables chosen to proxy value-based management are mainly; “margin” to note the “operational efficiency”, and “turnover” to show the “asset efficiency”. Through the calculation on margin, it is expected that the operational activities are able to show the level of operational efficiency. As noted previously, given the simple formula of margin as a proxy to firm’s operational efficiency, it becomes apparent that to have an increase in margin, *ceteris paribus*, net income has to rise, and total sales slide, or net income slides, and total sales rises, or both net income and total sales rise at different rates. Likewise, it is expected that the calculation on turnover can reveal the firm’s asset efficiency. Again, as noted, the simple formula of turnovers as a proxy to firm’s asset efficiency shows that total sales has to rise, *ceteris paribus*, and total assets slide, or total sales slide, and total asset increases, or both total sales and total asset jump at different rates.

##### 4.5.1. Operational Efficiency

As mentioned, operating efficiency refers to “margin”, which was calculated based on the firm’s net income, or sometimes, earnings before interests (“EBIT”) were also used, divided by total sales (Anantadjaya and Yudha, 2010; Copeland, et al, 1995; Koller, 1994; Hubbard, 2008; Nasmul, 2011). Margin provides insights of the firm’s level of profitability on each of the business transactions. In this case, margin provides invaluable information on the level of profitability in handling automotive projects. In other words, margin attempts to describe how well the firm manages its costs.

**Table 5: Average Operational Efficiency**

	2009	2010	2011	2012*
<b>Average Margin</b>	-2.5%	10.1%	12.5%	7.5%

\* these figures were annualized

Source: Firm A, Firm B, Firm C, Firm D, 2009-2012, modified

The above table indicates that the average margin was improving. From a negative amount of -2.5% in 2009, the average margin has jumped to as much as 12.5%, before it slides down

again in 2012. The higher margin indicated that firms have been successfully managing their project costs. Hence, though the average actual project run-down may have indicated setbacks during the period of 2009-2012 until the first quarter, the average operational efficiency did not appear to conform to such delays.

#### 4.5.2. Asset Efficiency

As mentioned, asset efficiency refers to “turnover”, which is calculated based on the firm’s total sales divided by total assets (Anantadjaya and Yudha, 2010; Copeland, et al, 1995; Koller, 1994; Nasmul, 2011). This ratio indicates how often the assets are being “turned over” to generate revenue. As prescribed, the amount less than 1 signifies heavy capital requirements industry. Aside from indicating the level of asset efficiency, turnovers may also indicate pricing strategy. Looking at the perspective of total asset turnover (“TATO”), for instance, a relatively high TATO may portray a relatively low margin, and vice versa (Hubbard, 2008; Soliman, 2007).

**Table 6: Average Asset Efficiency**

	2009	2010	2011	2012*
<b>Average Turnover</b>	1.5x	3.2x	7.5x	9.7x

\* these figures were annualized

Source: Firm A, Firm B, Firm C, Firm D, 2009-2012, modified

The above table indicates that the average turnover was improving. At a glimpse, the trend appeared to mirroring the average margin in the previous table. From a negative amount of -1.5 times in 2009, the average turnover has jumped to as much as 9.7 times. The higher turnover indicated that firms have been successfully managing their project run-down; from the beginning to the completion. Hence, though the average actual project run-down may have indicated a slim increase during the period of 2009-2012 until the first quarter, the average asset efficiency did not appear to conform to such delays.

## 5. CONCLUSION & RECOMMENDATION

### 5.1. Conclusion

From the findings above, it is safe to conclude that the average project of these firms were considered overrun, including running behind the planned schedule with delays. Nevertheless, from the VBM perspective, though the average projects were delayed, the margin and turnover appeared acceptable. This meant that such delays did not show any evidence of declining in values, as returns for the companies. Some points were worth noted, as follows; (1) Quality control remained align with the prescribed project planning. This was due to the back-up using computerized systems in maintaining the project schedule and cost, particularly, the value created for firms, perhaps, (2) Product unavailability appeared troublesome. However, this appeared to be anticipated since most orders were customized, and (3) Further cost reductions remained possible, particularly since the mechanics and technicians were relatively experienced. Though not all of the mechanics and technicians were highly skillful, however, as time passes, their level of experience increases. Future projects could have been handled a lot more better.

### 5.2. Suggestion

Though this study was able to bring up evidence on the project overrun, this study was also able to show that the project is well under “control”, in terms of VBM. It is suggested that the project working instructions may have to be constantly modified to reflect the current

situation and condition of the firms. In particular, portions of skilled and semi-skilled labors, availability of parts, and other materials requirements, should be monitored and/or frequently updated.

Some notable suggestions can be formulated, as follows; (1) risk management may have to be accounted for, perhaps, in terms of market risk, credit risk, and operational risk, to note for externalities, which may potentially delay the completion of the projects, such as; delivery time, availability of parts from vendors, availability of personnel as planned, and the macro economic condition of the country - inflation, interest, and exchange rate, (2) attempt to reduce the level of optimism during project planning to mirror the real conditions of labors, (3) spare part unavailability may have to be predicted in the beginning, perhaps, by simply adding more time toward project completion to reduce the likelihood of overrun and delays, (4) work sequences may have to be verified as the projects were commenced,

Future studies may want to include more variables, more projects, and more firms. This would be considered essential in making a lot more proper comparisons; not only from the perspective of project management, but from the perspective of VBM. At this time, at least, this study provides the preliminary work on such concepts.

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