THE PERCEIVED IMPACTS OF THE IMPLEMENTATION OF BALANCED SCORECARD IN PETROVIETNAM POWER CORPORATION

THESIS

FOR THE GRADUATION OF MASTER OF ADMINISTRATIVE SCIENCES ON FINANCIAL ADMINISTRATION AND PUBLIC SECTOR ACCOUNTING

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Dear Professor Jarmo Vakkuri,

I would like to declare that this thesis is done by myself under the supervision of Professor Jarmo Vakkuri and the whole content of this research was written in English by myself.

Your sincerely

Do Thi Thanh Binh
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ABSTRACT

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Title: “The perceived impacts of the implementation of Balance Scorecard on the financial efficiency of PetroVietnam Power Corporation”.
Master’s thesis: 118 pages including cover page, 1 appendix.
Keywords: Balanced Scorecard, performance measurement, PV Power.

This research studied the perceived impacts of the implementation of Balanced Scorecard on PetroVietnam Power Corporation’s financial efficiency. More specifically, it explores the current situation of performance measurement of PertroVietnam Power Corporation (abbreviated as PV Power) and investigates the perception of PV Power’s top and middle managers about the impacts of the Balanced Scorecard implementation on PV Power’s financial efficiency. This research applied a qualitative research method such as documentary analysis and in-depth interviews within top and middle managers of PetroVietnam Power Corporation.

The findings from documentary analysis and interviews show problems of PV Power’s performance measurement such as information in business production plans and performance reports are unsystematic and not regularly. In addition, the findings from interviews illustrate PV Power’s expectation of a comprehensive performance measurement system. Final, the finding from interviews indicate the perception of over 52 percent of the respondents on the interaction between non-financial and financial indicators illustrating the prediction that setting up non-financial and financial indicators interactively and in cause-and-effect linkage for translating strategic objectives into actions and measuring performance would lead to the improvement of financial efficiency of PV Power. This finding can be considered as the perception illustrating prediction that the implementation of Balanced Scorecard in PV Power would lead to the improvement of PV Power’s financial efficiency because of the following reasons. First, non-financial and financial indicators provided in the interviews were designed in the manner of Balanced Scorecard. Second, the perception of PV Power’s managers on setting up non-financial and financial indicators interactively and in a cause-and-effect linkage can be considered that this setting lies in critical steps to build a Balanced Scorecard. The last reason is that the finding gathered from PV Power’s perception on the interaction between non-financial and financial indicators is similar to the results provided by researchers implemented studies on Balanced Scorecard such as Davis and Albright (2004), Othman (2006), and (Ong et al., 2010).
CHAPTER 1: INTRODUCTION

1.1 Research background

PetroVietnam Power Corporation (abbreviated as PV Power) is a state own corporation belonging to The Vietnam Oil and Gas Group (abbreviated as PVN), which is the first leading economic group in Vietnam contributing about thirty percent of GDP to the country annually. The main duty of PV Power, which has nineteen subsidiaries, is to invest, build and operate power plants in the whole country in order to supply electricity and to ensure the national power security, a political mission assigned by the Government of Vietnam. PV Power is the second ranked position among the biggest electricity suppliers in Vietnam now.

Since its establishment in 2007 up to now, PV Power has no comprehensive and specific strategy and hasn’t applied Balanced Scorecard yet for translation strategy into action as well as performance measurement. There are only short term operational plan for one year and long term operational plan for five years, in which several main targets called as strategies are mixed with general production plans. Operational results of PV Power are assessed once per two weeks, monthly, quarterly and annually. Only some financial indicators, production output, actual progress of new investment projects and some non-financial indicators of tasks assigned to divisions are assessed at the end of each two weeks, each month, each quarter and each year to know whether such indicators were completed as planned. However, due to the lack of comprehensive performance measurement system, PV Power’s business production plans were built not basing on the consideration of the balance between financial and non-financial indicators, short-term and long-term business production plans were not comprehensive and causal linkages between indicators were not considered adequately. As a result, the roots of some failures in business and production of PV Power, some times, were not defined exactly and not timely for settlement, performance appraisal has not been carried out successfully, and financial performance almost has not achieved planned targets.

Therefore, the purpose of my research is to study how would the implementation of comprehensive performance measurement such as Balanced Scorecard, which contains the balance between financial, customer, internal business process, and learning and growth perspectives, impact financial efficiency of PV Power. Basing on research results I will propose to improve a comprehensive performance measurement system for PV Power.
In order to do this research, first of all I collected a literature review for this thesis by collecting researchers’ investigated results in terms of effectiveness of Balanced Scorecard implementation or, in other words, the impacts of Balanced Scorecard implementation on financial efficiency. This literature review will be a theoretical base for this research. In the second step I analysed real situation of financial efficiency and performance measurement of PV Power in a period from year 2007 to 2010 through financial statements, financial information, production and business planning reports, and reports of results of production and business activities. In addition, applying Balanced Scorecard theory to appraise and find out the gaps between PV Power’s current performance measurement and Balanced Scorecard theory. This is also to know to what extent of Balanced Scorecard PV Power’s performance measures are. In final step I conducted interviews PV Power’s managers to gather more information about PV Power’s current performance measurement, their attitudes towards performance measurement, ways to develop performance measurement in PV Power, and the perception of PV Power’s managers about interactions between non-financial indicators and PV Power’s financial efficiency. Basing on these results, I analysed and argued how would the use of four perspectives of Balanced Scorecard impact PV Power’s financial efficiency and suggested the way to develop PV Power’s performance measurement system.

The linkage between three main steps presented in this part is that the presentation of effectiveness and impacts of Balances Scorecard on financial efficiency, which were investigated by many researchers, is to prove that many organizations in the world gained success with Balanced Scorecard. Analysing PV Power’s financial efficiency and performance measures is to know whether PV Power’s real finance is efficient, what are advantages and disadvantages of the current performance measurement of PV Power, and find out the gap between of PV Power’s performance measurement comparing with Balanced Scorecard theory. Basically, these will be a main basis to propose a solution developing PV Power’s performance measurement. Conducting interviews with PV Power’s managers is to gather further information related to PV Power’s performance measurement, their attitudes towards performance measures, interactions between indicators within one perspective and within perspectives or between non-financial and financial indicators, and ways to develop performance measurement in PV Power in order to know whether they perceive fully about performance measures, their ideas about developing performance measurement in a way of Balanced Scorecard, and their ideas about how would the use of non-financial indicators impact financial performance. This will be a supplemental basis supporting my suggestion to develop PV Power’s performance measurement
system and bring out a detail solution in terms policy implication such as training, personnel issues, etc., to apply Balanced Scorecard in PV Power.

Thus, the title of my thesis is “The perceived impacts of the implementation of Balanced Scorecard in PetroVietnam Power Corporation”.

My expectation in this research, based on the outcome of the research, is to help PV Power to improve its performance measurement by using a comprehensive performance measurement such as Balanced Scorecard to achieve better financial efficiency of the corporation.

1.2. The research target

The aim of this research is to answer research question as follow.

Main question:

How does Balanced Scorecard implementation impact financial efficiency of PetroVietnam Power Corporation?

Sub questions:

1. How will learning and growth contribute to the improvement of internal business production process of PV Power?
2. How will the improved performance in internal business production process meet the desired customers’ expectations and satisfactions?
3. How will customers’ satisfactions eventually lead to the improvement of financial efficiency of PV Power?

1.3 Organization of the research

This research is organised into five chapters. The first chapter is to introduce about research background, research target and research organization. More specifically, the description on detail purpose for this research and the description on linkages between five chapters of this research are done.

The second chapter of this research is to present literature review of financial efficiency, performance measurement theory and Balanced Scorecard, in which concept and measurement
of financial efficiency were presented. Next, introduction of performance measurement, setting a performance measurement system in an organization, limitations of traditional performance measurement and problems of application in performance measurement also were presented. The final and major issue of this chapter is Balanced Scorecard. In this chapter, general introduction of Balanced Scorecard, its advantages, the way it works and the method of building Balanced Scorecard were presented. Moreover, many research findings in terms of popularity, effectiveness of Balanced Scorecard and impacts of Balanced Scorecard implementation on financial efficiency reported from many researchers were collected and reported.

The third chapter is to present research methodology, in which research method, sample design, research procedure, method of collecting data and data analysis were presented. A guide book of Mack et al. (2005) is the main source of document which has been used for the methodology of this research.

The fourth chapter is to present current situation of PV Power’s performance measurement. Specifically, general introduction and context of PV Power, main operational fields, mission, vision and strategy of PV Power were presented. In addition, operational results of PV Power in four-year period from year 2007 to 2010 in the combination with the financial efficiency analysis were provided. Next, the current use of performance measurement in PV Power was explored and presented in this chapter. The analysis of this PV Power’s performance measurement was done basing on the application of Balanced Scorecard theory to find out the gap between PV Power’s performance measurement and Balanced Scorecard approach. Last but not least, the findings from documentary analysis and interviews were found and presented in this chapter.

The last chapter is to present the limitation of this research, provide conclusion and recommendations for PV Power’s performance measurement. Specifically, conclusion and recommendation were provided basing on the findings of this research and analyses referred from other researchers. Final, thesis contributions in terms of practice and theory were also presented in this chapter.
CHAPTER 2: LITERATURE REVIEW

2.1 Financial efficiency and performance measurement in an organization setting

2.1.1 Concept and measures of financial efficiency

To survive and thrive in a competitive environment, it requires the firm to provide products and services with high quality, diversity, reliable and on time delivery, and low cost. It becomes vital to improve performance efficiency and financial efficiency of the firm in order to meet requirements of existence and thrive in a competitive environment.

According to Kaplan and Cooper (1998), Quang (2011), and lecture delivered by Professor Jarmo Vakkuri (2011), operational efficiency of an organization considers two main aspects, these are input and output. Specifically, regarding input, consider the saving aspect to know whether could the services have been produced using less resources. On the other hand, regarding output, consider the augmenting aspect to know whether could there be more services produced at the same level of resources. This means that efficiency is about producing maximum output with minimum input.

Efficiency measures

In order to measure financial efficiency, Quang (2011, page 180) defines criteria of financial efficiency as follow. Firstly, financial efficiency is a comparison between output and input:

Formulation 1: Financial efficiency = \[
\frac{\text{Output}}{\text{Input}}
\]

Or, it is a comparison between input and output:

Formulation 2: Financial efficiency = \[
\frac{\text{Input}}{\text{Output}}
\]

The higher calculated result of formulation 1 the higher business result and vise versa in formulation 2. Quang (2011, page 181) also defined criteria of input and output as follow. \textit{First}, basing on the organization’s report of business production result to define output, which
includes total turnover of goods sold and services supplied, gross profit of goods sold and services supplied, profit before tax, and profit after corporate income tax.

Second, Quang (2011, page 181) stated that there are two different ways to define input. The first way is basing on the balance sheet to define input, which includes total assets, total owned equity, total non-current assets, and total current assets. The other way is basing on the report of business production result, input defined includes costs of goods sold and services supplied, expenses for selling goods, management costs, financial expenses, and other expenses.

Formulation 1 reflects that one dollar of input, which includes capital, labor cost, material, equipment, etc., creates how much dollars of output, which include turnover, profit, etc., in a business period. The higher result of this criterion the better efficiency of the organization. Formulation 2 reflects one dollar of output, which includes turnover, profit, commodity output in value, etc., needs how much dollar of input such as capital, material, labour cost, etc. The lower result of this criterion the higher efficiency of business activities.

Increasing financial efficiency is one of the most important methods of the organization to foster sustainable growth of economy (Quang, 2011, page 179). Therefore, in order to increase financial efficiency, input should be lower to produce same volume of output or output should be higher with the same input expenses.

**Ways to lower costs and increase productivity**

Because the organization’s financial efficiency is defined by its input and output, there is some ways to achieve financial efficiency such as lower costs or improve productivity as follow. *Firstly*, according to Kaplan and Cooper (1998), some ways to lower production cost such as lowering materials purchase prices, decreasing direct labor cost; reducing machine-related costs, changing from high-cost-to-serve customers to low-cost-to-serve customers. Furthermore, considering the relationship with suppliers it is necessary to choose low cost, not low price suppliers. In addition, Kaplan and Cooper (1998) suggest that the greatest chances for companies to save cost can come from upstream operations. By understanding the costs related to ordering, receiving, inspecting, moving, storing and paying for materials companies can make better decision in choosing the lowest cost suppliers, not just the lowest price suppliers. Traditionally, accessing to low-cost raw materials, energy sources, or financial capital and an
ability to invest in physical capital to achieve economies of scale and scope is one of the ways to gain competitive advantage for the organization (Kaplan and Norton, 2002).

Secondly, Bernolak (1997) suggests that there are a few typical factors and methods that can be considered to improve productivity as follows.

- Enhancing human resources by improving the education, training, working conditions, communication of what is expected and feedback on how performance rates, improving the involvement of employees in matters that affect them, productivity, and non-financial and/or financial productivity incentives.
- Regarding the organization, it is necessary to have clear definition of objectives in writing, better planning and scheduling, shorter meetings and clearer presentations.
- Focusing on productivity through focal person or persons for productivity improvement in an organization.
- Cutting out waste by reducing or eliminating unnecessary duplications, waste of materials, energy, identifying and eliminating old, antiquated requirements that are no longer needed.
- Eliminating productivity barriers such as resistance to change, being afraid of the unknown, ignorance of productivity and its importance and methodology, apathy, limitations of bottleneck areas, and lack of top-management support.
- Using properly technology in a way of being simplified, standardized, smoothened, restructured, and then analysing whether the existing technology is adequate or new technology needs to be introduced. It is important to make as much utilization of capital assets as possible;
- Regarding productivity culture, a new organizational attitude needs to be developed, in which the following questions should be considered regularly such as is this operation needed and why? Could this work be done in a better way? Could this operation be standardized or simplified? Does any one in the organization have a set of measures which show how he or she is doing? Is he or she doing the "right thing" and doing it in the "right way"?

Thus, in order to achieve and improve financial efficiency, a firm needs to better manage input costs and increase output. It requires the firm to have a comprehensive and effective performance measurement system for its performance management and measurement.

2.1.2 Performance measurement in an organization setting
2.1.2.1 Introduction of performance measurement in an organization

Poister (2003, page 4) indicates that “performance measurement is intended to produce objective, relevant information on program and organizational performance that can be used to strengthen management, and inform decision making, achieve results and improve overall performance, and increase accountability”. Performance is very important for keeping a company on track in achieving its objectives because “what you measure is what you get” (Kaplan and Norton, 1992).

In other words, Atkinson, Waterhouse and Wells (1997) argue that performance measurement system evaluates how well the strategy has met stated objectives, helps managers to evaluate how well the existing systems achieve their objectives and support the evaluation of alternative system, evaluates and reports process results to help members assess whether the chosen processes are operating as intended. In addition, according to Poister (2003, page xvi), the benefit in effectively designing and implementing performance measurement system is that managers can be provided a tool to maintain control over their organizations, a mechanism to govern bodies and fund agencies to hold organization accountable for producing desired kinds of results. Data can be produced to contribute to more informed decision making, help managers reward success and take corrective action to avoid replicating failure.

The importance of performance measurement system has been reported by many researchers. First, performance measurement systems reflect the strategic objectives of a firm under stable operating conditions (Euske, Lebas and McNair, 1993). These systems can be used to force an organization to focus on the right issue and can be considered as an important aid to make judgments and decisions because organizations can use performance to identify success and identify whether they are meeting customer requirements. The organization also can use performance to identify where problems, bottlenecks and waste exists and where improvements are necessary, ensure that decisions are based on facts, not supposition, emotion or intuition, and show if improvements planned, actually happened (Parker, 2000).

Second, Atkinson, Waterhouse, and Wells (1997) found that performance measurement system is the heart of the control system that provides for organizational learning, a vital management system that includes both financial and non-financial measures of performance. This system must do four things such as it helps the company evaluate the value received from suppliers and employees, evaluate the value provided to the stakeholders, guide the design and
implementation of processes, and evaluate the company’s planning and the contracts negotiated between the company and its stakeholders. In addition, an effective performance measurement system must be an integral part of the management process (Kaplan and Norton, 1993), help managers of the organization make better decisions, improve performance, both require and provide general accountability (Poister, 2003). Moreover, this system should reflect results not the activities used to produce results, contain normalised metrics that can be used in benchmarking, be seen to be practical and easily understood by all, provide a continual self-assessment, use reliable and robust measures, provide a benefit that exceeds the cost, and have clear ownership of all measures (Parker, 2000).

Finally, Lebas (1995) argues that management could hardly exist without performance measurement. Thus, performance measurement helps managers to answer five strategically important questions: Where have we been? Where are we now? Where do we want to go? How are we going to get there? How will we know that we got there?

2.1.2.2 Setting a performance measurement system in an organization

In order to setting an effective performance measurement system, Poister (2003, page 22-100) introduced ten steps in processes of design and implementation as follows.

- Step one is to secure managers’ commitment at the outset to the design, implementation, and utilization of the performance measurement system, otherwise it is probably not a workable situation for developing a useful system.
- Organizing the system development process is a main content of step two. This means developing system, adopting a design and implementing process.
- Step three is to clarify system purpose of performance measurement system and parameters within which it is to be designed.
- In step four the organization is required to identify the intended outcomes and other performance criteria to be monitored by the measurement system.
- Step five is considered as the most important issue in the performance measurement process in order to define, evaluate and select indicators, which should be reliable, valid, meaningful, understandable, balanced and comprehensive, clear in terms of preferred direction of movement, timely and actionable, resistant to goal displacement, and cost-sensitive.
- The next step is to develop data collection procedures.
Step seven is to specify the system design.

Conducting a pilot of the system before committing to full-scale implementation is a subsequently required step in order to get a better understanding of how well the system work and of particular problems that need to be addressed.

Step nine is to implement the full-scale system.

The last step is to use, evaluate and modify the system.

In addition, it is necessary to consider the following issues in order to suite the purpose of a measure and achieve effective a performance measurement system. First, the formula should have an appropriate precision (Tangen, 2005a) and be easily measured and understood (Crawford and Cox, 1990), should stimulate improvement (Kaplan and Norton, 1992), and should be as accurate as possible (Neely et al., 1997). Second, objective criteria should be used in the formula rather than subjective (Neely et al., 1997). Third, ratios should be used instead of absolute numbers (Globerson, 1985). Fourth, performance measurement should be considered as a system rather than focus on individual measures (Neely, 2004) and be designed to reflect the most important factors influencing the productivity of the different processes that can be found in the company (Tangen, 2004a). In addition, performance measurement should not only be derived from strategic objectives to ensure that employee’s behaviour is consistent with corporate goals (Kaplan and Norton, 1992; Globerson, 1985) but also provide timely, relevant and accurate feedback and be a part of a closed management loop (Globerson, 1985). Performance measurement should also include both financial and non-financial performance measures (Kaplan and Norton, 1992), contain the consideration of short-term and long-term results, have an appropriate balance, guard against sub-optimization, be easily accessible, and consist of performance measures that have comprehensible specifications (Tangen, 2004b).

Furthermore, there are also several common failures or pitfalls to avoid. The formula should not indirectly support negative behaviours (Skinner, 1986), should not measure someone on something over which they have no control (Neely et al., 1997) and should not be based on misleading “weighting”. It is important to pay attention to limiting the data requirements to both the necessary detail and frequency. In addition, it is necessary to consider whether the data are needed for a specific useful purpose, and whether the cost of producing is not higher than expected benefit (Bernolak, 1997) because a large number of performance measures can increase the risk of information overload, which is practically impossible to distinguish information with
high importance from information with less value and may be a waste to collect data if they are ignored (Tangen, 2005).

2.1.2.3 Contemporary issues in performance measurement

Limitations of traditional performance measurement

Although the importance of performance measurement was defined by modern researchers as presented in Section 2.1.2.1, performance measurement has gone through the stages of development from traditional stage and reached the modern level of current performance measurement. Ghalayini (1997) recorded that there are two phases of the literature concerning performance measurement. The first phase began in the 1880s and ended in the 1980s which emphasized financial measures of performance such as profit, return on investment, and productivity. The second phase started in the early 1980s as a result of global competition that changed customer requirements and forced the implementation of new technologies and philosophies of production and management (i.e. CIM, FMS, JIT, OPT, and TQM1).

According to Eccles (1991), dissatisfaction with using financial measures to evaluate business performance has been reported. During the 1980s, many executives saw their companies’ strong financial records deteriorate because of unnoticed declines in quality of customer satisfaction or because their market share lost to global competitors. In addition, traditional performance measures, which include return on investment (ROI), return on assets (ROA), return on sales (ROS), purchase price variances, sales per employee, profit per unit production, and productivity, based on traditional accounting systems (Ghalayini, 1997) lack the focus and robustness that needed for internal management and control (Atkinson, Waterhouse, and Wells, 1997).

Moreover, traditional performance measures are backward looking and do not reflect the long-term and future consequences of managerial action (Hemmer, 1996). Ghalayini (1997) also argued that such performance measures have many other limitations. For instance, firstly, they are based on management accounting systems which focus on controlling and reducing direct labor costs meanwhile labor cost component occupied only about 12 percent in all industries while overhead comprises 50-55 percent of the manufacturing cost. Secondly, traditional performance measures are lagging metrics since financial reports are usually closed monthly and

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1 CIM: Computer integrated manufacturing; JIT: Just in time; OPT: Optimized production technology; TQM: Total quality management.
are a result of decisions that were made one or two months prior. *Thirdly*, traditional performance measures try to quantify performance and other improvement efforts solely in financial terms whereas many improvement efforts are difficult to quantify in dollars, such as lead time reduction and adherence to production schedule, which can have a significant impact on overall success. *Fourthly*, traditional performance measures tend to be inconsistent with the concept of continuous improvement. Other limitation of traditional performance measurement defined by Kaplan and Norton (1992, page 71) is that current profit and other financial measures only partially reflect the effects of past and current activities, whereas non-financial measures such as customer satisfaction, internal process improvements, and an organization’s innovation and improvement activities reflect the effect of current managerial actions that will not show up in financial performance until later. *Furthermore*, Kaplan and Cooper (1998) argue that using a performance management system that solely consists of financial performance measures can cause problems for a company because financial measures are not directly related to manufacturing strategy and do not report accurately on the cost of processes, products, and customers. In addition, traditional criteria such as cost efficiency and utilisation may pressure managers and supervisors for short-term results and therefore discourage improvements.

**Problems of application in performance measurement**

Poister (2003, page 19), found that “although the purpose of measurement system is to help improve performance through influencing decisions, they cannot be expected to control or dictate what those decisions will be because decisions relating to strategies, priorities, goals and objectives are often made in heavily politicized contexts”. In addition, performance measurement systems may be ignored and will not automatically be used.

In addition, Vakkuri and Meklin (2003) defined the problem in implementing performance measurement in knowledge organizations relates to three fundamental elements. The first is the cultural context, which involves the problem of structure referring to the ways in which people as members of invisible colleges position themselves and how thick their shared understanding of the roles of organization is. They concluded that using performance measurement system is strongly influenced by the cultural conditions of working environments. Second, the objectives of performance measurement system are understood ambiguously while design and use modes involve different rationalities. Third, these elements result in both intended and unintended consequences of the use of performance measurement system.
Current issues

Even though individual firms tend to utilise firm-specific performance indicators appropriate to their needs, however, many firms pay attention to main performance indicators in which there is a combination of financial; market/customer; competitor; human resource; internal business process; and environmental indicators (Eccles, 1991; Kaplan, 1983). Performance measurement has relied on financial or accounting-based measures in spite of the drawbacks associated with such an approach. Specially, there are serious limitations in using financial measures solely because financial measures have inherently backward-looking nature, limited ability to measure operational performance and tendency to focus on the short-term (Ittner, Larcker, and Rajan, 1997; Kaplan et al., 2001a), meanwhile non-financial measures are superior to short-term financial measures as indicator of progress towards achieving long-term goals (Ittner et al., 1998a). In addition, non-financial measures are better indicators of managerial effort and thus valuable in evaluating managerial performance (Kaplan and Norton, 2001c) and better predictors of long-term performance. Therefore they are used to help refocus managers on the long-term aspects of their actions (Kaplan and Norton, 1996a).

Acknowledgement of limitations of financial measures has led to views that the financial accounting model should be expanded to incorporate the valuation of the company’s intangible and intellectual assets, which can be categorized as non-financial in order to reflect the assets and capability that are critical for success in competitive environment (Burr and Girardi, 2002; Lev and Zarowin, 1998). Especially, in order to present the true picture of organization performance, under the circumstance that industries and firms are confronted with increasing expectations from a variety of stakeholders, the organization requires more from its performance measurement system than ever before (Kaplan and Norton, 2001a; Lambert, 1998).

In the information-age, many companies are beginning to place greater emphasis on non-financial measures such as customer satisfaction, innovation measures, on-time delivery, market share, product quality, and productivity (Kaplan and Norton 1996c; Lev and Zarowin, 1999). The method of performance management should be self-motivated for the adaptation of internal and external changes. To deal with this issue and answer the limitations of traditional performance measurement, the most remarkable framework, among which developed and adopted performance measurement with multidimensional view, has been the Balanced Scorecard developed by Kaplan and Norton (1992, 1996b).
Challenges of performance measurement

Tangen (2004) defines obstacles in performance measurement as follow. Firstly, terminology within the field of performance measurement is not clear, misused and confused with frequently used concepts like productivity, efficiency and performance. Secondly, when designing performance measurement system, the fact that the number of existing performance measures to select among is huge. Thirdly, a performance measurement system must be designed in accordance to numerous of case-specific factors. Lastly, there are lots of requirements that the measurement practitioner wish to fulfil when designing a performance measurement system.

According to Neely (2004), the organization may face with challenges arising from the design and implementation of measurement system. Many organizations have still not sorted out their performance measurement systems because there is still a tendency to measure things that are easy to measure and often to measure too much. Performance data are considered to be a source of power or a control device. But measurement is all about understanding what is happening inside the organization and working out, how to introduce improvement (Neely, 2004).

Neely (2004) also argued that the organization may face with challenges in four fundamental processes of performance measurement, which are designing measurement system, implementing, managing through measurement, and refreshing the measurement system. Firstly, in design process, challenges lies in choosing the right measures. The current problem of measurement is the excessiveness of measurement as the organization desires to quantify absolutely everything. So the current challenge is not necessarily identifying what the organization could measure but what it needs to measure in order to concentrate on what is absolutely vital. Secondly, two main challenges in implementation process are data accessing issue and political and cultural issues. Notably, people worry how to manipulate target-setting to ensure targets are achievable and no blame can be attributed. Thirdly, the challenge in managing through measurement is that managers presented raw performance data and left to draw their own conclusions. This can lead to time-consuming and largely unnecessary debate to justify individual figures while the focus should be on the current situation, what can be learned from it and, more importantly, how targets can be achieved. Fourthly, challenges happening in refreshing performance measurement system is that manages can introduce performance reports in terms of specific problem. However, instead of requiring an introduction of new performance reports, problems that have become obsolete, because those have been solved, are rarely deleted.
According to Poister (2003, page xvii-20), challenges in designing and implementing effective performance measurement system are both addressing a number of methodological issue and managing organizational and institutional change. However, performance measurement system may require too much time and effort.

2.2 Theory of Balanced Scorecard

2.2.1 Introduction of Balanced Scorecard

Concept of Balanced Scorecard

The Balanced Scorecard developed by Kaplan and Norton (1992) is a performance measurement tool and a comprehensive framework that used to translate an organization's vision and strategy into a coherent and linked set of performance measures, which are financial and non-financial objectives and performance measures (Kaplan and Norton, 2001a, 1996b). It solves the demand of multiple measures of performance and encourages the use of both financial and non-financial measure along four perspectives such as financial, customers, internal business process, learning and growth to measure organization performance (Kaplan and Norton, 1996a). Balanced scorecard emphasizes the linkage of measurement to strategy (Kaplan and Norton, 1993) and the cause-and-effect linkages that describe the hypotheses of the strategy (Kaplan and Norton, 1996b).

In addition, Balanced Scorecard is a set of measure that gives the managers a fast but comprehensive view of the business (Kaplan & Norton, 1992). The balanced scorecard summarizes a strategically oriented set of leading and lagging performance indicators grouped into four different perspectives: financial, customer, internal process, and learning and growth. Kaplan and Norton (1992) argue that, by giving information from four perspectives, the Balanced Scorecard minimises information overload by limiting the number of measures used. It also forces managers to focus on the handful of measures that are most critical. Further, the use of several perspectives also guards against sub-optimization by compelling senior managers to consider all measures and evaluate whether improvement in one area may have been achieved at the expense of another.

Kaplan and Norton (1992) developed Balanced Scorecard to provide answer to four basic questions: The question for financial perspective is “How do we look to shareholders?”. The
question for internal business perspective is “What must we excel at?” “How do customers see us?” is the question for customer perspective. The question “Can we continue to improve and create value?” is for innovation and learning perspective.

In addition, Balanced Scorecard developed by Kaplan and Norton (1992) is to supplement traditional financial measures with operating measures oriented toward customers, internal processes, and learning and growth activities. First, financial measures, which is the most traditional and still most commonly used measurement tool, typically focused on profitability-related measures such as return on capital, return on equity, return on investment, return on sales, etc. These measures are used to indicate whether the company’s strategy implementation and execution are contributing to improvements in the bottom line. Second, customer measures, such as customer satisfaction, are intended to measure the company’s performance from the customer’s perspective (Kaplan and Norton, 1992). This is a core of any business strategy, which describes the unique mix of product, price, service, relationship, and image that a company offers (Kaplan and Norton, 2001c), and defines how the organization differentiates itself from competitors to attract, retain, and deepen relationships with targeted customers (Kaplan and Norton, 2001b). Third, internal business process measures, such as on-time delivery from suppliers, time to process customer returns in retail stores, are employed to identify core competencies, recognize strengths and shortcomings, and make improvements. Since the path to success for any business changes with time, a company’s ability to innovate new products and new process is critical in achieving excellence (Kaplan and Norton, 1992). Internal business process measures represent the perspective of the operation management within the Balanced Scorecard model. The internal process measures are typically based on the objective of most efficiently and effectively producing products or services that meet customer needs (Kaplan and Norton, 1996b). Fourth, learning and growth measures, such as employee skills and computerization, focus on factors that facilitate continuous improvement. The innovation and learning perspective is all about developing the capabilities and processes needed for the future (Kaplan and Norton, 1992).

According to Kaplan and Norton (2001c), the new framework, which called as "Strategy Map" is a logical and comprehensive architecture for describing strategy as illustrated in Figure 1.
Figure 1: The Balanced Scorecard Defines a Strategy’s Cause-and-Effect Relationships. Source: Kaplan and Norton (2001c).

Specifically, the Balanced Scorecard is a framework that expresses an organization’s strategy as a set of measurable goals from the perspectives of owners or investors, other external stakeholders, and the organization itself. If these goals, associated measures, and targets are well chosen, the Balanced Scorecard will help managers focus on the actions required to achieve them, thus helping the organization achieve its overall strategic goals and realise its strategic visions (Kaplan and Norton, 1996c). More specifically, Kaplan and Norton (2001c) defined that,
first, objectives for growth and productivity to enhance shareholder value. Second, market and account share, acquisition, and retention of targeted customers where profitable growth will occur. Third, value propositions would lead customers to do more higher-margin business with the company. Fourth, innovation and excellence in products, services, and processes that deliver the value proposition to targeted customer segments, promote operational improvements, and meet community expectations and regulatory requirements. Fifth, investments required in people and systems to generate and sustain growth.

Balanced Scorecard has three levels of information such as corporate level is the first level describing corporate objectives, measures and targets. The second level is to translate corporate targets into targets for each business unit of the organization. The third level is individuals and teams level articulating which of their own objectives would be consistent with the business unit and corporate objectives, as well as what initiatives that would take to achieve their objectives (Kaplan and Norton, 1996a).

Balanced Scorecard emphasizes that financial and non-financial measures must be a part of the information system for employees at all levels of the organization. The scorecard should translate the business unit’s mission and strategy into tangible objectives and measures. Moreover, these measures are balanced not only between external measures (shareholders and customers) and internal measures (critical business process, innovation, and learning and growth) but also between the result measures outcomes and driver measures (measures for future improvement). The scorecard uses measures to communicate and to inform employees about the drivers of current and future success (Kaplan and Norton, 1996a).

**Advantages of Balanced Scorecard**

Shareholder value can be created by the company through more effective governance by not only ensuring compliance but also focusing time and efforts on the most critical strategy. The Balanced Scorecard approach is a tool that can be used to help companies create greater value at the business unit level, the corporate level, and the board level. These scorecards clarify goals, priorities, processes, and ownership, and define the linkages between desired financial results and the actions needed to achieve them (Kaplan and Palepu, 2003).

The effectiveness of the Balanced Scorecard is based on its ability to translate a firm’s mission and strategy into a comprehensive set of performance measures (Kaplan and Norton, 2001a).
The Balanced Scorecard enables managers to have full picture of company operations (Kaplan and Norton, 1993), safeguard from sub-optimization in the decision-making through considering the four perspectives of business performance, protect the managers from information overload by limiting the performance measures to only four perspectives that are customer, financial, internal business, and learning and growth. The implementation of the Balanced Scorecard is a process whereby the organization’s strategy is translated into a set of key performance indicators (Kaplan and Norton, 1996c).

According to Muhammad (2010), Balanced Scorecard brings advantages as follows. *First*, it is intuitive, easy to apply and flexible approach. In addition, it avoids data overload, can form the basis of a performance management system linking strategy to planning, budgeting, individual objectives etc. *Moreover*, it gives a balanced view over the internal and external key performance indicators, develops a cause and effect relationship between measures and objectives, and develops strong internal and external communication. *Furthermore*, Balanced Scorecard revolves around value creation activities from internal organizational processes to external stakeholders, provides powerful means for translating a firm’s vision and strategy into a tool that effectively communicates strategic intent and motivates performance against established strategic goals and provides relative and balanced information in a concise way for managers, thereby reducing the time for ‘digestion’ of information and increasing the time for decision making. *In addition*, Balanced Scorecard creates an environment which is conducive to learning organizations through the testing of hypotheses regarding cause-and-effect relationships and by laying the groundwork for a 360° feedback process. *Other advantage* of the Balanced Scorecard is that it contains elements of a “boundary control system” in that it involves from the vision, mission & strategic goals of the organization. *It also* offers managers the possibility to combine all types of control systems and that it adds value to management. *Final*, Balanced Scorecard provides a measurement framework that improves alignment of actions to the strategic goals of an organization and also a platform for identifying priorities.

Furthermore, typical applications of Balanced Scorecard is that it focuses management agenda on achieving strategic goals, supports two way communication of strategic priorities and organizational performance. In addition, Balanced Scorecard supports continuous learning about strategic “cause and effect” relationships that affect an organization (Lawrie and Cobbold, 2004; Andersen et al, 2004). Moreover, typical outputs of the Balanced Scorecard is that, it is a clearly articulated statement of vision and strategy, a set of measurable strategic objectives spread over
four “perspectives”, and a set of priority “initiatives” linked to the strategic objectives and measures (Shulver and Lawrie, 2009).

A Balanced Scorecard can meet greater internal communication needs of because it facilitates decisions and actions which support strategies based on the needs of stakeholders, internal and external customers, regulatory bodies, managers, and employees and requires involvement by all levels of the organization (Kaplan and Norton 1996c). Besides, Hoque and James (2000) proposed that organizations with a strong market position have a greater demand for internal communication, and thus are likely to place greater emphasis on the use of a Balanced Scorecard.

2.2.2 How does the Balanced Scorecard work

The Balanced Scorecard builds on basic concepts of management activity concerning causality, learning, team working, and communication. Firstly, regarding to causality, it is believed that managers can identify things to do that will lead to important outcomes being achieved. Secondly, in terms of learning, it is supposed that given appropriate feedback, managers will identify ways to improve performance. Thirdly, with regard to team working, it is confident that most organizations rely on management activity performed by teams as well as individuals (for instance “the Board”). Fourthly, concerning the communication the belief that clear communication of goals, priorities and expectations are necessary to achieve high levels of performance within an organization. Although many variations exist, most Balanced Scorecards are built on a core idea that manager’s need information on a reduced set of measures selected across four distinct “perspectives” of performance. Measurement information is usually collected at least quarterly, circulated in the form of paper or electronic reports, and these reports are used to inform regular meetings of the management team (Kaplan and Norton, 1993; Cobbold & Lawrie, 2004; Andersen et al, 2004).

Balanced Scorecard based on four perspectives such as learning and growth, internal processes, customer, and financial. A change strategy for assessing the standard of the Balanced Scorecard to comply with three principles such as causality, outcome measurement and performance drivers, links with financial. These three principles are link with business strategy of the Balanced Scorecard. The causal chain is the process and decision-making. The purpose of these measurements is that the new to the organization of workflow specification. Establish strategic
priorities, strategies and performance driver’s factors of the logic process (Kaplan and Norton 1992, 1996c).

A major strength of the Balanced Scorecard is the emphasis that it places on linking performance measures with business unit strategy. Kaplan and Norton (1996c) also introduced a framework to link the scorecard with the management of strategy, which is called as “strategic framework for action”. It consists of four specific processes. The first process is clarifying and translating vision and strategy. The second process is communicating and linking strategic objectives and measures. The third process is planning, setting target, and aligning strategic initiatives. The last process is enhancing strategic feedback and learning. The following is specific steps to build Balanced Scorecard according to Kaplan and Norton (1996c).

**Building a Balanced Scorecard**

For an organization’s first Balanced Scorecard building, the following steps should be implemented according to Kaplan and Norton (1996c) as follows.

**Step 1: Define the measurement architecture**

There are two tasks that need to be carried out at this step. *The first task is to select the appropriate organization unit.* The architect should, in consultation with the senior executive team, define the business unit for which a top-level scorecard process appropriate. It is suggested that, the initial scorecard process works best in a strategic business unit, ideally one that conducts activities across an entire value chain such as innovation, operations, marketing, selling, and service.

*The second task is to identify sub unit/corporate linkages.* Once the sub units has been defined and selected, the architect should learn about the relationship of the sub unit to other sub units and to the divisional and corporate organization through interviewing key senior divisional and corporate executives about financial objectives for sub unit, overriding corporate themes, and linkages to other sub units.

**Step 2: Build consensus around strategic objectives**

There are three main tasks that should be done at this step. *The first task is to conduct first round of interviews.* The architect should implement the following issues to fulfill the first main task as
follows. The first issue is to prepare background material on the Balanced Scorecard as well as internal documents on the company’s sub unit, division, mission and strategy. The second issue is to acquire information on the industry and competitive environment of the sub unit, including significant trends in market size and growth, competitors and competitor offerings, customer preferences and technological developments. The last issue is to conduct interviews of approximately 90 minutes each with the senior managers.

The second task is to organize a meeting. The architect and other members of the design team meet to discuss the response in the interviews, highlight issues, and develop a tentative list of objectives and measures that will provide the basis for the first meeting of top management team.

The third task is to organize executive workshop – first round. The architect schedules and conducts a meeting with top management team to begin the process of gaining consensus on the scorecard. The executive team should be divided into four subgroups in which each responsible for one of the perspectives. By the end of the workshop, the executive team will have identified three to four strategic objectives for each perspective, a detail descriptive for statement for each objective, and a list of potential measures for each objective.

Step three: Select and design measures

At this step two main tasks should be implemented. The first task is to organize subgroup meetings. The architect works with the individual subgroups for several meetings for the accomplishment of four principal objectives as follow. The first objective is refining the wording of the strategic objectives inline with the intentions expressed in the first executive workshop. The second objective is identifying, for each objective, the measures that best capture and communicate the intention of the objective. The third objective is identifying, for each proposed measure, the sources of the necessary information and the actions that may be required to make this information accessible. The last objective is identifying, for each perspective, the key linkages among the measures within the perspective, as well as between this perspective and the other scorecard perspectives. Attempt to identify how each measure influences the other.

The second task is to executive workshop – second round. This workshop, involving the senior management team, their direct subordinates and a large number of middle managers, debates the
organization’s vision, strategy statements, and the tentative objectives and measures for the scorecard.

**Step four: Build the implementation plan**

There are the main tasks at this step. *Task one is develop the implementation plan*, which includes how the measures are to be linked to data base and information systems, communicating the Balanced Scorecard throughout the organization, and encouraging and facilitating the development of second-level metrics for decentralized units. Therefore, an entirely new executive information system that links metrics of top-level management down through shop floor and site-specific operational measures could be developed.

*Task two is to organize executive workshop – third round.* The purpose of this workshop is to reach a final consensus on the vision, objectives and measurements developed in the first two workshops, validate the stretch targets proposed by the implementation team and identify preliminary action programs to achieve the targets. *Task three is to finalize the implementation plan.* For a Balanced Scorecard to create value, it must be integrated into the organization’s management system.

Setting an organization’s first Balanced Scorecard can be implemented over a 16-week period Kaplan and Norton (1996c). There should be 15 to 25 financial and non-financial measures to be grouped into four perspectives of Balanced Scorecard. The scorecard should tell the story of the business unit’s strategy. This story is told by linking outcome and performance driver measures together via a series of cause-and-effect relationships (Kaplan and Norton (1996c, page 165).

### 2.2.4 Causal linkages between four perspectives of Balanced Scorecard

The use of Balanced Scorecard has gained increasing popularity and attention among industry practitioners and researchers over the years. Nevertheless, it has received strong criticism for its novelty and efficiency as the dominant framework in performance management (Marr and Schiuma, 2003). Balanced Scorecard bases its success on the grounds that all four perspectives are linked to each other in a cause-and-effect relationship (Aidemark, 2001). In fact, the cause-and-effect logic has been described as the essence of the Balanced Scorecard approach.

A cause-and-effect relationship exists among the perspectives of Balanced Scorecard in a sequential manner (Kaplan and Norton, 1996c). The four perspectives of Balanced Scorecard
refer to the learning and growth, internal business process, customer value and the financial performance perspective.

![Organisational Strategy Diagram]

**Figure 2: Cause-and-Effect Concept in Balanced Scorecard (Adopted from Kaplan and Norton, 1996)**

*Learning and growth perspective.* Measures referring to the most important intangible assets in strategy formulation and implementation such as innovation, creativity, competencies and capability are emphasized in this perspective (Ong et al., 2010) to learn and improve (Cohen et al., 2008). Employee satisfaction derives from high quality support services provided by the firm, for instance, human capital development. Employee training has been empirically linked with a number of other Balanced Scorecard measures (Heskett et al., 1994). Studies reported a positive linkage between training and innovation, process improvements and customer service quality (Johnson, 1996; Heskett et al., 1994). Developing technical competency was vital in producing innovations and tended to be more profitable than those firms that did not invest in strategic information systems (Brown, Gaitian and Hicks, 1995). Investment in learning and growth will foster internal communication, shared values and common organizational objectives or in other words, the improved performance in learning and growth perspective will result in a significant positive increase in the ameliorated performance of the internal business and production process perspective (Ong et al., 2010). Generally, the empirical evidence supports significant relations of learning and growth activities in contribution to the internal business process improvement. These are considered as a sufficient evidence to rely on learning and growth as a foundation and a starting point for the causal chain of Balanced Scorecard (Ong et al., 2010).
**Internal business process perspective.** This perspective identifies the critical processes, skills, competencies and technologies, etc., (Kaplan and Norton 1992, 1996c). Investment on research and development (R&D) is a critical factor in contributing to superior economic performance (Gartrell, 1990). On the other hand, capitalization on R&D is significantly positive associated with firm future earnings (Aboody and Lev, 1998). Another finding from Jacobson and Aaker (1987) indicates that product quality is positively associated with higher market share. According to Rust, Zahorik and Keiningham (1995) and Huselid (1995), the level of service quality affects customer satisfaction, acquisition and retention. Ong et al. (2010) found that internal business process contributes to an effect on customer value. This is inline with the study by Gartrell (1990) where the constant improvements and upgrading of internal business processes is a critical factor in contributing to superior economic performance of the company. Within a prosperous internal business and production environment, that is categorized by effective handling of customer orders, good relations with suppliers and distribution channels as well as quick response to innovation adaptation is very likely that the end product of the company will satisfy customer needs and prospects (Ong et al., 2010; Cohen et al., 2008). The actions of pursuing internal operations excellence and efficiency such as involvement in research and development activities and quality management, will positively lead to delivering high levels of service, product quality, value for money and brand loyalty towards the products and services offered by the company (Ong et al., 2010). In short, these studies presented empirical evidence of a positive relation between post-sales service quality and market share, and support the notion that organizational learning and growth activities drive to improve internal business processes and appear to be directly related in contributing to greater customer value.

**Customer value perspective.** This perspective defines the value proposition used to generate sales and loyalty from targeted customers (Kaplan and Norton, 1996c), requires managers to identify the potential customers, and consequently choose the value parameters to deliver to the customers. The majority of marketing literatures provided evidences that perceived customer value determines the level of customer satisfaction, which leads to customer acquisition, retention and ultimately customer profitability and market share (Malina, 2001). Improving the level of innovation, product improvements, level of service quality, and after-sales service may lead to improved customer satisfaction levels (Krishnan et al., 1999; Rust et al., 1995). Several studies have found a significantly positive relation between customer satisfaction and customer acquisition and retention (Anderson and Sullivan, 1993; Bolton and Lemon, 1999). It is reported that the firm performance in relation with, revenues (Rucci, Kirn and Quinn, 1998), return on
investments (Anderson, Fornell and Lehmann, 1994) and stock returns (Ittner and Larcker, 1998a) have shown evidence of a positive relation with customer satisfaction. Customer selection, customer acquisition, customer retention, and customer growth maximize the value of the customer, and therefore to create value in general (Kaplan and Norton (2003). Other important issue to make an organization saving production cost is considering supplier relationship, for instance choosing low cost, not low price suppliers, which in turn lead to financial efficiency (Kaplan and Cooper, 1998). In brief, most marketing research supports the sequential effect of improved business activities that will lead to improve customer value. Customer satisfaction measured properly under the right circumstance is a leading indicator of financial performance (Lambert, 1998).

Financial performance perspective. The financial objectives are retained as company goals and considered the ‘lagging’ indicators in the sense that they are the results of other former actions mostly of qualitative nature (Cohen et al., 2008). The relationship between customer value and financial result is that the chains of action which yield a high level of customer value at low costs will lead to good financial results (Nørreklit, 2000). Increased customer loyalty generates increased revenues and margins (Huselid (1995). All financial performance measures such as interest margin, expense/income, return on assets and capital adequacy are positively correlated with customer service quality score (Duncan and Elliott, 2004). Financial outcomes are separated causally and temporally from improving employees' capabilities. The value from intangible assets depends on organizational context and strategy. This value cannot be separated from the organizational processes that transform intangibles into customer and financial outcomes (Kaplan and Norton, 2001c).

Linkage between the four perspectives

Most of the Balanced Scorecard perspectives are correlated with each other at a statistically significant level in a sequential manner. There is a sequential dependency among the four Balanced Scorecard perspectives. It is believed that that the cause-and-effect relationship of Balanced Scorecard will lead to improved business efficiency and profitability (Ong et al., 2010), improvements in intangible assets will affect financial outcomes (Huselid, 1995).

Specifically, Heskett et al., (1994) argue that the service-profit chain creates relationships between profitability, customer loyalty, employee satisfaction, loyalty, and productivity. First, customer loyalty drives profitability and growth, and customer satisfaction drives customer
loyally. *Second*, customer satisfaction derived from employee satisfaction and value, which means the results the customers receive in relation to the total costs. *Third*, employee satisfaction derived from internal quality, and high quality support service and policy that enable employees to deliver results to customers. *Fourth*, value is resulted from employee productivity, which, in turn created from employee loyalty. Specially, employee satisfaction drives loyalty.

Furthermore, the findings of Ong et al. (2010) revealed that the comprehensive framework of Balanced Scorecard provides a broader view of how an organization will convert its initiatives and resources including intangible assets such as corporate culture and employees’ skills and knowledge into tangible and predictable outcomes when the cause-and-effect links take place. Study results provided by Ong et al. (2010) also proved that the template of Balanced Scorecard articulated by Kaplan and Norton (1996c) provides a common language and a generally accepted structure which can be used by managers for describing the corporate strategies. Moreover, by conducting a survey with the chief financial officer of 2443 New Zealand companies, Lord, Shanahan and Gage (2005) concluded that most firms agree with the importance of the interdependent relationship between Balanced Scorecard measures, specifically, increased performance in one perspective leads to an increase in performance in another. Therefore, it can be concluded that without a Balanced Scorecard, organizations will not be able to achieve internal consistency of vision and action in their attempts to implement changes and introduce new strategies and processes (Ong et al., 2010). It is recommended that managers should expand performance measurement systems including non-financial information whilst retaining the traditional financial ratios (Kaplan, 1983) as no one single measure provides consistent evidence of the correlation between all stakeholders’ satisfaction and firm performance (Otley, 1994). Specifically, firms operating within the service industry cannot rely solely on financial performance or non-financial performance indicators (Ittner and Larcker, 1998a; Kaplan and Norton, 1996c).

### 2.2.5 Popularity, effectiveness and impacts of Balanced Scorecard implementation on financial efficiency

**Popularity of Balanced Scorecard**

During the next 15 years from 1992, Balanced Scorecard has been adopted by thousands of private, public, and non-profit enterprises around the world (Kaplan, 2010). There are numerous normative and empirical studies of its implementation in the literature as follows.
First, Kaplan and Norton (1996b, 1996c) found that Balanced Scorecard has been used as an auxiliary tool for organizations in order to put the strategies into function and showed the linkages between four perspectives of Balanced Scorecard, in which learning and growth perspective is drivers for the achievement of excellent outcomes of other three perspectives of Balanced Scorecard. Core outcome drivers and internal business process will lead to customer satisfaction. Then, customer outcomes will lead to financial outcomes.

The Balanced Scorecard arose out of the need to improve the planning, control, and performance measurement functions of management accounting. Because of the rise in popularity of the Balanced Scorecard, and benefits attributed to its usages, Atkinson et al. (1997) stated that the Balanced Scorecard is a significant development in management accounting that deserves intense research attention.

The implementation of Balanced Scorecard leading to the improved financial performance relies on the identification of key leading indicators, typically non-financial measures, of desired financial performance. These leading indicators are logically derived from the establishment of causal linkages between improved performance on non-financial measures and improved performance on selected financial measures. Applying Balanced Scorecard helps managers in selecting these key indicators through viewing the organization from four different perspectives such as financial, customer, internal processes, and learning and growth (Kaplan and Norton, 1996c).

In addition, Silk (1998) implemented a survey with Balanced Scorecard and found that the Balanced Scorecard has received significant attention in the business press and a recent survey estimates 60 percent of Fortune 1000 firms have experimented with Balanced Scorecard. Furthermore, Chenhall and Smith (1998) implemented a survey and found the evidence that suggests the majority of large Australian firms have adopted a range of management accounting techniques that emphasize non-financial information and take a more strategic focus.

Next, Aidemark (2001) implemented a research of the use of Balanced Scorecard in health care management by interviewing administrators and heads of the professional bureaucracies and found that the appreciation of Balanced Scorecards in Swedish health care organization is comprehensive. Balanced Scorecards are considered as appropriate control mechanisms, almost designed for health care organizations. They reduced goal uncertainty, communicated the
complex work of professionals to management and politicians and stimulated a new dialogue about vision and strategy.

Moreover, Malmi (2001) conducted a study with series of semi-structured interviews in 17 organizations to find out how Balanced Scorecards are applied in Finland and why companies adopted them. The study found that there is an increase of popularity of Balanced Scorecard in Finland because the logic of Balanced Scorecard is certainly appealing to many in Finland and more interestingly, preliminary insights derived from this study suggests that the supply-side organizations of the Balanced Scorecard have a significant effect on the decisions of organizations to adopt.

Final, Balanced Scorecard not only successfully used in large business companies but also used in small to medium-sized enterprises for instance, Hyde Park Electronics (Ohio), Future Industries (Clearfield), and Southern Gardens Citrus (USA) in America can get benefit from using Balanced Scorecard (Gumbus and Lussier, 2006).

**Effectiveness and impacts of Balanced Scorecard implementation on financial efficiency**

In addition to the popularity of Balanced Scorecard presented above, many other researchers proved the effectiveness and impacts of Balanced Scorecard on financial efficiency of the organization through their studies as follows. First, the Balanced Scorecard’s evolution into a strategic management system involves the linking together of performance measures in a series of cause-and-effect relationships (Kaplan and Norton, 1996c). It is thus assumed that measures of organizational learning and growth drive measures of internal business processes, which in turn drive measures of the customer perspective. Financial measures are then determined by these customer measures (Nørreklit, 2000).

Second, Aderson, Fornell and Rust (1997) investigated whether there are conditions under which there are tradeoffs between customer satisfaction and productivity. They found that the association between changes in customer satisfaction and changes in productivity is positive for goods while both customer satisfaction and productivity are positively associated with ROI for goods and services.

In addition, Banker, Potter, and Srinivasan (2000) examined the association between improved financial performance and non-financial measures in a hotel chain where a new incentive
program included an emphasis on customer satisfaction performance measures. By using time-series data for 72 months from 18 hotels managed by a hospitality firm, they provided some qualified support for the argument that customer satisfaction is associated more with long-term rather than immediate financial performance. They also found the evidence of a relationship between customer satisfaction non-financial measures and future financial performance that suggests the implementation of the new incentive program positively impacted targeted non-financial measures and ultimately improved financial performance for the hotels on the new incentive program.

Besides, Hoque and James (2000) studied the effect of balanced scorecard on company function by doing a survey of sixty six Australian manufacturing companies and found that larger firms make more use of Balanced Scorecard and high effect of Balanced Scorecard and improvement in functioning. Moreover, Malina and Selto (2001) conducted a study through qualitative research method and conducted interviews with the U.S. Fortune 500 company’s managers and its North American 31 distributorships, and provided not only evidence on the effectiveness of the Balanced Scorecard as a strategy communication and management-control device but also evidence of causal relations between effective management control, motivation, strategic alignment, and beneficial effect of Balanced Scorecard that includes changes in processes and improvements in both the Balanced Scorecard and customer-oriented services.

Other researchers namely Sim and Koh (2001) conducted a study with 83 electronics companies located within the USA and found that manufacturing plants that have strategically linked their corporate goals or objectives to their performance measurement system, via the scorecard, performed better than those that do not. Next researchers namely Lipe and Salterio (2002) investigated the effect of indexes in four dimensions of Balanced Scorecard by applying experimental design research and found more effective points with Balanced Scorecard on correlation between branches.

Furthermore, Figge et al. (2002) discussed that overall the sustainability Balanced Scorecard provides a strong tool for an integrated sustainability management. It helps significantly to overcome the shortcomings of the often parallel approaches of environmental, social and economic management systems implemented in the past.

In addition to studies exploring the application of Balanced Scorecard in firms done by other researchers, McAdam and Walker (2003) conducted an exploratory study into the use of
Balanced Scorecards as an approach to implementing Best Value in UK local government. Their findings show that the Balanced Scorecard can play a key role in Best Value implementation and it is also useful in linking other improvement initiatives.

With regard to the exploration of application of Balanced Scorecard in public sector, other researcher named Chan (2004) also conducted a survey with 132 local governments in the USA and 52 municipal governments in Canada in order to explore the application of Balanced Scorecard in the government sector. The results show that, firstly, the respondent administrators strongly agreed that traditional financial measures included in their organization’s performance measurement system are necessary but not sufficient for performance evaluation. They felt that more non-financial measures describing their organization’s current and potential effectiveness in achieving set objectives should be included in their organization’s performance measurement system. Secondly, the administrators perceived that the Balanced Scorecard complements the financial measures of past performance with operational measures that drive future performance and growth, and provides a link between the organization’s mission and strategy with objective measures. They agreed that the benefits of the Balanced Scorecard would out weigh its costs if it were implemented successfully. In addition, the administrators concurred that the balanced scorecard is a strategic management system. They, however, did not think that the Balanced Scorecard is an ad hoc collection of financial and non-financial measures. Implementers of the Balanced Scorecard strongly believe that it is not a fad. Finally, close to 80 percent of the respondent administrators indicated that they expect their organization’s use of the Balanced Scorecard to change somewhat and significantly more over the next five years. This implies that the respondents felt positive about their experience and the Balanced Scorecard is a management tool that they would continue to adopt in the future.

Similarly to the research done by Banker, Potter and Srinivasan (2000) on the association between improved financial performance and non-financial measures, Davis and Albright (2004) implemented an investigation of effect of Balanced Scorecard implementation on financial performance of bank branches by using quasi-experimental study on American Bank system. Davis and Albright (2004) found the evidence supporting the proposition that Balanced Scorecard can be used to improve financial performance for bank branches, and promote improved financial performance when compared to a traditional performance measurement system focusing only on financial measures.
In addition to researches on Balanced Scorecard in firms and public sector conducted by other researchers, Urrutia and Eriksen (2005) implemented a case study of a private Spanish hospital to address the question of whether the Balanced Scorecard can be utilized in non-profit organization. Their finding shows that Balanced Scorecard is applicable to any type of organization, albeit with modifications.

Turning back to the researches on Balanced Scorecard in firms, Evans (2005) conducted a survey of hotels in Northeast England to assess the usefulness of Balanced Scorecard for the international hotel industry and concluded that the reports are available indicating the usefulness of a Balanced Scorecard approach, albeit modified to suit individual circumstances, but also point to potential pitfalls in its implementation. In addition, a wide variety of measures are currently being used and that many hoteliers are using measures from all four of the category groupings identified in the Balanced Scorecard framework.

In addition, Anand, Sahay and Saha (2005) studied the usage of Balanced Scorecard evaluation in fifty three Indian companies and appraise the implementation of Balanced Scorecard as a management instrument. This research used nationwide questionnaire-based survey research and found that the Balanced Scorecard adoption rate is 45.28 percent in corporate India comparing with 43.9 percent in the US, and the implementation of the Balanced Scorecard lead to the cost reduction opportunities in firms which, in turn, has resulted in improvement in the bottom line.

According to Ping (2006), in addition to the benefit in developing strategies, Balanced Scorecard provides a timely and cost-effective way to review whether an organization is on track to achieve its strategic objectives, vision and mission. Furthermore, Balanced Scorecard enables senior managers to assess the subordinates’ performance effectively. This advantage brings benefits in human resources aspect. Ping (2006) studied the usage of Balanced Scorecard, the perceptions, applicability and its usefulness held by Hong Kong organizations by using a survey with 50 Hongkong Companies listed on the Hong Kong Stock Exchange and found that most respondents agreed with the Balanced Scorecard as a strategic management model, the balance of financial and non-financial measures and cause-and-effect relationships. Moreover, the respondents believed that Balanced Scorecard provides a framework for vision translation and communication which brings divisional goals consistent with corporate goals.

One more researcher namely Othman (2006) studied on the effects of Balanced Scorecard adoption and found that the mot important benefit from the use of the Balanced Scorecard is its
role in helping communicate the organization’s strategy. This is followed by its role in helping organizations align their activities. In addition, many of benefits attributed to the Balanced Scorecard were realized by the responding organizations. These include clearer accountability, developing the link between short-term and long-term goals, better performance management, improvement in financial performance and competitiveness and improved strategy implementation.

Similarly to the research done by Banker, Potter, and Srinivasan (2000) on the association between improved financial performance and non-financial measures, Cohen, Thiraios and Kandilorou (2008) studied interrelation between four perspectives of Balanced Scorecard by implementing a survey with 90 leading Greek companies and verified the underlying theoretical hypothesis of Balanced Scorecard that lead Balanced Scorecard perspectives are positively correlated with one another at a statistically significant level in a sequential way. In addition, their supportive evidence shows that the companies that have improved their return on equity (ROE) and return on assets (ROA) during the analysis period have increased their efforts towards aspects that characterize the learning and growth perspective more than the companies whose ROE and ROA values decreased.

At the same period, Chang et al (2008) assessed performance improvement after implementing the Balanced Scorecard in a large hospital namely Mackay Memorial Hospital (MMH) in Taiwan. They came to the conclusion that Balanced Scorecard has been successfully developed and implemented at MMH because from the beginning the Balanced Scorecard executive team included the Board of Directors along with senior management personnel and departmental Balanced Scorecard were successfully launched and liked to budget planning after two years of full implementation.

Next, Kittiya Yongvanich and James Guthrie (2009) conducted a survey with 123 Thai stock exchange companies in order to assess the performance effects of Balanced Scorecard. Their findings provide evidence on Balanced Scorecard usage and performance effects among listed companies in Thailand and indicate that most companies in Thailand have used the Balanced Scorecard to obtain the benefits.

Moreover, Kollberg and Elg (2010) identified the main characteristics of the Balanced Scorecard practice in health care services by applying case study focusing on three health care organizations in Sweden using the Balanced Scorecard and found that Balanced Scorecard is
used as a tool for improving internal capabilities and supporting organizational development. More specifically, the Balanced Scorecard is used as a tool by management and employees in discussions, information dissemination, knowledge creation, follow-up and reporting processes, and is used as a tool for opening up the organization and providing a foundation for an improvement dialogue, which consequently increases the demands on management.

Other research on the adoption and implementation of Balanced Scorecard had been done by Ong et al. (2010). By using a method of survey through 100 companies in Malaysia, Ong et al. (2010) found that most of the Balanced Scorecard perspectives are correlated with each other at a statistically significant level in a sequential manner. Their finding generally supports the theoretical foundations of Balanced Scorecard that there is a sequential dependency among the four Balanced Scorecard perspectives. In addition, their findings show that most respondents participated the survey believe that the cause-and-effect relationship of Balanced Scorecard will lead to improved business efficiency and profitability.

Finally, Philbin (2011) implemented a research to identify how the management of university institutes can be improved through adoption of an integrated performance measurement system based on the Balanced Scorecard through case study investigation. The finding of this research showed that using economic and non-economic measures can improve the operational management of a university institute through providing tangible benefits to stakeholders.

2.2.6 Challenges and limitations of Balanced Scorecard

Challenges in implementing Balanced Scorecard

Despite the advantages discussed above and the wide adoption of the Balanced Scorecard, some challenges in implementing Balanced Scorecard were reported. First of al, Neely et al. (1997) comment that it is necessary to consider the purpose of the measure, the frequency of measurement and the source of data, and developing a balanced scorecard is a complex process. It is difficult to determine which measures should be used in each perspective. Similarly, points of view from Nigel (2005) given that the adoption of Balanced Scorecard requires commitment of resources and the alignment of strategy with performance measures. All these requirements result in the drawback of time-consuming in the development and implementation of the Balanced Scorecard model.
In addition, Schneiderman (1999) emphasized that the company is necessary to define appropriate short-term and long-term goals as well as measures. Heather and II-woon (2005) specified the importance to identify and monitor the significant aspects of a business. Failure to meet the above conditions leads to failure in the Balanced Scorecard adoption. Both authors pointed out these two conditions were not an easy task. It supports the drawbacks of complexity in the use of Balanced Scorecard.

Next, Heather and II-woon (2005) identifies several barriers buried in the Balanced Scorecard. Firstly, Balanced Scorecard is unable to recognize community and environmental issues. It does not include supplier-related or competitor-related measures while these two areas are vital to the business survival. Secondly, there is a pitfall that focusing on the lagging financial indicators instead of the leading non-financial indicators. Wrong focus may be harmful for a company in the long term. Third, it is difficult to obtain timely and cost-effective data for the use of Balanced Scorecard. Consequently, they concluded that Balanced Scorecard has relative little effect on organization performance.

Final, The major challenges in Balanced Scorecard design are the selection of measures – an activity that is often undertaken using specialist external support – and the introduction of new ways of working that actually make use of the information generated by the Balanced Scorecard – usually attempted as an “in-house” exercise (Shulver and Lawrie (2009).

Limitations of Balanced Scorecard

Despite the evidences suggesting that the Balanced Scorecard provides effective way for organizations to develop a multidimensional view of performance measurement, the Balanced Scorecard is not without its shortcomings.

First of all, Kaplan and Norton (1996b) concede potential limitations of the Balanced Scorecard that the effectiveness of Balanced Scorecard will suffer if the included non-financial measures are not linked to or aligned with the company’s strategic objective. Furthermore, they argue that “Scorecards built upon lagging, non-strategic indicators represent only a limited application of the full power of the Balanced Scorecard”.

Next, Ghalayini et al. (1997) argue that Balanced Scorecard approach is primarily designed to provide senior managers with an overall view of performance. Thus, it is not intended for the
factory operations level. Furthermore, it is constructed as a monitoring and controlling tool rather than an improvement tool.

In addition, companies seeking to increase their competitive advantage have to consider both business strategy and business processes, but Kueng (2000) notes, the Balanced Scorecard theory’s strength is its focus on a company’s organizational unit, such as strategic business units, not on business processes: “It looks at business processes only as far as they have a great impact on customer satisfaction and achieve an organization’s financial objectives” (Kaplan and Norton, 1996c).

Furthermore, Nørreklit (2000) points out that ultimately the Balanced Scorecard can only be as successful as the strategy that underpins it. The Balanced Scorecard’s four pillars do not take account of all of an organization’s stakeholders, that it does not take account of competitor actions, developments in technology or, for that matter, any unexpected even, which makes it static rather than dynamic and thus fails to establish a basic for continuous improvement. This would be especially hazardous in environments classified as uncertain where there is a clear need for organizations to be flexible in meeting unexpected demands (Nørreklit, 2000, 2003). Moreover, Nørreklit (2000) argues that mechanisms need to be in place to capture and incorporate the ideas of low-level managers into organizational strategy and that employee involvement or lack thereof in developing a Balanced Scorecard will be influence the success or failure of implementation. But, he concedes that such a level of employee involvement is “inconsistent with the top-down approach control function of the Balanced Scorecard, whereby strategy and performance objectives are determined by upper management” as articulated by (Kaplan et al., 2001b).

Other weaknesses of Balanced Scorecard also were reported by Muhammad (2010), in which Balanced Scorecard neither addresses how to derive key measures nor fully explores causality across the scorecard. In addition, it fails to recognise the dashboard concept and is limited exploration of behavioural, environmental and cultural aspects. Moreover, Balanced Scorecard reflects limited progress that most organizations have made in linking employees, information systems and organizational alignment with strategies. It also does not cohere with the stakeholder approach to performance measurement and fails to highlight employee and supplier’s contributions i.e. it does not consider the extended value chain, which is an essential element of today’s networked organizations. Furthermore, Balanced Scorecard fails to identify the role of the community in defining the environment within which the company works. It also
fails to identify performance measurement as a two-way process that it focuses primarily on top-down performance measurement and does not correlate the effect of external factors like government policies and market imperfections with internal factors.

Factors necessary for the success of Balanced Scorecard implementation

In order to build and implement successfully Balanced Scorecard, it is necessary to pay attention to the following issues. The first issue is relating to a number of measures, the organization needs to obtain balance between leading and lagging indicators, obtain only the indicators that reflect strategy and are most critical, and only select measures that are linked to the organization’s strategy (Kaplan and Norton, 2001a).

Next, regarding making linkage between non-financial leading indicators and expected financial results, the organization should not make a quantitative link between non-financial leading indicators and expected financial results because the financial measures are the dependant variables and are the retrospective, lagging indicators. Some organizations are tempted to make this linkage quantifiable but since lag time is difficult to predict and numerous factors may influence the result, a quantitative link can not be established (Schneiderman, 1999; Nørreklit, 2000).

The third issue is regarding the commitment of senior management, delegation of the project to middle management and defining the project as performance measurement is described as one of the most common causes of failure, by missing focus and alignment to implement strategy. This is a process that can only be led from the top (Kaplan and Norton, 2001a). Fourth, regarding keeping the scorecard at the top, in order to be effective, the Balanced Scorecard, including strategy and action to support implementation, must eventually be shared with every member of the organization (Kaplan and Norton, 2001a; Schneiderman, 1999).

Other issue is that Balanced Scorecard is an approach to effectively measure strategy rather than a means of deciding strategy (McAdam and O’Neill, 1999). The use of a Balanced Scorecard does not mean just using more measure; it means putting a handful of strategically critical measures together in a single report, in a way that makes cause-and-effect relations transparent and keeps managers from suboptimizing by improving one measure at the expense of others. To achieve a balance among the four dimensions of the Balanced Scorecard, a company should pay attention to all of them (Hoque and James, 2000). Final, according to Molleman (2007), a
strategy is a set of hypotheses about cause and effect. The measurement system should make the relationships such as hypotheses among objectives and measures in the various perspectives explicit, so that they can be managed and validated. The chain of cause and effect should pervade all four perspectives of a Balanced Scorecard.

2.3 Conclusion remarks

This chapter has presented the issue of financial efficiency, theory of performance measurement and theory of Balanced Scorecard. First, the definition of financial efficiency and the method specifying output and input were provided. In addition, solutions of Kaplan and Cooper (1998) to lower input costs and ideas of Bernolak (1997) to improve productivity were presented in this section as a theoretical base to measure and analyse PV Power’s financial efficiency, which will be done in Chapter 4.

The second part of this chapter is theory of performance measurement. The content of this section shows two major stages of development of performance measurement and indicates the importance of performance measurement system, which has been reported by many researchers. Moreover, the ten-step method proposed by Poister (2003) to set a performance measurement system in an organization was illustrated in this section. Besides, issues that need to be considered in order to suite the purpose of a measure and achieve an effective performance measurement system were suggested as a theoretical base to find the way in developing and improving the organization’s performance measurement system, especially for the analysis and suggestions to be provided to PV Power’s performance measurement system, which will be done in Chapter 4 and Chapter 5.

Furthermore, problems of application in performance measurement have been showed in this chapter. For instance, Poister (2003) indicated problems of performance measurement relating to heavily politicized contexts. In addition, Vakkuri and Meklin (2003) defined the problem in implementing performance measurement relating to three elements. The first two elements are the cultural condition of working environment, and the ambiguity of objectives of performance measurement in designing and using modes that involve different rationalities. Third, these elements result in both intended and unintended consequences of the use of performance measurement system. This issue and theory of performance measurement presented in this chapter are theoretical bases to analyse PV Power’s current performance measurement system, consider PV Power’s working environment and provide some recommendations for PV Power
to improve its performance measurement system, which will be done in Chapter 4 and Chapter 5.

The third part of this Chapter is theory of Balanced Scorecard developed by Kaplan and Norton (1992, 1996b), which is the most remarkable framework among which developed and adopted performance measurement with multidimensional view to deal with the issues of performance measurement and answer the limitations of traditional performance measurement. Balanced Scorecard is a performance measurement tool and a comprehensive framework that used to translate an organization's vision and strategy into a coherent and linked set of performance measures (Kaplan and Norton, 2001a, 1996b). It also emphasizes the cause-and-effect linkages describing the hypotheses of the strategy (Kaplan and Norton, 1996b) among financial, customer, internal business, and learning and growth perspectives in a sequential manner (Kaplan and Norton, 1996c).

Moreover, many researchers carried out studies of the popularity, effectiveness and impacts of Balanced Scorecard on financial efficiency. The studied results presented in Section 2.2.5 proved that Balanced Scorecard has been used widely in around the world and the implementation of Balanced Scorecard leads to the improvement of business efficiency, financial performance and profitability. Thus, theory of Balanced Scorecard and the proved effectiveness of Balanced Scorecard presented in this Chapter are a theoretical base to analyse PV Power’s current performance measurement, which will be presented in Chapter 4, find out gaps between PV Power’s performance measurement and Balanced Scorecard approach, and a base in the combination with findings of interviews in order to propose a solution to improve PV Power’s performance measurement system.

Among the studies on Balanced Scorecard, I chose a study model of Ong et al. (2010) in order to get the idea in designing this research. Ong et al. (2010) implemented an empirical study on the adoption and implementation of Balanced Scorecard in Malaysia. Specifically, they investigated the sequential dependency among the four Balanced Scorecard perspectives. Ong et al. (2010) carried out a survey in firms, which adopt and do not adopt Balanced Scorecard, in order to deal with the respondents level of agreement with regards to the causal relations of learning and growth and internal business process, rate the degree of their agreement pertaining to the causal relations of internal business process and customer values, and seek the extent of agreement from respondents pertinent to the cause-and-effect relationship of customer values and financial
performance. Eventually, Ong et al. (2010) found that the cause-and-effect relationship of Balanced Scorecard will lead to improved business efficiency and profitability.

However, in this research, because PV Power has not applied the Balanced Scorecard yet, I applied qualitative research and designed interview questionnaire through using key performance indicators containing some items of Balanced Scorecard measures in order to gather PV Power's perceptions, in the manner of Balanced Scorecard, on the interactions between measures in operation and production of PV Power. In other words, this can be considered as the interactions between non-financial indicators and PV Power’s financial efficiency. This content will be specifically presented in Chapter 3 and Chapter 4, Section 4.5.3.
CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research method

Research design of this dissertation is case study, which is one of the major types of qualitative research design (Hancock, 1998). The focus of this study is on PetroVietnam Power Corporation in Hanoi, Vietnam.

The research method used for this research is qualitative research method because qualitative research method seeks answers to a question, systematically uses a predefined set of procedures to answer the question, collects evidence, produces findings that were not determined in advance and rich data, and produces findings that are applicable beyond the immediate boundaries of the study (Mack et al., 2005). In addition, other reason I chose qualitative evaluation research method is that the area to be studied is in PetroVietnam Power Corporation only and PetroVietnam Corporation has not applied Balanced Scorecard for its performance measurement yet. Specifically, qualitative research methods used for this dissertation include documentary analysis and semi-structured method such as in-depth interviews with open-ended questions as this is optimal for collecting data on individual’s personal histories, perspectives, and experiences (Mack et al., 2005).

The main source of data collection is documentation of PetroVietnam Power Corporation and the interview protocol and interview recording. Documents of PetroVietnam Power Corporation collected are short-term and long-term production and business plans, reports of production and business results, financial reports in a period from year 2007 to year 2010. In addition, in-depth interviews with top managers within PetroVietnam Power Corporation were conducted to collect data. After collecting the data, the data were processed and analysed through conducting qualitative content analysis as this is a method of identifying and labeling items of data which appear in the text of a transcript so that all the items of data in one interview can be compared with data collected from other interviewees (Hancock, 1998).

3.2 Sample design

Interviews

Sampling taken in this research was done basing on purposive sampling, which is one of the most sampling strategies according to preselected criteria relevant to a particular research
question. Moreover, purposive sample sizes are often determined on the basis of theoretical saturation (Mack et al., 2005). Specifically, the group was selected to interview is top Managers, Chief Accountants, and Manager of Controller of PetroVietnam Power Corporation because they are experienced and aware of PV Power’s operational system. Thus, they can provide information to answer the research question of this dissertation.

A pilot interview with the actual interview question guides was implemented with other researcher, who is studying with me in the same master course in order to clarify meaning of each question. Then, face to face interviews were conducted. Informed consent was obtained prior to in-depth interviews. First of all, I made phone calls to managers of PV Power and its subsidiaries for interview proposal and then discussed the purpose of this research in order that such managers can understand information and provide his or her consent to participate the interview. Before conducting the interview, I have committed to keep confidentiality about the interviewee and the information to be provided by the interviewee, and asked for the permission to record interviewing conversations.

Then, questions listed in an interview questionnaire were settled with each interviewee. There were 23 interviews, in which 15 interviews were approved to record and eight interviews were not approved to record. Each interview lasted about 60 to 70 minutes. For the interviews not being recorded, I have taken notes of interviewees’ answers. Some information such as date, time, place, name, and interview questions were prepared in the notes before conducting interviews. Spaces between interview questions were leaved on the page for taking notes. For interviews without recording, shorthand was used to take notes quickly what was happening and being said.

### 3.3 Research procedure

This research was done according to the following procedure. First, I preliminarily collect information of PV Power to define problems of PV Power in terms of performance measurement for the topic of this research. The second step is to place a research question that need to be solved. After studying the preliminary literature, the problem statement was refined and was converted to a research question. The third step is to design this research, which was presented in Section 3.1. After completing the research design, literature review was developed by collecting theory of financial efficiency, performance measurement, theory of Balanced Scorecard and results of studies on Balanced Scorecard.
The next step carried out for this research is to collect qualitative data. The details of data collection are presented in Section 3.2 and Section 3.4. First, data was collected from PetroVietnam Power Corporation’s short-term and long-term business production plans, reports of business production results for a period from year 2007 to 2010, financial reports in the same period. Second, 23 in-depth interviews were conducted within PV Power’s managers to collect data. Data collection was followed by the analysis of qualitative data, which included the qualitative content analysis of documentation and the interview data.

Subsequently, interpreting the findings was done. The findings were interpreted and the interpretation of the results of this study will be provided in Chapter 4. The last step of the procedure is to discuss and make conclusion. In this section, the recommendation for the improvement of PV Power’s performance measurement system will be provided.

3.4 Collecting data

As it is a qualitative research, methods of documentary data collection and in-depth interviews were applied to collect data. Documentary data collection is to understand the current situation of performance measurement and operational reports and financial efficiency of PV Power in a period from year 2007 to 2010. Specifically, to see whether PV Power achieved financial efficiency with its current performance measurement, find out which indicators did PV Power use in its operational and financial reports, who directly participated in making operational and production plans, and how does PV Power’s performance measurement system differs from Balanced Scorecard criteria.

In addition, the interviews seek to collect top managers’ ideas about their perception on financial and non-financial information using in PV Power’s performance measurement. The interviews conducted were also to find the interaction between non-financial and financial indicators within PV Power’s business production activities. Moreover, the aim of interviews is to gather perceptions of PV Power’s managers on how could indicators of four perspectives of Balanced Scorecard be used in PV Power, and how could performance measurement be improved to improve PV Power’s financial efficiency.

Data set of this research was collected from PV Power’s sources of documents. This source includes long-term operational production plans meaning plans made up to year 2015 and 2025, short-term operational production plans meaning annual plans in a period from year 2007 to year
2010, regular and unscheduled reports of production and business activities results in the same period, financial reports in the same period, and data collected from interview notes and recordings. In addition, the data set of this research were collected from the Enterprise Law no. 60/2005/QH11 promulgated on 29th November 2005 by the Parliament of Vietnam, the regulation of Oil and Gas Group of Vietnam on planning, reporting production and business activities in an organization, and performance measurement according to Balanced Scorecard approach.

Moreover, interview questions of this research were built basing on target of this research and indicators of Balanced Scorecard’s four perspectives. Twenty three interviews were conducted within PetroVietnam Power Corporation’s managers. Final, data collection instruments used for this research are documentary, in-depth interview guide and interview scripts. For further information of interview questionnaire, please see Appendix 1 of this research.

3.5 Data analysis

Objectives of data analysis of this qualitative research method are to describe variation and individual experiences, to describe and explain relationships (Mack et al., 2005). First of all, I summarised the mass of data collected and presented the results in a way that communicates the most important features. I analysed real financial data, real performance measures during a period from year 2007 to 2010 of PV Power through collecting financial statements, financial information, production and business planning reports, and reports of results of production and business activities for the understanding of current situation of PV Power’s performance measurement. Specifically, to find out which indicators that PV Power used in its operational and financial reports. After that, in-depth interviews were conducted to gather top managers’ ideas about how could performance measurement be improved and how could indicators of four perspectives of Balanced Scorecard be used in PV Power.

Due to using qualitative research method, data analysis and in-depth interviews, the analysis of data was done by using a method of content analysis (Hancock, 1998). Descriptive account of the data collected and interpretative analysis were used. Specifically, data collected from interviews were classified according to categories. After the list of data categories have been identified from the transcript, the analysis of content was commenced. Finally, basing on results of analysis, the recommendation was provided for PV Power to improve its performance measurement system.
CHAPTER 4: PERFORMANCE MEASUREMENT IN PETROVIETNAM POWER CORPORATION

4.1 General introduction and context of PetroVietnam Power Corporation

4.1.1 History of PV Power

PetroVietnam Power Corporation (abbreviated as PV Power) is the parent company with 100 percent of legal capital owned by Vietnam National Oil and Gas Group under the Decision No 1468/QD-DKVN dated May 17, 2007 by Board of Directors of Vietnam National Oil and Gas Group. PV Power’s legal capital, by the end of 2010, was VND 11,238.00 billion equivalent to USD 561.90 million.

PV Power, which is one of the leading corporations of Vietnam Oil and Gas Group, operates mainly in the field of power plant investment, electricity generation with government-assigned task is to ensure energy security national goals for economic development and industrialization, modernization of the country.

After four years of development, PV Power has gradually affirmed itself as one of the leading enterprises in generating and trading electricity in Vietnam. Currently, PV Power has its headquarters in Hanoi, Vietnam, four affiliates, eight subsidiaries, and seven associated companies located in all around the country. In addition, PV Power has more than 1,500 qualified and experienced employees, four power plants are in operation currently and a number of power plant projects are in investment and construction phases.

Along with the development orientation of Vietnam power sector, PV Power’s strategy till 2015 is to reach the total installed capacity of all power plants of over 10,000 MW, with commercial power output of around 36-40 billion kWh per year, accounting for 16-20 percent of the total national output and to bring this ratio to around 30 percent by 2025.

Established in 1997, throughout four years of strive and development, PV Power has made significant, great developments and progresses. Challenges are great but the future is wide open. The Management Board and all the staff members of PV Power determine, with the spirit of daring to think, daring to do and daring to take responsibility, to build PV Power to become a powerful industrial and commercial Corporation on every aspect, to deserve trust of the Party,
the Government, and together with the Vietnam National Oil and Gas Group to **light up the future of the country**.

### 4.1.2 Main operational fields of PV Power

Main operational activities of PV Power are as follows:

- Generating and trading electricity;
- Investing new power plants in domestic and abroad;
- Supplying services of designing power plants;
- Supplying services of power plant management and consultancy;
- Providing services of maintenance of power plants.

In addition to the main activities presented above, electric power industry development strategy was put on the top and throughout the operation of PV Power. Moreover, PV Power promotes to invest build big power plants inside and outside the country, train and develop human resources so as to meet the demand for development of the corporation. Moreover, PV Power is providing power engineering services and other technical services for industrial and electric power plants, power project management and construction consultant services in domestic and foreign markets, manufacturing and trading electrical equipment and instruments.

### 4.1.3 Mission, vision and strategy of PV Power

PV Power brought out its mission and vision. The mission of PV Power is to guarantee energy security of the country. PV Power’s vision toward the year 2025 is to account for 30 percent of the total national power output.

PetroVietnam Power Corporation also had its development strategy toward the year 2025. First of all, it strives for being the leading corporation of the country on gas thermal power output and hydropower investment abroad. Besides, PV Power attempts to be a second-ranked position in the country in total commercial power output, coal-fired thermal plants, and the pioneer in research and development of new energy, renewable energy including nuclear energy.
Figure 3: Organization chart of PV Power
4.2 Operational results of PetroVietnam Power Corporation in four year from 2007-2010

4.2.1 Major financial indicators and operational result data of PV Power from year 2007-2010

Operational results of PetroVietnam Power Corporation in four years from 2007 to 2010 are presented in Table 1 as follows.
Table 1: Operational results of PV Power from year 2007 to 2010
(Financial data were audited)

<table>
<thead>
<tr>
<th>No.</th>
<th>Contents</th>
<th>Unit</th>
<th>Year 2007</th>
<th>Year 2008</th>
<th>Year 2009</th>
<th>Year 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Current assets</td>
<td>Million VND</td>
<td>2,046,911</td>
<td>4,184,045</td>
<td>9,213,256</td>
<td>11,901,841</td>
</tr>
<tr>
<td></td>
<td>In which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Short term financial</td>
<td>Million VND</td>
<td>0</td>
<td>0</td>
<td>1,138,014</td>
<td>1,556,811</td>
</tr>
<tr>
<td></td>
<td>investment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Receivable</td>
<td>Million VND</td>
<td>27,710</td>
<td>683,606</td>
<td>3,327,017</td>
<td>4,956,873</td>
</tr>
<tr>
<td>II</td>
<td>Non-current assets</td>
<td>Million VND</td>
<td>2,714,540</td>
<td>18,355,105</td>
<td>20,551,966</td>
<td>28,476,923</td>
</tr>
<tr>
<td></td>
<td>In which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Fixed assets</td>
<td>Million VND</td>
<td>2,170,472</td>
<td>17,147,133</td>
<td>20,038,346</td>
<td>26,682,170</td>
</tr>
<tr>
<td></td>
<td>2 Long term financial</td>
<td>Million VND</td>
<td>539,913</td>
<td>1,191,897</td>
<td>831,002</td>
<td>831,002</td>
</tr>
<tr>
<td></td>
<td>investments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total assets</td>
<td>Million VND</td>
<td>4,779,452</td>
<td>22,539,150</td>
<td>29,765,222</td>
<td>40,378,765</td>
</tr>
<tr>
<td>III</td>
<td>Liability</td>
<td>Million VND</td>
<td>1,820,803</td>
<td>17,880,485</td>
<td>18,651,895</td>
<td>27,171,628</td>
</tr>
<tr>
<td></td>
<td>In which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Payable to sellers</td>
<td>Million VND</td>
<td>38,826</td>
<td>633,607</td>
<td>1,698,574</td>
<td>4,388,416</td>
</tr>
<tr>
<td></td>
<td>2 Non-current liability</td>
<td>Million VND</td>
<td>335</td>
<td>4,256,376</td>
<td>10,158,078</td>
<td>17,874,882</td>
</tr>
<tr>
<td>IV</td>
<td>Equity</td>
<td>Million VND</td>
<td>2,958,075</td>
<td>4,618,299</td>
<td>9,402,228</td>
<td>11,410,420</td>
</tr>
<tr>
<td></td>
<td>In which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Investment of the owner</td>
<td>Million VND</td>
<td>2,983,287</td>
<td>4,803,306</td>
<td>9,166,227</td>
<td>11,238,000</td>
</tr>
<tr>
<td></td>
<td>V Benefit of minority</td>
<td>Million VND</td>
<td>572</td>
<td>40,366</td>
<td>1,711,098</td>
<td>1,796,715</td>
</tr>
<tr>
<td></td>
<td>shareholders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total equity</td>
<td>Million VND</td>
<td>4,779,452</td>
<td>22,539,150</td>
<td>29,765,222</td>
<td>40,378,765</td>
</tr>
<tr>
<td>VI</td>
<td>Total revenue</td>
<td>Million VND</td>
<td>698,070</td>
<td>3,216,654</td>
<td>8,728,840</td>
<td>14,987,305</td>
</tr>
<tr>
<td></td>
<td>In which:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Revenue of goods sold</td>
<td>Million VND</td>
<td>679,752</td>
<td>2,920,263</td>
<td>8,190,833</td>
<td>14,805,238</td>
</tr>
<tr>
<td></td>
<td>and services supplied</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Financial revenue</td>
<td>Million VND</td>
<td>8,744</td>
<td>268,972</td>
<td>262,741</td>
<td>166,247</td>
</tr>
<tr>
<td></td>
<td>3 Other revenue</td>
<td>Million VND</td>
<td>9,544</td>
<td>2,080</td>
<td>268,609</td>
<td>9,238</td>
</tr>
</tbody>
</table>
Table 2: Power generated of the whole country from year 2007-2010 (Divided by producers)

<table>
<thead>
<tr>
<th>No.</th>
<th>Electricity Producer</th>
<th>Year 2007 (million Kwh)</th>
<th>Year 2008 (million Kwh)</th>
<th>Year 2009 (million Kwh)</th>
<th>Year 2010 (million Kwh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Electricity Group of Vietnam (EVN)</td>
<td>50,658</td>
<td>52,857</td>
<td>56,581</td>
<td>58,199</td>
</tr>
<tr>
<td>2</td>
<td>PetroVietnam Power Corporation (PV Power)</td>
<td>651</td>
<td>3,618</td>
<td>8,542</td>
<td>12,685</td>
</tr>
<tr>
<td>3</td>
<td>Small Producers</td>
<td>17,390</td>
<td>19,480</td>
<td>21,896</td>
<td>29,187</td>
</tr>
<tr>
<td></td>
<td>Total of the whole country</td>
<td>68,699</td>
<td>75,955</td>
<td>87,019</td>
<td>100,071</td>
</tr>
</tbody>
</table>

Source: data extracted from PV Power’s reports of business production results from year 2007-2010.
Figure 4: Market share of PV Power from year 2007-2010

Source: Data collected from operational reports of PV Power from year 2007-2010.

Table 2 and pie charts presented above show the growth of power output and market share of PV Power during a period from year 2007 to 2010. At the beginning of the period, PV Power’s power output achieved 651 million Kwh, which formed one percent of total national power output and increased sharply to 3,618 million Kwh constituting five percent of total national power output. In 2009, PV Power’s power output continuously jumped nearly two times to 8,542 million Kwh, compared with year 2008, which came to ten percent of total national power output, and finally soared to 12,685 million Kwh accounting for thirteen percent of total national power output.

4.2.2 Capital mobilization
The source of capital for production and business activities and investment of PV Power includes equity and loans including short-term and long-term loans from domestic and foreign banks. PV Power has not applied types of capital mobilization in the form of bonds, bills or other forms of capital mobilization.

**Equity sources.** Sources of equity of PV Power was formed by capital provided by Oil and Gas Group of Vietnam and PV Power’s self funding including portfolio, provident funds, other funds belonging equity, profit after tax not having been distributed, and other capital of the owner.

### 4.2.3 Power plant projects invested by Power

#### 4.2.3.1 Investment projects fully owned by PV Power

PV Power, since its establishment, has been investing many power plant projects including power plant projects fully and partly owned by PV Power. First, power plant projects fully owned by PV Power are presented in Table 3 as follow.

**Table 3: Power plant projects fully owned by PV Power**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of project</th>
<th>Total investment (billion VND)</th>
<th>Capacity (MW)</th>
<th>Location of the power plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ca Mau 1 gas fired power plant</td>
<td>6,874.00</td>
<td>750</td>
<td>In the South of Vietnam</td>
</tr>
<tr>
<td>2</td>
<td>Ca Mau 2 gas fired power plant</td>
<td>6,825.00</td>
<td>750</td>
<td>In the South of Vietnam</td>
</tr>
<tr>
<td>3</td>
<td>Nhon Trach 1 gas fired power plant</td>
<td>6,451.00</td>
<td>450</td>
<td>In the South of Vietnam</td>
</tr>
<tr>
<td>4</td>
<td>Phu Quy wind power plant</td>
<td>355.20</td>
<td>6</td>
<td>In the South of Vietnam</td>
</tr>
</tbody>
</table>

Source: Data extracted from PV Power’s investment documents from year 2007 to 2011.

#### 4.2.3.2 Power plant projects partly owned by PV Power

In addition to the power plant projects fully owned by PV Power presented in Table 3, there are 12 power plant projects that partly owned by PV Power and to be presented in Table 4 of this thesis. Moreover, PV Power is investing further power plants such as Luang Prabang hydro
power plant in Laos, Ninh Thuan win power plant in the South of Vietnam, geothermal power plant in the South of Vietnam and other thermal power plans using liquidized natural gas.

Table 4: Power plant projects partly owned by PV Power

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of project</th>
<th>Total investment (billion VND)</th>
<th>Percentage of capital owned by PV Power (%)</th>
<th>Capacity (MW)</th>
<th>Location of the power plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nhon Trach 2 gas fired power plant</td>
<td>11,448.00</td>
<td>70</td>
<td>750</td>
<td>In the South of Vietnam</td>
</tr>
<tr>
<td>2</td>
<td>Hua Na hydro power plant</td>
<td>5,964.00</td>
<td>Above 70</td>
<td>180</td>
<td>In the Middle of Vietnam</td>
</tr>
<tr>
<td>3</td>
<td>Dakdrink hydro power plant</td>
<td>3,423.00</td>
<td>Above 70</td>
<td>125</td>
<td>In the Middle of Vietnam</td>
</tr>
<tr>
<td>4</td>
<td>Nam Cat hydro power plant</td>
<td>136.00</td>
<td>Above 70</td>
<td>7.5</td>
<td>In the North of Vietnam</td>
</tr>
<tr>
<td>5</td>
<td>Xekaman 1 hydro power plant</td>
<td>7,137.00</td>
<td>Above 20</td>
<td>290</td>
<td>In Laos</td>
</tr>
<tr>
<td>6</td>
<td>Xekaman 3 hydro power plant</td>
<td>5,536.00</td>
<td>Above 20</td>
<td>250</td>
<td>In Laos</td>
</tr>
<tr>
<td>7</td>
<td>Song Tranh 3 hydro power plant</td>
<td>1,494.00</td>
<td>Above 20</td>
<td>62</td>
<td>In the Middle of Vietnam</td>
</tr>
<tr>
<td>8</td>
<td>Song Mien hydro power plant</td>
<td>145.24</td>
<td>Above 30</td>
<td>6</td>
<td>In the North of Vietnam</td>
</tr>
<tr>
<td>9</td>
<td>An Diem 2 hydro power plant</td>
<td>441.00</td>
<td>Above 20</td>
<td>15</td>
<td>In the Middle of Vietnam</td>
</tr>
<tr>
<td>10</td>
<td>Ngoi Hut 1 hydro power plant</td>
<td>245.00</td>
<td>Above 20</td>
<td>8.4</td>
<td>In the North of Vietnam</td>
</tr>
<tr>
<td>11</td>
<td>Nam La hydro power plant</td>
<td>649.00</td>
<td>Above 20</td>
<td>30</td>
<td>In the North of Vietnam</td>
</tr>
<tr>
<td>12</td>
<td>Nam Chien 2 hydro power plant</td>
<td>735.00</td>
<td>Above 20</td>
<td>32</td>
<td>In the North of Vietnam</td>
</tr>
</tbody>
</table>

Source: Data extracted from PV Power’s investment documents from year 2007 to 2011.

4.3 Analysing financial efficiency of PV Power

4.3.1 Profit and loss
Table 1 presented above shows the results of operation and production activities of PV Power in a period from 2007-2010, in which results in 2007 and 2008 were of a loss and in 2009 and 2010 were profitable. This is explained as follows, PV Power was established in May, 2007 with main activities are generating and trading of electricity. In 2007, there was only one power plant namely Ca Mau 1 of PV Power operating single cycle mode. PV Power’s revenue, in this year, came only from the power output of this plant, meanwhile, PV Power had to pay for all costs of initial operation and production. Thus, total revenue of VND 698,018 million was not enough to offset the costs of VND 764,240 million in 2007, which resulted in the loss of VND 66,199 million in 2007.

There was one more power plant of PV Power coming into operation in 2008, which lead to an increase of PV Power’s revenue to VND 3,126,654 million in 2008 being higher 360 percent than that in 2007. However, selling price of electricity negotiated with electricity buyer did not include all costs of production and business activities (because Vietnam has only one monopoly buyer, who was assigned by the Government, to purchase electricity from all power plants and sell to all consumers across the country. This is a disadvantage to the seller when there is not much choices in business negotiations), meanwhile, total costs of PV Power in 2008 was VND 3,380,099 million, which caused the loss of VND 162,289 million in 2008.

PV Power’s revenue in 2009 reached VND 8,728,840 million, which went up 170 percent compared to 2008 due to one more power plant coming into operation. Moreover, PV Power achieved a new agreement with Electricity of Vietnam on electricity price. With this new agreement some of the costs of production and business activities, which have not been fully taken into account such as costs for operation and maintenance of power plants, thereafter have been charged with a higher rate in electricity prices though such costs have not been fully calculated. PV Power’s total cost in 2009 was of VND 8,227,816 million which was lower than revenue of VND 8,727,840 million. Therefore, PV Power’s profit after tax reached VND 471,624 million in 2009.

PV Power’s revenue in 2010 achieved VND 14,987,305 million, which leaped 172 percent over the year 2009 because one more power plant of PV Power came to operation in 2010, meanwhile PV Power’s total cost was of VND 14,761,236 million in 2010. However, due to the fundamental problem of differences in exchange rate, profit after tax of PV Power was only of VND 208,918 million in 2010 equivalent to 44 percent of that in 2009. General changes in
revenues, costs and profit after tax of PV Power in a period from 2007 to 2010 are illustrated in Figure 5.

![Bar chart showing total revenue, total cost, and profit after tax for PV Power from 2007 to 2010.](chart.png)

**Figure 5:** Total revenue, total cost, profit and loss of PV Power in a period from 2007 to 2010.

Source: Data extracted from financial reports of PV Power in a period from 2007 to 2010.

4.3.2 Financial efficiency analysis

As presented in Section 2.1.1 of this thesis, financial efficiency can be defined by a fraction of output per input or input per output. First, Quang (2011, page 181) defined criteria of output including total turnover of goods sold and services supplied, gross profit of goods sold and services supplied, profit before tax, and profit after corporate income tax. Data of these criteria
are collected from the report of business production result of the organization. Second, regarding criteria of input, Quang (2011, page 181) stated that input can be defined according one of the two different ways. The first way is basing on the balance sheet to define input, which includes total assets, total owned equity, total non-current assets, and total current assets. The other way is basing on the organization’s report of business production result in order to define input, which includes costs of goods sold and services supplied, expenses for selling goods, management costs, financial expenses, and other expenses.

Therefore, PV Power’s financial efficiency of each year from 2007 to 2010 was calculated by a fraction of output per input\(^2\). First, PV Power’s output is a sum of total revenue, gross profit, profit before tax, and profit after tax. These data were collected from PV Power’s reports of business production results in a period from year 2007 to 2010 and presented in Table 1, Section 4.2.1 of this thesis. Second, PV Power’s input is a sum of costs of goods sold and services supplied, financial expenses, expenses for selling goods, management costs, and other expenses. The data of input were collected from PV Power’s reports of business production results in a period from year 2007 to 2010 and presented in Table 1, Section 4.2.1 of this thesis. By using this method, PV Power’s financial efficiency of each year from 2007 to 2010 was defined.

Specifically, financial efficiency of PV Power calculated was 0.69 in 2007; 0.84 in 2008; 1.26 in 2009; and 1.07 in 2010. Thus, VND 1.00 of input creates VND 0.69 of output in 2007, VND 0.84 of output in 2008, VND 1.26 of output in 2009, and VND 1.07 of output in 2010. Generally, PV Power’s financial efficiency from the first two years of losses increased from 0.84 in 2008 to 1.26 in 2009 equivalent to the increase of 50 percent in 2009 compared to 2008 then went down to 1.07 equivalent to the decrease of 15 percent in 2010 compared to 2009. The changes of PV Power’s financial efficiency in this period are presented in Figure 6.

\(^2\) This formula was presented in Section 2.1.1 – Concept and measures of financial efficiency.
Figure 6: Financial efficiency of PV Power in a period from 2007-2010

Source: Data extracted from financial reports of PV Power in a period from 2007 to 2010.

Figure 7: Profit after tax of PV Power in a period from 2007-2010

Source: Data extracted from financial reports of PV Power in a period from 2007 to 2010.

Regarding results of PV Power’s operation and production in a period from year 2007 to 2010 presented in Table 1, profit after tax was minus VND 66,199 million in 2007, minus VND 162,289 million in 2008, positive VND 471,627 million in 2009, and positive VND 208,918 million in 2010. Generally, as illustrated in Figure 7, PV Power’s profit after tax decreased 145 percent in 2008 compared to 2007, then increased to 191 percent in 2009 compared to year 2008 but finally slipped 56 percent in 2010 compared to year 2009. This demonstrates that there was rapid growth and efficient production in 2009, however, PV Power’s growth and efficiency declined in 2010 as follows.
First, making comparison of revenue and cost of goods sold and services supplied between years in the period, as presented in Table 1, PV Power’s revenue of goods sold and service supplied was VND 679,752 million in 2007, VND 2,920,263 million in 2008, VND 8,190,833 million in 2009 and VND 14,805,238 million in 2010. PV Power’s cost of goods sold and services supplied was VND 735,635 million in 2007, VND 2,964,427 million in 2008, VND 7,470,493 million in 2009 and VND 13,634,814 million in 2010. In comparison between year 2009 and 2008, the growth speed of 180 percent of goods and service revenue was higher than the growth speed of 152 percent of goods and services cost. This proved that input costs of goods and services have been saved in 2009. Subsequently, in comparison between year 2010 and 2009, the growth speed of 81 percent of goods and service revenue was lower than the growth speed of 83 percent of input costs. This shows that input costs in 2010 not only being kept at the same rate of previous year but also rising, and input costs, in 2010, is considered as not having been well controlled. The change of growth speed of revenue and cost of goods sold and services supplied in a period from year 2007 to 2010 are illustrated in Figure 8.

![Figure 8: Growth speed of revenue compared to that of cost of goods and services supplied by PV Power during a period from 2007-2010](image)

Source: Data extracted from financial reports of PV Power in a period from 2007 to 2010.

Second, making comparison of financial revenue and financial cost between years in the period, as presented in Table 1, PV Power’s financial revenue was VND 8,744 million in 2007, VND
268,972 million in 2008, VND 262,741 million in 2009 and VND 166,247 million in 2010. PV Power’s financial cost was VND 8 million in 2007, VND 301,871 million in 2008, VND 583,065 million in 2009 and VND 911,257 million in 2010. In comparison between year 2009 and 2008, financial revenue slightly decreased in a speed of 2 percent, meanwhile financial costs increase significantly in a speed of 93 percent. Moreover, in comparison between year 2010 and 2009, financial revenue continuously dropped in a speed of 37 percent but financial costs surged in a speed of 56 percent. This shows that PV Power’s financial activities done ineffectively in 2009 and 2010. PV Power should reduce and strictly control financial costs. PV Power’s growth speed of financial revenue and financial cost in a period from year 2007 to 2010 is demonstrated in Figure 9.

![Figure 9: Growth speed of financial revenue compared to that of financial cost of PV Power in a period from 2007-2010](image)

Source: Data extracted from financial reports of PV Power in a period from 2007 to 2010.

Third, making comparison of other revenue and other cost between years in the period, Table 1 shows that PV Power’s other revenue was VND 9,544 million in 2007, VND 2,080 million in 2008, VND 268,609 million in 2009 and VND 9,238 million in 2010. PV Power’s other cost was VND 74 million in 2007, VND 2,482 million in 2008, VND 15,924 million in 2009 and VND 9,980 million in 2010. In comparison between year 2009 and 2008, revenue of other activities shoot up in a speed of 12,814 percent, which was much higher than growth speed 542 percent of costs of other activities. The reason of dramatic jump of other revenue in 2009 was the income from recoveries of bad debts. Thus, profit of other activities, in 2009, moderately
impacted on PV Power’s total profit. However, in comparison between year 2010 and 2009, revenue of other activities crashed 97 percent, meanwhile costs of other activities slipped only in a speed of 38 percent. Moreover, in 2010, other cost of VND 9,980 million was higher VND 742 million than other revenue of VND 9,238 million. This negatively impacted on PV Power’s total profit in 2010. Therefore, PV Power should reduce and strictly control costs of other activities. PV Power’s growth speed of other revenues and other costs in a period from year 2007 to 2010 is illustrated in Figure 10 hereafter.

![Figure 10: Growth speed of other revenue compared to that of other costs of PV Power during a period from 2007-2010.](image)

Source: Data extracted from financial reports of PV Power in a period from 2007 to 2010.

In short, the analyses presented above show that PV Power’s input costs were not well controlled. With the characteristics of the electricity market in Vietnam, only one monopoly buyer assigned by the Government to buy electricity from all power plants and then sell to all consumers. Moreover, in the current period, PV Power’s all power plants have been operating closely to maximum capacity, for instance above 80 percent of total capacity. Therefore, the efforts to increase revenue, considering the current situation of operation conditions of PV Power’s existing power plants, seem to be not urgent. In order to increase PV Power’s financial efficiency, the most important things for PV Power is to control and reduce the input costs of production and business activities. To better control the production and business activities for
the aim to reduce input costs and increased financial efficiency, PV Power needs a comprehensive performance measurement system because “what you measure is what you get” (Kaplan and Norton, 1992).

4.4 Current use of performance measurement in PetroVietnam Power Corporation

4.4.1 Overview of PV Power’s reports system

The performance of PV Power is managed through the following report system.

4.4.1.1 Production and business planning process

Under The Vietnam Oil and Gas Group’s development strategy for the period of 2010-2015 and orientation toward 2025, production business plans are mapped out for a long term period of five years and a short term period of one year. On the eve of a period of 5 years or every year, PV Power sets out its production business plan as follows.

The long-term business production plan of PV Power for the period of 2010-2015 and its orientation toward 2025

First, the long-term business production plan of PV Power for the period of 2010-2015 and its orientation toward 2025 was set up under the development strategy toward 2015 and orientation toward 2025 of Vietnam oil and gas sector as well as PV Power’s overall objectives as follows. Building PV Power to become a strong trading and industrial corporation which specializes in generating and trading electricity as well as related products and services, of which electricity generating and trading take a key priority to make PV Power become a prestigious brand in the country, Southeast Asia region and international market.

Second, constructing and developing electricity sources, generating and trading multi electricity power plants, managing to take the lead in gas fired power production in Vietnam and second-ranked position behind Electricity of Vietnam in terms of hydraulic power output and the total power output. Besides, the corporation aims to become the country’s leader in investing abroad to build hydraulic power plants especially in Cambodia and Laos. PV Power also engages in producing and trading electrical equipment and spare parts serving the various industries, civil works, power plants, electricity transmission and distribution systems. Furthermore, PV Power promotes and makes full use of all kind of resources to raise the corporation’s competition
abilities, contributes to guarantee the national energy security and serves the national cause of modernization and industrialization.

Long-term plans include key indicators such as financial indicators (revenue, profit before tax, profit after tax, tax, the debt on equity, the return on equity ratio (ROE)), the total capacity of power plants, total power output of each year in the planning stage, services of electrical engineering and consultancy, investment and development of power plant projects, the total number of employees in each year, average income, training expenditures. In addition, long-term plans propose solutions for capital resource, human resource, co-operation with domestic and foreign partners, equitizing a number of power plants being in operation, employee training, building quality management system for safety operation and maintenance works, the solution of science and technology, environmental protection, technical operational management. However, the proposed solutions are just for orientation, not specifically for detail deployment and implementation. For instance, training plan only showed the purpose of improving employee’s professional competency, did not specify what training should be carried out to meet the planned tasks.

Regarding the orientation toward 2025, PV Power only focuses on developing new power plant projects. This long-term production and business plan was set out by PV Power and submitted to PVN for approval at the beginning of the long-term period. The strategy to speed up the development growth rate in the power sector toward 2015 and orientation toward 2025 is in compliance with PVN’s master plan and from that, PV Power is supposed to map out its own plans serving the high growth rate target.

**Annual business production plans**

In every October, Economic Planning Division of PV Power collects indicators from functional divisions to build operational and productional plan for the coming year. The indicator of electricity output is suggested under the approved long-term plan. However, other indicators were built according to functional divisions’ proposals. Therefore, the planning process is regarded as illogicality and lack of interrelation among indicators, incentives to create causal logicality. For annual production plans, key indicators are given similarly to the long-term plan, but more detail and more explanations for each key indicator are provided, for example, power output, revenues, profits, needs capital, number of employees. In addition, annual plan sets out the annual schedule for specific items of each power plant project. Moreover, solutions of
human resources, management and administration, finance and other solutions are given to implement the annual plan. Although solutions given in annual plans are more than those in long-term plan, but most of them are still general and do not show which solution is needed for a certain target of the plan. This means that the indicators of the plan are unsystematic, incoherent, spread and lack of focus.

Annual and long-term planning is done without the direct involvement of PV Power’s senior leaders but by its functional divisions, which build indicators for its activities and transfer to Economic Planning Division for consolidation. After that, the plan is submitted to the President and CEO of PV Power for consideration and further comments before submitting to higher management level, which is The Vietnam Oil and Gas Group, for approval. The plan indicators and solutions given are for the implementation of each unit of PV Power. However, each unit has not set up objectives and specific initiatives for individual in the unit to ensure the general target eventually being completed fully.

**Monthly business production plans**

In every month, PV Power’s functional divisions are assigned to formulate their next month’s performance plan which is transferred to the Economics Planning Division for processing and then it is submitted to the President and CEO in the scheduled meeting to be held in every two weeks. The functional divisions report their performance during the last two weeks and plan their tasks for the next two weeks. The data in these reports are detailed but unfocused. Thus, the President and CEO may not concentrate solving key issues and may not be possible to settle all issues. Moreover, formulating the own plans by divisions for the next two weeks or next month may lead to the lack of interaction key between issues and planned objectives, and the neglect of important issues that need to be settled if such issue is the challenges for a certain division or such division may intentionally ignore their real challenges.

The procedure of setting up and approving operation and production plans of PV Power is as follows. Short-term (one year) and long-term (five years) plans for operation and production of PV Power are set up by functional divisions and then transferred to the Economic Planning Division for consolidation. The general plan is then submitted, by Economic Planning Division, to the President and CEO for consideration and ratification before submitting to The Vietnam Oil and Gas Group for final approval. The plan will be rechecked and reconsidered by The Vietnam Oil and Gas Group (abbreviated as PVN) during a meeting to be held by PVN and may
be modified if necessary and under PVN’s request. Subsequently, once the plan has been revised and resubmitted to PVN, the plan will be approved for the implementation of PV Power. PV Power is responsible to report the results of operation and production to PVN monthly, quarterly and annually.

4.4.2.2 Performance reports

PV Power’s performance reports are made once per two weeks for weekly meetings of top and middle managers monthly, quarterly, and annually. In addition, there are unscheduled reports to be made according to PV Power’s managers. The procedure of performance report making is as follows. First, each individual of functional divisions shall report his or her performance implemented and next plan to the person in charge of the division. Subsequently, the report of each division will be sent to Economic Planning Division Commission for the consolidation and to be submitted to the President and CEO, and to PVN thereafter. Performance report system of PV Power comprises of the following reports.

First, financial statements to be made according to regulation of Ministry of Finance (Ministry of Finance, 2000) including balance sheet, business performance report, cash flow report and explanation of financial statements. These reports, which focus on financial indicators only, are made by Finance Accounting Auditing Division quarterly and annually. The second type of report is unplanned financial reports. These reports are also made by Finance Accounting Auditing Division and focus on financial indicators only.

The third type of PV Power’s reports is management reports. These reports analyse revenues and costs according to cost components of electricity selling prices such as operation and maintenance costs, cost of fuel, capacity charges of power plants. These reports, which are made by Finance Accounting Auditing Division quarterly and annually, are submitted to the President and CEO, then to the Board of Management of PV Power. The contents of the reports include key indicators on power output, revenues and costs. The reports contain analysis of reasons leading to the reduction of power output, the increase of input costs. The analysis only focuses on fuel costs because fuel cost accounts for about 80 percent of total costs of power generation. Two main reasons leading to the increase of gas fuel costs are the dependence of gas price on international oil prices and the gaps in exchange rate of foreign currency between the point of time PV Power making payment to gas suppliers and the point of time PV Power being paid from Electricity of Vietnam, who is monopoly buyer. Therefore, management reports only
reflect financial information without evaluating non-financial information and internal factors of PV Power.

Fourth, reports of all divisions’ performance are prepared monthly, quarterly, annually, and accidentally. These reports are made by all divisions on their tasks implemented, tasks being on the progress, reasons of uncompleted tasks, and recommendations. However, uncompleted tasks are often lasted without drastic solutions to solve.

The fifth type of report is the report of PV Power on one-year results of accelerated development strategy of Vietnam Oil and Gas sector. The report shows programs of solution groups, which have been done within a year. For instance, programs executing management solution were provided. Specifically, decisions approving the quality policy of PV Power was issued, solutions to implement strategic objectives of power output production for a period from 2011–2015 were built, and a team to upgrade the accounting software for the management of revenues and costs of PV Power was established. In addition, programs implementing human resource solutions were provided such as organizing a seminar on "strategy of training and human resource development of PV Power”, training leadership positions and staffs of PV Power. Furthermore, programs performing science research solutions were brought out such as establishing the Board of Science and Technology of PV power, and approving the proposal of raising the capacity of Nhon Trach 1 power plant. Final, programs implementing investment solutions were implemented such as reallocating PV Power’s capital in hydroelectric power projects.

At the same time, report implementing one year of the strategy shows power output that has been achieved in one year, comparing the percentage of the result with the strategy. In addition, the report explains the cause of external effects such as financial market, which has adverse trends for PV Power’s financial investment. The report also reviews advantages, disadvantages, shortcomings, and causes affecting PV Power’s strategic objectives. For instance, the impact from unstable situation of gas supply to power generation; the dependence of gas price on international oil price; high depreciation costs. As a result, costs for power generation are higher than other power plants and power output declined. Furthermore, as reported by PV Power (2010), the effects of the economic downturn led to industrial growth reaching from 8 to 10 percent lower than expected from 15 to 18 percent has affected the needs of power from national grid system. The report also evaluated the effects of inflation and economic recession, foreign currency exchange rate fluctuations, which affect input factors of production, increase production costs, adversely impact on profit targets of PV Power. Currently, Electricity of
Vietnam owes PV Power for electricity payments with the debt over VND 11 trillion equivalent to 105 percent of PV Power’s charter capital (PV Power, 2011). Consequently, Electricity of Vietnam’s debt affected PV Power’s balance of cash flow and increased financial costs affecting the ability of PV Power to repay loans to credit institutions. The report also gives out financial and non-financial objectives and measures for the following stages. However, the solutions presented in this report are general, unspecific, for example, one of solutions to accomplish financial goals is to collect debts from Electricity of Vietnam in order to ensure capital source for PV Power’s production and business. Other solutions are given in general manner similarly to those of long-term plan of PV Power.

4.4.2 Advantages and disadvantages of PV Power’s current performance measures

PV Power’s performance measurement has advantages and disadvantages as follows.

**Advantages**

PV Power’s performance measurement has some advantages. Firstly, it is easy to define objectives because basing on the acceleration development strategy issued by The Vietnam Oil and Gas Group to year 2015 and its orientation toward 2025. Secondly, planning and reporting are done quickly because the indicators are easily defined, and there is no detailed initiative for each issue to execute. Other advantage of PV Power’s performance measurement is regarding performance appraisal, the report only emphasizes tasks completed while provide general assessment on the tasks that not have been completed, not provide a thorough analysis of the causes led to the uncompleted tasks. As a result, PV Power’s performance appraisal does not displease staffs. This is one of cultural characteristics of working environment in the state-run companies. Finally, PV Power’s frequency of meeting and reporting once per two weeks helps the leaders to capture relatively information on production and business activities of the corporation.

**Disadvantages**

Despite the advantages presented above, PV Power’s performance measurement is not without its shortcomings. In addition to PV Power’s financial indicators and power output, which were quantified, non-financial indicators have not been quantified, initiatives were not detailed but generic. Moreover, the targets lack the concentration and logical association. Therefore,
performance management and performance measurement are not systematic and not comprehensive to manage operation and production, grasp the root causes of the problems in a timely manner, and address the issue of performance measurement.

Moreover, job assignment made to staffs is unspecific so it is difficult to appraise staffs’ performance in a proper way. Consequently, it is difficult to determine the appropriate salary to be paid to staff according to their abilities, competencies and performance results of each month. As a result, incentives were not created to the employees of the corporation.

4.4.3 Applying Balanced Scorecard theory to appraise PV Power’s performance measurement

4.4.3.1 Procedures of operation production planning and performance measurement

Procedures of operation production planning

First of all, up to now PV Power does not have unit specialized in strategy area but only Economic Planning Division. This division is responsible for planning business and production activities and making performance reports basing on data collected from PV Power’s functional divisions and subsidiaries. PV Power does not have a separate strategy for production and business activities. There is a number of indicators, which are called as a strategy, to be integrated into the long-term plans of production and business activities. Basing on accelerated development strategy of the Vietnam Oil and Gas Group toward 2015 and its vision toward 2025, Economic Planning Division, in every October, prepares the letter to send and request PV Power’s functional divisions and subsidiaries making plans of business production activities of each unit in PV Power. The divisions and subsidiaries will plan their activities and send the plan to Economic Planning Division. More specifically, the plan of each unit is built by every one in the unit. In addition, the same procedure is applied for PV Power’s subsidiaries. Then, there will be meetings of middle and top managers of PV Power to review, adjust and get consensus for the following plan and/or long-term plan. Upon agreement achieved by the managers and the President and CEO of PV Power, the plans shall be adopted and submitted to The Vietnam Oil and Gas Group (PVN) for final approval to proceed. After production and business plans have been approved by PVN, PV Power will implement and periodically report to PVN.

The current procedure in planning business and production activities of PV Power is from shop floor and site-specific operational level to top level management. This procedure is reversed
compared to the procedure of defining strategic objectives, measures, target, and initiatives of Balanced Scorecard approach, which is organized from top level management down through shop floor and site-specific operational level (Kaplan and Norton, 1996c). Moreover, the divisions and subsidiaries build operation plans for their units often do not base on the strategy of the corporation but offer many performance indicators on the basis of their functions and works that they are responsible for. One of the reasons that the divisions provide more objectives for their units is to demonstrate the division’s importance and wish to do more works for the corporation despite the limitation of resources the implementation of the spread objectives is not feasible. Therefore, building business production plans does not match strategy objectives and during developing objectives, managers have not assessed interactions between objectives to achieve strategy of the corporation. Besides, too many indicators may cause the leaders being difficult to identify key indicators in the priority order for the strategy of the corporation. The fact that key indicators, some time have not been fully settled or only been settled partly while matters less important have been solved.

**Procedure of performance measurement**

PV Power manages performance through periodic meetings between top and middle managers once per two weeks. During the meeting, manger of each division will report the works that have been done and the works that not have been done. The managers also give out the reasons of problems and provide recommendations for decision making of the President and CEO. With such a frequency of meetings, the President and CEO can be able to capture enough information about operations of PV Power. However, because many issues were given meanwhile there is no unit specializing on strategy management and strategy performance appraisal, moreover, only financial indicators are emphasized during planning business production activities, no non-financial indicators are quantified, which means that there is no measures for non-financial indicators, many issues raised during the meeting but not all issues including critical ones were settled. Even the fact that a number of fundamental issues have been repeated several times during meetings still not resolved.

Most of the meetings or monthly, quarterly and annual reports of the divisions and subsidiaries only emphasized power output and financial indicators, not paying attention to non-financial indicators. Because there is no measure for non-financial objectives the divisions are not able to appraise and measure their performance. The divisions do not know how many percent of work they have done and where are they on the way of performance. Meanwhile, the Balanced
Scorecard approach offers strategic objectives of each perspective, potential measures for each objective, the interaction between the objectives and implementation plan with the levels of metrics for decentralized units that help the organization being able to evaluate how the strategic objectives of the organization are being implemented, and define the root cause of problems arising out during the implementation period.

The fact of four-year operations from 2007 to 2010 of PV Power shows that, for four years, PV Power built plan target with the ultimate goal but one month before ending the year if seeing that indicators of power output, revenue, profits were not likely to reach the approved plans, PV Power proposed to decrease the planned targets to the extent that PV Power can achieve. This demonstrates that, during the four years, PV Power has never completed the planned targets, which were first approved at the beginning of the year.

Furthermore, a significant difference between PV Power’s performance management and Balanced Scorecard approach is that leaders of PV Power make no commitment to fulfill the business production plans, which were approved at the beginning of the year while Balanced Scorecard approach requires commitment from top managers of the organization to implement Balanced Scorecard. Therefore, the story of reducing the approved plans for annual business production activities occurred continuously during a period from 2007 to 2010.

4.4.3.2 Participants in setting up strategy, business production plan, and measuring performance

Participants in setting up strategy and business production plan

There is a difference between types of personnel groups participating in setting business production plans of PV Power and Balanced Scorecard approach. Balanced Scorecard approach requires senior management team, subordinates, middle managers involving in setting Balanced Scorecard, for example, answering interview questions about the trend expanding the market, the competitors, the contents related to customers, and the development of technology for the organization, identification of strategic objectives for the scorecard, discussion about the organization's vision, strategy statements, and the tentative objectives and measures for the scorecard.
In contrast, as described in Section 4.4.3.1, PV Power has no unit specialized in strategy area. Setting up business production plans was done based on the accelerated development strategy of The Vietnam Oil and Gas Group toward 2015 and its orientation toward 2025. Setting up business production plans was done by individuals of PV Power’s functional divisions. Economic and Planning Division is responsible for planning data collection from the divisions to create a general business production plan of the corporation. President and CEO and Vice President of PV Power do not involve in setting up plans for business production activities but only review and provide their comments for the plan. The President and CEO is the person adopting the plan to submit to The Vietnam Oil and Gas Group for an approval.

4.4.3.3 PV Power’s perspectives

There are some indicators, in PV Power’s short-term and long-term business production plans, belonging learning and growth, internal business production process, and financial perspectives as examples to be presented hereinafter.

- Learning and growth perspective. There are a few objectives belonging this perspective in the short-term and long-term business production plans such as employee training programs, and science research.

- Internal business production process perspective. There are several objectives for this perspective such as average income, average labor, power output, building technical and economic norms in production, adjusting the decentralization to PV Power’s subsidiaries, safety issues. Especially, building and developing PV Power’s brand name, although not included in business production plans but it was stated in the report of production and business activities. Specifically, PV Power pays its attention to building PV Power’s brand name, launching cultural activities of PV Power in various ways such as issuing directions relating to the implementation of labor safety regulations, corporate culture, behavioral culture, PV Power’s website is updated weekly. Similarly, the promulgation of internal regulations, quality standard system, the designation, restructuring PV Power’s subsidiaries although not included in short-term and long-term business production plans but were assessed and set forth in the performance reports.

- Financial perspective. Financial objectives were specially emphasized through a series of financial indicators such as revenues, profits, restructuring capital contributed to associated companies, charter capital, profit before corporate income tax, profit after corporate income tax, rate of return, taxes, ratio of the debt per charter capital. Despite the ratio of
the debt per charter capital was planned in the decline way, actually it was increased. Financial perspective also includes borrowings, training expenditures, fund for scientific research, improvement of efficiency of capital use, purchasing assets, value of construction and investment, and financial investment.

4.4.4 Concluding remarks

To conclude, there are fundamental differences between PV Power’s current performance measurement system and Balanced Scorecard approach. First, procedure of setting business production plan of PV Power is from shop floor and site-specific operational level to top level management, which is contrary to the procedure of translating strategy into strategic objectives, measures, initiatives of Balanced Scorecard from top level management to shop floor and site-specific operational level. Second, Balanced Scorecard’s indicators are provided interactively, meanwhile, PV Power’s indicators given are incoherent, unsystematic, and not in a logical link because the indicators come from various reports of PV Power. The third difference is that PV Power offers many indicators without considering the cause-and-effect linkage between indicators to achieve strategic objectives, which led to the situation that less significant issues were solved while fundamental issues were not settled. Fourth, PV Power’s non-financial indicators were not quantified by specific measures and detailed initiatives, PV Power hardly measured the divisions’ performance results of tasks assigned. Therefore, the divisions reported the assigned tasks they have completed, and causes for the uncompleted tasks without appraising percentage of performance of the tasks partly done. Fifth, PV Power’s leaders did not undertake to complete the firstly approved plan for business production activities, so that at the end of each year, the adjustment of reducing business production output often occurred, while Balanced Scorecard requires the commitment from top managers for the implementation of Balanced Scorecard. Sixth, leaders of PV Power did not directly involved in setting up short-term and long-term business production plans but only considering, reviewing the plans submitted by Economic Planning Division in order to submit to The Vietnam Oil and Gas Group for final approval. In contrast, Balanced Scorecard requires the attendance of top management team to raise strategic objectives, measures and initiatives. Seventh, regarding perspectives, PV Power has a number of indicators belonging learning and growth, internal business production process, and financial perspectives without having customer indicators because PV Power has only one buyer, who is a monopoly buyer assigned by the Government of Vietnam to buy electricity from all power plants and sell electricity to all consumers in the country. Thus, PV Power has not paid
attention to customer relationship. However, there was no interaction between indicators of PV Power to achieve strategic objectives. These are the differences between PV Power's performance measurement and Balanced Scorecard approach.

4.5 Interviews

4.5.1 Interview procedure

First of all, interview questionnaire was prepared, then the group to be interviewed was chosen. I made phone calls to the persons who are expected to be interviewees to ask permission for interviews. After they agreed to participate in the interview, I continued to talk with them to fix the schedule and location of interview. For managers who are working at the head office of PV Power, I met them in person to obtain approval and interview schedule. After receiving their approval and interview schedules, I conducted 23 interviews in November, 2011.

4.5.2 Population and sample

The population of this research comprises of a group of respondents, which include Financial Director, President and CEO, Chairman of Board of Management, Member of Board of Management, Financial Controller of PV Power’s head office. In addition, the group of respondent includes Director and Chief Accountants of two branches and eight subsidiaries of PV Power as they are all well aware of the operations of PV Power and its subsidiaries, and understand regulations of PV Power, The Vietnam Oil and Gas Group, and the Government. These 10 units came into operation with the complete system for business, production, and management activities. Managers of the remaining branches and associated companies of PV Power were not selected for interviews because there are in the progress of construction of new power plants, which have not had completely organizational structure yet.

The sample size interviewed included managers of PV Power head office, two branches, and eight subsidiaries of PV Power. Specifically, 23 interviews were conducted. I conducted 11 interviews with managers of PV Power’s head office and three subsidiaries such as PV Power Project Consultant Joint Stock Company (PCC), PV Power Engineering Joint Stock Company (PVPE), and PV Power Service Joint Stock Company (PVPS) at their premises in Hanoi. In addition, 12 interviews were conducted in the head office of PV Power with the remaining managers of two branches and five subsidiaries, which have offices in the North, the Middle, and the South of Vietnam. The reason is that there were annual meetings to be held in PV
Power’s head office in November, 2011 between PV Power and its branches and subsidiaries for considering and reviewing business production plans for the year 2012 of all subsidiaries, in which directors and middle managers of all branches and subsidiaries had to participate the meetings. The meetings were organized in turn with each subsidiary in November, 2011. Each meeting lasted over one day, so that the interviewees agreed to participate the interview during their stay in Hanoi. During the interviews 15 out of 23 managers allowed me to record interviews. Other interviewees did not agreed to record interview conversations, then interview notes were taken.

Face-to-face interviews with each manager were conducted. In-depth semi-structured interviews were conducted and lasted about 60 to 70 minutes per each interview. Participants were asked in order to gather types of information that managers received in the reports, what types of key information they received, what types of information that manager assess as important and necessary for the reports and performance measurement. In addition, in-depth interviews were conducted to gather perceptions of PV Power’s managers about the importance of financial and/or non-financial information in performance measurement, the interaction between non-financial and financial indicators, and how such interactions impact on financial efficiency of PV Power.

4.5.3 Interview findings and discussion

After collecting interviewing results, the data collected from interviews were classified according to categories of contents, which are presented and discussed as follows.

The first issue, information of key financial and non-financial performance measures to be presented in PV Power’s business production reports, all the interviewees affirmed that both financial and non-financial indicators are stated in the reports. For example, key financial indicators are reported such as revenue, profits, receivable, payable; key non-financial indicators are reported such as power output, fuel consumed, training, safety process, shutdown of power plants, and scheduled maintenance. However, these indicators come from different reports, not regular, and unsystematic. Moreover, this information is not analysed thoroughly, some types of indicators are reported monthly, others are reported quarterly or annually. PV Power’s financial statements are made quarterly, therefore, leaders of PV Power only can get full financial information every quarter. There are several criteria that are important for investors and reflect the efficiency of PV Power but were not considered such as return on investment (ROI), return
on asset (ROA), return on equity (ROE). These targets may be referred to its phenomenon in a number of management reports but not regularly and has not been thoroughly analysed. Even these indicators were less concerned in annual management reports. Particularly, regarding the growth of revenue, due to the characteristics of electricity market in Vietnam, there is only a monopoly buyer as Electricity of Vietnam, this indicator seem to be not very urgent issue for PV Power. The growth of revenue mainly depends on putting new power plants into operation because the existing power plants are currently being operated with over 80 percent of total capacity. PV Power has no quantified measures for its performance measurement. For instance, there are reports of increased fuel costs, but it was no possible to measure how many percent of increase and where was the root cause. Cost reduction is an important issue that the Board of Management pays great importance to. One more issue, PV Power has no specific measures to control cost of power generation. Procedure of controlling costs is reported, however there is no tool assisting the control and measure where and when and how much of input costs not have been saved. Thus, the control of input cost is done ineffectively and limited.

Regarding non-financial indicators, a number of key indicators such as power output, cost of fuel consumed, materials consumed, the results of power plant maintenance, safety process, worker safety, number of shutdown of power plant are reported. However, a lot of non-financial indicators that not have been concerned such as labor productivity of workers directly involved in power plant and staffs at the units, employee satisfaction, and performance appraisal, relationships with customers and suppliers. These indicators have never been mentioned in the reports or in any weekly meeting of PV Power as well as in the subsidiaries.

Additionally, regarding indicator of customer relationship, because PV Power has only one buyer, most of interviewees argued that it is not necessary for PV Power to attach importance to customer relationship recently. However, the remains of interviewees paid their attention to indicator of customer relationship because their companies provide maintenance services, consultancy services for the design and construction of power plant and they need to find more and acquire customers, in order to expand market share, increase revenue growth and profit.

For the suppliers of PV Power, fuel suppliers are the most important suppliers of PV Power because fuel costs account for about 75 percent of total costs of power generation (PV Power, 2010). About three-fourths of respondents said that although the source of supply and volume of fuel were fine. However, the fluctuation of exchange rates and information on exchange rate differences have not been analysed. Specifically, there is a difference between points of time that
PV Power pays for fuel to fuel suppliers and get money back from electricity buyer namely Electricity of Vietnam. Both payments are made in US Dollars. The exchange rates in different points of time are different. This is considered as one of a cause that led to the loss of PV Power. When problems have not been considered strictly, the solution to reduce loss would not be provided. The respondents also argued that this is a problem of PV Power’s performance measurement. Regarding input materials using for the maintenance and repair of power plants, most of interviewees believed that their units have not found competitive suppliers to reduce input costs. The purchase of materials currently depends on the original equipment manufacturers, who are monopoly suppliers, so PV Power does not take the initiative in purchasing materials while not total price of material were taken into the selling price of electricity. This is also considered as one of causes of the loss of PV Power because cost of maintenance occupies about 8-10 percent of total costs of power generation. Thus, PV Power’s all units should focus on finding and building relationships with suppliers to gradually break the monopoly of the original equipment manufacturers, reduced production costs, improving the financial efficiency of PV Power. A few interviewees argued that their company does not need to focus on the relationship with suppliers because their companies provide consulting services designed to build power plants without having key suppliers virtually. However, all the interviewees thought that issues in PV Power’s business and production should be quantified and measured in order to use resources in the priority order for the achievement of short-term and long-term strategic objectives.

In short, for the first issue of interview results, there are some key financial and non-financial indicators set forth unsystematically and not interactively in business production reports of PV Power because the indicators come from different reports. The data of the reports were not analysed thoroughly and non-financial indicators were not in the priority attention of PV Power’s leaders. PV Power was unable to measure its performance and control input costs since it has no specific measures for performance measurement. All the respondents agreed that issues in PV Power’s business production should be quantified and measured in order to achieve short-term and long-term targets. The first finding of interview shows the problems of PV Power’s performance measurement due to the lack of a comprehensive performance measurement system. The evidences of these problems were found from documentary analysis presented in Section 4.4.4 and from the interview lead to the needs of a comprehensive performance measurement system for PV Power.
The second content, the level of adequacy of information in operational and financial reports of PV Power, about two-thirds of interviewees said that information in reports of performance were inadequate. Many issues were raised during the meetings but there was no effective solution and resolute method to implement. For instance, the issue of recovering maintenance costs for power plants was raised in a long time but has not been resolved yet despite of solutions provided by the Board of Management of PV Power. PV Power's managers believed that there is a lack of a certain tool for both top and middle managers of PV Power’s head office its subsidiaries. Moreover, progress of other power plants slipped continuously, liability issues have not been taken seriously. On the other hand, some respondents argued that the information given to the controllers and accountants met the needs of their work. The rest of interviewees, who are chief accountants, answered that the information they received in the reports almost satisfy the requirement of the accounting jobs. In addition, they suppose that considering at the position of the corporation’s top leader, they wish to receive more financial information and indicators such as ROA, ROI, ROE in order to analyse the corporation’s efficiency and effectiveness, and non-financial indicators such as performance appraisal, employee productivity, employee skills, relationships with suppliers, customer relationship, etc., in order to manage, control and assess the corporation’s operations to improve financial efficiency, satisfy requirements in a competitive environment.

In brief, about two-thirds of interviewees agreed that information in performance reports was inadequate and they want to supplement more financial and non-financial information in the reports while some of respondents judged information in the reports was almost adequate, and the rest of interviewees concluded that information in the reports satisfies their jobs. The second finding of interviews indicates that it was very likely that one of the root causes of the information inadequacy in performance reports is the lack of financial and non-financial indicators provided in long-term and short-term business production plans. This may be seen as a problem in translating the corporation’s strategy into actions, which in turn lead to problems in managing and measuring performance. Obviously, this is considered as a factor for a need of a comprehensive performance measurement system for PV Power.

The third issue, assessing the importance of financial and non-financial indicators to the top manager for the purpose of decision making to improve performance measurement in short-term and long-term business production activities. About four-fifths of interviewees said that because PV Power not only invests power plants and sells electricity but also has to
implement a political mission, assigned by the Government, to contribute the guarantee of national energy security, PV Power should be aware and pay attention to non-financial indicators besides financial indicators from the beginning of the operational process. Both financial and non-financial measures are equally important to manage PV Power’s performance and to improve performance measurement because finance itself does not make anything but non-financial factors will drive financial results. Specifically, Mr. Nguyen Viet Loi – a member of PV Power’s Board of Management provided his idea during the interview that “the management aims at financial objectives but non-financial factors should be concerned every day, financial and non-financial factors should be balanced because non-financial factors drive financial performance and there is interaction between them”.

In contrast, a few interviewees thought that because they are not decision makers they can not assess financial or non-financial indicators are more important than the other one in decision making. However, they suppose that financial information is of importance but it is not possible to get rid non-financial information because non-financial information indicates whether PV Power’s current financial situation is suitable with its organization status. In addition, financial results show the result of the corporation’s operations, and non-financial information illustrates the corporation’s activities and other resources, which help the manager to control the corporation’s financial activities.

In a word, despite similar ideas of PV Power’s managers are expressed in two manners all the interviewees perceived that financial and non-financial information are equally important in decision making to improve PV Power’s performance measurement. This finding implies that perception of PV Power’s managers on the balance of financial and non-financial indicators, an essential characteristic of Balanced Scorecard approach, is a favourable condition for PV Power to build and develop a comprehensive performance measurement system like Balanced Scorecard approach.

The fourth issue, how and what types of indicators that PV Power’s managers want to add to the reports. Most of managers interviewed wish to have more financial and non-financial information and indicators in performance reports and deep analysis to serve well the performance management and measurement. Some of the respondents, who are chief accountants, stated that because they are responsible for the corporation’s finance (Accounting Law of Vietnam, 2003) they need more information in order to co-operate with other functional divisions in negotiating with electricity buyer and suppliers, recovering a debt, and especially
measuring employees’ performance to pay salary adequately. To satisfy this requirement, employees should improve their working quality. For instance, upon the report of increasing fuel costs is required, the function division must report which factors impact the increase of fuel costs, such cause has led to how many percent of fuel cost. The managers judged that the functional divisions of PV Power have not yet satisfied this requirement due to their limited abilities, low quality of work and lack of comprehensive performance measurement system.

According to the respondents, strategic indicators should be set up from the beginning of planning process and quantified for management and performance appraisal. Therefore, employees’ abilities and skills should be improved through training. Besides, some of interviewees believed that information given in the reports was enough for their works and they do not need more information. The rest of interviewees supposed that if they were President and CEO, they would need more financial and non-financial information in performance reports such as ROA, ROI, ROE, performance appraisal, employee productivity, employee skills, relationship with customer and suppliers, etc. The indicators should be measurable to facilitate a tool to define where the corporation is and where is the root cause of the problems. Therefore, PV Power should have a comprehensive performance measurement system, which is suitable with the corporation. Furthermore, the respondents indicated that it is necessary to develop the application of technology in performance management such as software managing materials, tools, and equipments for the maintenance work of power plants.

Briefly, the fourth finding of interview shows that PV Power’s managers want to set up adequately financial and non-financial indicators from the beginning of planning process and subsequently add more financial and non-financial indicators in performance reports. This implies that strategy should be translated into actions through adequate and logical number of financial and non-financial indicators. This is considered as an essential effect of the Balanced Scorecard (Kaplan and Norton, 1996c). Thus, this attitude of PV Power’s managers is very likely a reasonable factor for PV Power to apply Balanced Scorecard to translate strategic objectives into specific and comprehensive business and production plans to act.

The fifth issue, ideas of PV Power’s managers about the way to improve PV Power’s performance measurement. About 78 percent of interviewees believed that the corporation needs a comprehensive performance measurement system. Planning business production activities and making performance reports should contain both financial and non-financial indicators systematically, logically and interactively. These indicators should be quantifiable and
measurable in order to better measure performance and control input costs. Therefore, PV Power should improve its performance measurement by setting up a comprehensive performance measurement system. Accordingly, the first key issue need to be settled is setting up a team, in which all individuals should be aware and competent in performance measurement to deploy the system. The rest of interviewees perceived that everyone in PV Power are aware that there is a needs of comprehensive performance measurement system in order to measure, appraise performance, find root causes of the problems, and control business production costs. However, some of them argued that at present PV Power is difficult to apply a comprehensive performance measurement system because of the influence from working environment in the state-owned companies, in which many companies pay salary not basing on employees’ ability and competence. Moreover, state-owned companies may be impossible to dismiss employee even if the employee have not or not well fulfilled their assigned tasks. The limitation of five-year period of President and CEO of the state-owned companies is also a challenge for the corporation to apply a comprehensive performance measurement system as the President and CEO of this period may support applying the new performance measurement system but the President and CEO of the next period may not support the application of this one.

In sum, the fifth finding of interviews suggests improving PV Power’s performance measurement system by setting up a comprehensive performance measurement system which includes financial and non-financial indicators as managers are aware of interaction between non-financial and financial factors. Therefore, a performance measurement such as Balanced Scorecard is very likely suitable for this suggestion.

The sixth content, perception of PV Power’s managers about the interaction between non-financial and financial measures. Generally, most of the interviewees believed that there are interactions between measures of learning and growth, internal business production process, customer, and financial perspectives because final aim of the corporation is profits, thus, the corporation should have a comprehensive solution on organization structure, human resource, employee training, ability control, customer relationship, other activities, etc., to get profit. Perceptions of PV Power’s managers gathered from interviews on the interactions between non-financial and financial indicators are presented as follows.

Learning and growth perspective
The perception of PV Power’s managers about the interaction between performance appraisal and productivity improvement. More than 60 percent of interviewees perceived that improved performance appraisal would lead to productivity improvement. According their answers, most of state-owned companies in Vietnam have not implemented well the performance appraisal because job assignment was unspecified, unclear. In contrast, if job assignment was defined clearly and specifically the company would assess productivity of the employees and provide solutions to increase productivity thereafter. Besides, the rest of interviewees had similar point of view but they stated in other way such as for the case of PV Power it is necessary to enhance reasonably employee training to improve working quality, which in turn improve productivity.

The perception of PV Power’s managers about the interaction between the increase of employee turnover and the raise of employee's moral and employee's satisfaction. More than a half of interviewees argued that this interaction is positive if the income of employees is a pressure issue at a certain time. If employee’s income is seen as a problem at a certain time, the increase of income may increase employee’s morale and satisfaction. In contrast, if income is not a pressure issue, increasing salary may not lead to the increase of morale and satisfaction of employees. Overall, PV Power’s salary level considered is high, so employees need to have high awareness of work. The rest of respondents said that it is not very likely that the increase of employee’s salary will lead to the raise of employee's moral and satisfaction because even though the employees expect to receive money, but this does not mean that everything would be fine because of salary increase. If only raising salary without reasonably allocating and controlling employees, working productivity may not be increased but may be reduced. Salary may not help to increase morale spirit of employees because there are some other reasons such as the increase rate of salary is more slow than that of inflation. Thus, the streamlined organization and working environment is vital to increase employees’ morale.

The perception of PV Power’s managers about the interaction between the improved employee’s morale and the duration of power plant shutdown, innovations, the increase of productivity, the improvement of employee’s satisfaction. More than half of interviewees perceived that the improved employee’s morale would help to reduce number of shutdown of power plant, bring innovations to increase productivity, which in turn lead to the increase of salary and bonus, therefore improve employee’s satisfaction. Additionally, the rest of interviewees believed that the improved employee’s morale would help to reduce number of
shutdown of power plant, bring innovations to increase productivity, however, it is important for employees to have acknowledgment and appreciation from their leaders as these are the encouragement to increase employees’ moral.

The perception of PV Power’s managers about the interaction between employee's satisfaction and employee's productivity, and solution to increase employee's productivity. More than a half of interviewees believed that employee's satisfaction would lead to employee's productivity because when employees satisfy working conditions and working environment they will devote their time, intelligence and abilities to complete their assigned works. However, performance appraisal was done not well, salary payment was made not basing on employees’ competency and experiences but equally. Thus, the issue of salary payment in PV Power did not encourage employees. Meanwhile, some respondents supposed that employee may satisfy working conditions and salary but it is not very likely that this satisfaction will improve employee productivity if competency and experiences of such individual do not meet the requirement of assigned work. Therefore, the key issue in this context is employees’ competency and working quality. Moreover, the rest of interviewees thought that employee satisfaction would lead to employee productivity provided that such employee has to acquire qualification, competency and experiences satisfying requirements of the work, and the assistance of information technology is also essential factor to help increasing productivity.

Solutions to increase productivity. More than two-thirds of interviewees thought that workers and technicians working in power plants must follow operational procedures. Meanwhile, more difficult requirements made to staffs working in office. At present time, the description of working requirements applied for employees is unclear, which means that tool controlling employees unspecific thus managers were unable to evaluate employee’s productivity. These resulted in manager’s awareness that PV Power should improve a specific qualification description system, for each employee, in which all qualification requirements and job assignment will be described specifically for each individual in the corporation. More specifically, managers also stated that job assignment should be specific, suitable for each employee and measurable for the purpose of performance measurement. Meanwhile, the rest of interviewees supposed that in order to increase productivity, employees working in office should be allocated appropriately, trained to improve skills and qualifications, and assisted by information technology in the work.
The perception of PV Power’s managers about the interaction between training and the improvement of employees' skills. All the interviewees believed that reasonable trainings create the improvement of employees’ skills, qualification and performance. For instance, increase of productivity, reduction of risks in the works, purchasing material with best price, etc., which help to lessen input costs, however, so far PV Power has not pay attention to the issue of employee allocation in offices.

The perception of PV Power’s managers about the interaction between well trained employees (employee’s skills) and the reduction of number of shutdown of power plant, the reduction of duration of power plant shutdown, the reduction of costs of production and operation, the increase of customer satisfaction, the improvement of relationships with key suppliers. There is perception among PV Power’s managers that well trained employees and safety production process would result in the reduction of number of shutdown of power plant, the decline of duration of power plant shutdown, the decrease of costs of production and operation, the increase of customer satisfaction, and the improvement of relationships with key suppliers. Safety production process and well trained employee would reduce risks in production and working and increase savings. Employees with high qualification, good skills will fulfill well the assigned tasks, lower input material costs, lessen duration of power plant shutdown, reduce operational costs, increase customer satisfaction, and improve relationships with key suppliers. As a result, input material will be purchased with best price, which in turn lead to financial efficiency. More specifically, some respondents argued that well trained employees is not sufficient for the reduction of number of power plant shutdown as it also depends on status of equipments in power plants and external impacts cause the shutdown of PV Power’s power plants such as shutdown of national grid system. Moreover, if equipments are not maintained as plans required by original manufacturers and if using inexact and low quality materials shutdown of power plants may occur. Well trained employees combining with safety process, maintenance schedule and the use of right materials will lead to the reduction of number of power plant shutdown, the decline of shutdown duration, the decrease of production and operation costs, the increase of customer satisfaction and the improvement of relationships with key suppliers.

Internal business production perspective

The perception of PV Power’s managers about the interaction between safety production process and the reduction of number of power plant shutdown, and the increase of power
plant operation savings. All the interviewees believed that safety production process will lead to a reduction of number of power plant shutdown. The provision amount of money for the estimation of power plant shutdown has been taken into selling price of electricity, which has been negotiated by and between PV Power and Electricity of Vietnam who is the monopoly buyer. Thus, if PV Power operates power plants securely it will gain benefit from such provision getting back from the monopoly buyer without paying for power plant shutdown. Therefore, PV Power’s savings will be increased due to safety process. In addition, safety process will help the company providing power plant maintenance services to reduce risks, damages happened to personnel and equipments.

The perception of PV Power’s managers about the interaction between the reduction of duration of power plant shutdown and the reduction of production costs, and the improvement of productivity. All the respondents believe that the reduction of duration of power plant shutdown will lead to cost reduction and productivity improvement. The fact shows that the reduction of shutdown duration will help to reduce expenditures of maintenance works. The reduction of shutdown duration also provides a meaning that annual shutdown time stipulated in Power Purchase Agreement will not be exceeded. If actual shutdown time of a certain year exceeding the time stipulated in Power Purchase Agreement, PV Power will have to compensate the monopoly buyer for the exceeded time. Moreover, the reduction of shutdown duration will increase time of production meaning that ensuring the gas quantity that PV Power has to take every year under Gas Supply Agreement. If PV Power fails to consume an amount of gas stipulated in Gas Supply Agreement, PV Power will have to pay for the amount of gas that has not been taken by PV Power and receive such amount in the coming years provided that the full amount of gas stipulated in this agreement must be taken first. If this situation occurs PV Power’s financial costs will be increased. Therefore, it is possible to say that reduction of shutdown duration of power plant will lead to cost reduction and productivity improvement.

The perception of PV Power’s managers about the interaction between the timely settlement of urgent issues occurring during production and the reduction of the duration of power plant shutdown, the reduce production costs and the improvement of productivity. The finding of interviews shows more than half of interviewees having confidence that if employees’ qualifications meet the requirement of the work, the problems will be settled more quickly, which results in the reduction of shutdown duration and reduction of production costs as explained above. However, the rest of respondents said that troubleshooting time not
only depends on the employees’ skills but also depends on the availability of tools, instruments and material. Without one of these things the progress of troubleshooting will be slow, difficult to reduce production costs as well as increase productivity.

**The perception of PV Power’s managers about the interaction between innovation and the increase of power plant operation savings and the improvement of productivity.** All the respondents believed that innovations aim to raise productivity or savings. Therefore, when innovation are provided and adopted it will lead to an increase of power plant operation savings, productivity and revenue improvement, and reduce input costs.

**The perception of PV Power's managers about the interaction between the improvement of productivity and sales growth.** There is the same perception of all respondents about positive interaction between the increase of productivity and sale growth. It is very logical that the increase of productivity will lead to the reduction of costs. For instance, in power generation field, the consumption of fuel depends on the mode of operation. If an amount of electricity generated in one hour is increased the rate of fuel consumption will be reduced, especially fuel cost accounts for about 75 percent of total costs of power generation. The lower rate of fuel consumption may help to lower selling price of electricity, which results in customer's satisfaction, and in turn to increase sales growth.

**The perception of PV Power’s managers about the interaction between the decrease of input material cost and the reduction of goods selling price.** All the interviewees perceived that the reduction of input costs at least will reduce the losses in case the corporation is bearing losses due to high input costs. To a certain extent, if input costs are managed well the corporation can achieve a balance point between input and output. In another case, if the corporation got profit, the savings acquired from input costs will increase profit or selling price can be reduced to increase the corporation’s competitiveness. Recently, PV Power does not manage well input costs, for instance, functional divisions reported the increase of fuel cost but did not know the root causes of this increase. PV Power’s managers also stated that the reduction of input cost and the increase of profit are mainly derived from PV Power’s efforts. Therefore, PV Power should reassess, improve the defined level of input costs in terms of quantity and value, control expenditures within cost standards, analyse the fluctuations in spent costs to find causes of the fluctuation and solutions for the next period. Proposing solutions to cut costs requires the close co-operation of relating individuals in PV Power.
The perception of PV Power’s managers about the interaction between the decrease of operational cost and the reduction of selling price. All the interviewees believed that operational cost is one of input costs of the corporation. Similarly to the above mentioned analysis, if reducing operational costs but still ensuring production size the corporation will reduce the loss in case the corporation is suffering losses, create profit if the corporation achieved the balance point, and increase profit thereafter. Then the corporation can lower selling price of goods to increase its competitiveness.

Customer perspective

The perception of PV Power’s managers about the interaction between on time delivery and customer satisfaction. The same perception of all interviewees gathered is that on time delivery is one of the reasons which make customer satisfy with the corporation’s supply in terms of delivery. PV Power’s managers believed that customer is fully satisfied with the goods supplied if and only if they are satisfied with quality, price, delivery and after sales services. For the case of PV Power, because there is only one monopoly buyer, in addition, the current electricity sources do not meet the need in short term, thus, PV Power does not need to find customer. Moreover, electricity is a special goods which can not be stocked and without guarantee services, thus, most of the interviewees thought that PV Power does not need to pay great attention to customer indicators. However, some interviewees believed that, their companies are providing consultancy services in building power plant and maintenance services, which require the increase of customer number for the development, they pay high importance in customer relationship and customer satisfaction in order to increase number of customers, revenue and profits for their companies.

The perception of PV Power’s managers about the interaction between the reduction of selling price and customer satisfaction. All the respondents believed that quality and price of goods are the most important criteria for customer. Therefore, the customer will satisfy if they can buy the goods with lower price and good quality.

The perception of PV Power’s managers about the interaction between customer satisfaction and the increase of sales growth, market share, customer retention, profitability. 52 percent of interviewees perceived that in terms of theory and practice customer satisfaction would lead to the increase of sales growth, input cost reduction. Specifically, when Electricity of Vietnam satisfies with PV Power’s product meaning that the buyer satisfies in
terms of price and timeliness in generating and selling electricity. As a result, the buyer will increase electricity mobilization from PV Power’s plants because the principle of priority mobilization stipulated by Electricity of Vietnam is to mobilize electricity from power plants which offer the lowest to the highest selling price, and meet the load demand of national grid system. Due to the increase of mobilization from the buyer, PV Power will have opportunities to increase power output, thereby increase revenue and profit because of the specific characteristic of electricity generation, the more power output generated in an hour, the less input costs required. It is considered as input costs are saved thereby. Regarding customer retention, PV Power’s managers stated that in terms of theory, customer satisfaction will lead to customer retention, however, in case of PV Power, because there is only one monopoly buyer they seem do not pay great attention to maintain customers.

Meanwhile, nearly half of interviewees supposed that, in terms of theory, customer satisfaction may lead to the increase of sales growth, market share, customer retention, profitability. However, most of PV Power’s power plants currently are operating at above 80 percent of total capacity. As assessed by PV Power’s technical division this is considered relatively high level of capacity, thus, customer satisfaction criterion impacts very little on sales growth and hardly increase PV Power’s market share if no newly invested power plant is put into operation. In addition, regarding customer retention, in case of PV Power, whether the buyer satisfies with PV Power’s goods or not, in short term, the monopoly buyer has to purchase electricity from PV Power’s power plants to meet the needs of national grid system and because of the related instruction provided by Ministry of Industry and Trade which is state-level management unit of companies generating and trading electricity.

The perception of PV Power’s managers about the interaction between customer acquisition and the expansion of market share and the increase of sales growth. All the respondents perceived that, in terms of theory, there is positive interaction between the increase of number of customers which in turn lead to the increase of market share and revenue because if the company has not used the maximum ability of production such company will have a good condition to maximize production capacity. On the other hand, if the company is reaching maximum production capacity the increase of number of customer will lead to the increase of

1 PV Power is a state-owned corporation, which was assigned a political mission to invest and operate power plants in order to contribute the guarantee of national energy security. Because of the political factor some small hydroelectric power plants of PV Power were built despite of low economic effectiveness. In return of this investment PV Power can get preferences from the Government through the Government’s compulsory request applied to Electricity of Vietnam to buy electricity from PV Power’s power plants.
demand of such company’s goods. This may help the company to invest, expand production for the increase of market share and revenue.

The perception of PV Power’s managers about the interaction between the improved relationships with key suppliers and the reduction of input material costs, production costs, and the increase of profitability. All of the interviewees perceived that the improved relationship between PV Power and key suppliers would help PV Power to purchase materials with preference policies relating to price, payment, etc. These preferences would help PV Power reducing input costs of PV Power’s production and business, which eventually increase profitability. Especially, fuel cost of power generation constitutes about 75 percent of total production costs followed by costs of operation and maintenance, which accounts for about 9 percent of total production costs. Therefore, in both short term and long term, the reduction of input costs makes sense to PV Power to get profit because PV Power’s charter capital was provided by the Government, the corporation is responsible to preserve capital for producing and trading electricity, self payment of salary, not state subsidy. For example, if the relationship between PV Power and gas supplier is improved, Power would have many advantages in negotiating gas supply contracts and get preferences during the implementation of this agreement. Specifically, with the same price level of gas price but PV Power can be given priority in the supply of gas than other consumers. With the possibility of a higher quantity of gas supply, PV Power will better meet the needs of the national grid system and reduce the use of diesel oil, which is an alternative type of fuel. Meanwhile, cost of using diesel oil for power generation is far higher than the cost of gas fuel. Therefore, decreasing the amount of diesel oil using in power generation will increase PV Power’s savings in production. In addition, in case PV Power does not fulfill its obligation of taking full annual quantity of gas stipulated in the gas supply agreement PV Power will have to pay for the amount of gas which has not been taken in such year, however, because of good relations between the two parties, PV Power may be exempted from the payment of unconsumed gas quantity. Thus, PV Power’s financial cost will not be increased due to this issue. Finally, PV Power’s managers suggested that reducing input costs of production should be first priority to increase financial efficiency. In addition, focusing on searching and increasing the number of suppliers will provide more opportunities to select best price suppliers for input materials, tools, equipments, and other input services to reduce costs of operation, maintenance, repair of power plants.
Financial perspective

The perception of PV Power’s managers about the interaction between cost reduction and the increase of profitability and financial efficiency. All the interviewees believe that there is a positive interaction between cost reduction and the increase of profitability and the increase of financial efficiency as explained in above paragraphs.

The perception of PV Power’s managers about the interaction between the increase of sales growth and the increase of financial efficiency, cash flow, return on assets (ROA) and return-on-investment (ROI). The same perception of all respondents gathered is that the increase of sales growth, at the same size of production and in a condition that input costs are controlled well, would reduce losses if the corporation is suffering loss, and increase profit if the corporation has achieved the balance point, which in turn increase financial efficiency, cash flow, ROA, ROI, ROE of the corporation.

The perception of PV Power’s managers about the solution to increase PV Power’s financial efficiency, cash flow, return on assets (ROA) and return-on-investment (ROI). Most of the interviewees stated that to increase the investment efficiency it is necessary to carefully evaluate investment projects, if there is political pressure, PV Power’s economic benefits and PV Power’s contributions to the country should be evaluated clearly. In addition, there must be solutions to reduce production and operation costs. Regarding the management, functional divisions should follow up, up date, analyze and provide solutions to solve the matter of differences of exchange rates of foreign currency. Furthermore, it is necessary to recheck norm system, improve management method and performance measurement, etc. Moreover, relationship with customer should be concerned to ensure the completion of power generation plan. According to specific characteristic of power generation, if the output power increases, the production cost of electricity will be reduced, PV Power will have opportunities to increase profits. Final point, PV Power should pay great attention to the performance measurement issue in order to assign works explicitly, specifically, better monitor production and business activities, appraise employees’ performance adequately, and control input costs to increase financial efficiency.

Meanwhile, some interviewees thought that PV Power has had stably financial resource, long-term strategy toward 2025 achieving 30 percent of total power output of the country, long-term investment for newly invested power plants, long-term initiatives, monopoly buyer, the product
of electricity without necessity of guarantee and maintenance services, no concern about the excess or surplus of electricity products because power output supplied according to the needs of the national grid system. Therefore, the remaining issue is employee allocation to optimize PV Power’s profitability because of characteristics of electricity sector, in which the owners do not have to worry about increasing revenue and expanding market share but have to lessen input costs. This requires PV Power to restructure, reallocate reasonably employees, train and retrain employees to improve productivity, reduce costs. Besides, PV Power should pay great attention to the issue of performance measurement in order to monitor, measure adequately employee performance and control input costs.

In short, the perception of PV Power’s managers on the interactions between non-financial and financial indicators (factors) presented above can be understood as the prediction that setting up non-financial and financial indicators during translating strategic objectives into actions interactively and in cause-and-effect manner for the implementation of strategic objectives, performance management and measurement would lead to the improvement of financial efficiency of the organization.

PV Power’s perception on the interactions between non-financial and financial indicators presented above can be considered as the perception of the impact of implementation of Balanced Scorecard on PV Power’s financial efficiency because of the following reasons. First, financial and non-financial indicators provided in the interviews were designed in Balanced Scorecard manner, specifically in a cause-and-effect linkage. Meanwhile, cause-and-effect linkage between non-financial and financial indicators is major characteristic of Balanced Scorecard in translating strategic objectives into actions and measuring performance (Kaplan and Norton, 1992, 1996c). In addition, the perception of PV Power’s managers on setting up non-financial and financial indicators interactively and in a cause-and-effect linkage at the beginning period of translating strategic objectives into actions can be considered that this setting lies in critical steps, which suggested by Kaplan and Norton (1996c), to build a Balanced Scorecard. Final, the findings gathered from PV Power’s perception on this interaction is similar to the results provided by researchers implemented studies on Balanced Scorecard such as Davis and Albright (2004), Othman (2006), Ong et al. (2010), etc.

Figure 11 shows PV Power’s perception on interactions between non-financial and financial indicators.
Figure 11: PV Power’s perception on interactions between non-financial and financial indicators

Source: Findings from interviews with PV Power’s managers.
CHAPTER 5: CONCLUSION, RECOMMENDATIONS AND CONTRIBUTIONS

5.1 Limitation of the research

The limitation of this research is the limit of time and scale of the research, which was done only in the extent of PetroVietnam Power Corporation (PV Power). Therefore, the limit of sampling chose only PV Power’s area. Meanwhile, PV Power does not represent for the vast majority of Vietnam’s enterprises, thus the findings of this research may not be generalized to other enterprises in Vietnam. This limitation suggests the idea for further research, which is to study the impacts of the implementation of Balanced Scorecard on financial efficiency of enterprises in a broader context within Vietnam.

Because PV Power has not applied Balanced Scorecard yet, thus, research has been done only at the extent of studying PV Power’s current performance measurement system, exploring perception of PV Power’s managers on the impacts of the implementation of Balanced Scorecard on PV Power’s financial efficiency through interviewing managers’ perception about interactions between non-financial and financial indicators and how non-financial indicators impact financial indicators. Due to the limit of the research time, I was unable to study indicators of the four perspectives in order to translate real strategic objectives into actions for the implementation of PV Power’s strategy toward 2025.

5.2 Conclusion and recommendations

Conclusion

In conclusion, the findings from documentary analysis and interviews show problems of PV Power’s performance measurement such as information in business production plans and performance reports are unsystematic and irregular. Thus, PV Power was impossible to well measure performance and did not control well input costs. In addition, the findings from interviews show PV Power’s expectation of a comprehensive performance measurement system. Furthermore, the findings indicate the perception of over 52 percent of the respondents on the interaction between non-financial and financial indicators illustrating the prediction that setting up non-financial and financial indicators interactively and in cause-and-effect linkage for
translating strategic objectives into actions and measuring performance would lead to the improvement of financial efficiency of PV Power.

This perception of PV Power’s managers on the interactions between non-financial and financial indicators, which presented specifically in Chapter 4, can be considered as the perception about the impacts of Balanced Scorecard implementation on PV Power’s financial efficiency because of the following reasons. The first reason is that non-financial and financial indicators provided in the interviews were designed in the manner of Balanced Scorecard. Specifically, non-financial and financial indicators in the interview questionnaire were designed in a cause-and-effect logic. Meanwhile, cause-and-effect linkage between non-financial and financial indicators is a major characteristic of Balanced Scorecard in translating strategic objectives into actions and measuring performance (Kaplan and Norton, 1992, 1996). Moreover, the fact proved that the cause-and-effect logic has been described as the essence of the Balanced Scorecard (Ong et al., 2010). The second reason is that the perception of PV Power’s managers on setting up non-financial and financial indicators interactively and in a cause-and-effect linkage at the beginning period of translating strategic objectives into actions can be considered that this setting lies in critical steps, which suggested by Kaplan and Norton (1996c), to build a Balanced Scorecard. Besides, setting up non-financial and financial indicators in this way for performance measurement is seen as one of three elements of Balanced Scorecard such as measurement system, strategic management system, and communication tool (Kaplan and Norton, 1992, 1996c; Niven, 2003). The last reason, the findings gathered from PV Power’s perception on the interaction between non-financial and financial indicators is similar to the results provided by researchers implemented studies on Balanced Scorecard such as Balanced Scorecard can be used to improve financial performance (Davis and Albright, 2004; Othman, 2006) and the cause-and-effect relationship of Balanced Scorecard will lead to improved business efficiency and profitability (Ong et al., 2010). For these reasons, the findings of this research, which illustrate the prediction that setting up non-financial and financial indicators interactively and in a cause-and-effect linkage for translating strategic objectives into actions and measuring performance would lead to the improvement of financial efficiency of PV Power, can be considered as the prediction that the implementation of Balanced Scorecard in PV Power would lead to the improvement of PV Power’s financial efficiency.

Therefore, I myself believe that the findings of this research converge reasonable factors for PV Power to apply Balanced Scorecard because such factors are shortcomings of PV Power’s
current performance measurement, PV Power’s expectations of a comprehensive performance measurement system, and PV Power’s perceptions on the implementation of Balanced Scorecard mentioned in this section. More specifically to the perceived improvement of financial efficiency presented above, applying Balanced Scorecard would help PV Power to translate its strategy into specific measures, targets and initiatives as such functions of Balanced Scorecard were stated by Kaplan and Norton (1992, 2001a, 1996b). In addition, the application of Balanced Scorecard would help PV Power to provide a broader view of how PV Power will convert its initiatives and resources including intangible assets such as PV Power’s employee training, employee capabilities, performance appraisal, relationship with key suppliers into tangible and predictable outcomes when the cause-and-effect links take place since Ong et al. (2010) revealed this benefit of Balanced Scorecard in their study.

Furthermore, applying Balanced Scorecard would help PV Power to solve the problems of performance measurement in PV Power. Specifically, applying Balanced Scorecard requires the commitment from top managers to build and implement Balanced Scorecard. This is seen as the commitment of PV Power’s top managers in implementing the approved business production plans, which focuses on fundamental aims, reasonable allocation of resources, and contains specific initiatives for each measure. This would help PV Power to limit the adjustment of reducing the planning indicators to be approved initially in every year. In addition, Balanced Scorecard requires a procedure to be organized from top level management down through shop floor and site-specific operational level in order to build Balanced Scorecard (Kaplan and Norton, 1996c), define strategic objectives, measures, targets, initiatives and implement Balanced Scorecard. The procedure and commitment from top managers would help PV Power to define strategic objectives, measures, targets, and initiatives interactively and in a cause-and-effect linkage between indicators in order to achieve PV Power’s strategy. All these data would be transferred and developed specifically in all levels of PV Power to implement. Thus, PV Power’s managers would be able to keep track of PV Power’s operations. Final, information and indicators in PV Power’s performance reports would be systematic and not be spread. These also would help managers to assign jobs specifically to PV Power’s employees, well measure performance, find root causes of problems occurred in business production activities, and well control input costs, which can be considered as one of main methods to increase financial efficiency of PV Power.
Recommendations

Basing on the real situation of PV Power’s current performance measurement without a comprehensive performance measurement system, differences between PV Power’s current performance measurement and Balanced Scorecard approach analysed in Section 4.4.4, problems in PV Power’s performance measurement described in Section 4.5.3, PV Power’s expectation of a comprehensive performance measurement system mentioned in this section, and the effects of Balanced Scorecard proved by many researchers presented in Chapter 2, I would like to propose that PV Power should apply Balanced Scorecard as a comprehensive performance measurement of PV Power. Thus, PV Power should implement the following issues.

Regarding leaders of PV Power, it is necessary to have the commitment of PV Power’s top leaders in building and applying Balanced Scorecard as Kaplan and Norton (2001a) suggested that without this commitment the application of Balanced Scorecard implementation will not be effective. This is also a condition that Balanced Scorecard requires to top management level to successfully apply Balanced Scorecard. Besides, PV Power’s managers should directly participate in the process of building Balanced Scorecard because Balanced Scorecard process can only be led from the top (Kapland and Norton, 2001a). Thereafter, PV Power should prepare a schedule of building and applying Balanced Scorecard, human resource and finance for setting up and implementation of Balanced Scorecard.

Regarding human resource, as PV Power has not had individuals who are aware of Balanced Scorecard, PV Power should set up and train a team to be aware of Balanced Scorecard in order to build and develop Balanced Scorecard in PV Power according to the procedure suggested by Kapland and Norton (1996c) in building a Balanced Scorecard.

Regarding procedure of building strategy, business production plans, PV Power should have a unit which is specialized in building and managing strategy, and should reform this procedure in a direction from top level management down through shop floor and site-specific operational level, which is similar to the procedure of Balanced Scorecard provided by Kaplan and Norton (1996c) to ensure that objectives, measures, and initiatives are built from strategic objectives of the corporations and in a cause-and-effect linkages.

Regarding indicators of the four perspectives of PV Power’s Balanced Scorecard. PV Power should choose key measures for each perspectives. Specifically, it should be about 15 to
25 key financial and non-financial measures for four perspectives according to the theory of Balanced Scorecard approach (Kaplan and Norton, 1996c). These indicators should be provided interactively in order to achieve short-term and long-term strategic objectives. For instance, it is assumed that indicators perceived by PV Power’s managers and reported in Section 4.4.3 can be a reference for the cause-and-effect interaction in building Balanced Scorecard objectives and measures as follows.

*Learning and growth perspective.* PV Power should pay attention to indicators of employee training programs, performance appraisal, and innovation.

*Internal business production process perspective.* PV Power should concern indicators of power output, shutdown of power plant, productivity, productional and operational savings, employee’s skill, employee satisfaction, selling price, cost management.

*Customer perspective,* PV Power should pay attention to indicators of on time delivery, customer satisfaction, market share, relationship with key suppliers.

*Financial objectives,* the following indicators should be concerned such as sales growth, profitability, cash flow, ROI, ROA and ROE as these indicators reflect PV Power’s efficiency.

**Regarding the extent of PV Power to apply Balanced Scorecard,** in order to apply Balanced Scorecard effectively, Balanced Scorecard including strategy and actions to support implementation, must eventually be shared with every member of the corporation (Kaplan and Norton, 2001a). Balanced Scorecard should be applied first in PV Power’s head office and its branches since Poister (2003) advised that in order to setting effective performance measurement system, conducting a pilot of the system is necessary before committing to full-scale implementation in order to get a better understanding of how well the system work and of particular problems that need to be solved. After a period of Balanced Scorecard implementation, at least one year, PV Power should evaluate the result of Balanced Scorecard implementation and basing on the experiences from this implementation and modify the system if necessary as this is also a one of fundamental steps suggested by Poister (2003) to set up an effective performance measurement system. After that PV Power considers to further apply Balanced Scorecard in its subsidiaries.
Challenges of Balanced Scorecard application in PV Power. There may be several challenges that PV Power may face with as follows. First, the limitation of five-year term and the attitude of PV Power’s President and CEO may be the first challenge of Balanced Scorecard application. In Vietnam, a term of President and CEO of a company is five years (Enterprise Law, 2005) while applying Balanced Scorecard is a long term. PV Power’s top manager of this term may support and commit to apply Balanced Scorecard but the other one may not support applying Balanced Scorecard. If this occurred, the interruption of Balanced Scorecard implementation would arise out. As a result, this interruption would lead to the unsuccess of performance measurement in long term. Therefore, PV Power should have a solution to overcome this challenge. Specifically, after getting success from the application of Balanced Scorecard, PV Power should report the result to the Vietnam Oil and Gas Group (abbreviated as PVN) and request PVN to issue a written regulation of applying Balanced Scorecard in long term in PV Power, in which a condition of top management’s commitment to apply Balanced Scorecard should be stipulated. This regulation would be a base for PV Power to apply Balanced Scorecard in long term regardless of the change of President and CEO.

The second challenge for PV Power to apply Balanced Scorecard is the environment in working places because using performance measurement system is strongly influenced by the cultural conditions of working environments (Vakkuri and Meklin, 2003), especially working environment in state-owned companies in Vietnam. The fact that salary payment in many state-owned companies is made not basing on employees’ ability and competence, as a result, companies have not yet encouraged employee. Furthermore, state-owned companies may be impossible to dismiss employee even if the employee have not or not well fulfilled their assigned tasks. In case, when a comprehensive performance measurement system is set up and even if performance measurement is done perfectly PV Power is difficult to replace or dismiss those often have not fulfilled their assigned tasks. A potential solution for this challenge is assign works to employees in accordance with their competency, ability and skill. Moreover, PV Power should pay more attention to improve working quality through employee training, better propaganda, regimes encouraging employees to raise their awareness of work, and better employment.

Final challenge for PV Power is to define and chose most critical measures linking to PV Power’s strategy in order that indicators to be chosen are adequately, focused on strategy and not spread because this type of challenge has been reported by Neely et al. (1997). The solution for
this challenge is the concentration of intellect of PV Power’s top and middle managers to brainstorm, define key indicators for PV Power’s business production activities according to the procedure of setting up a Balanced Scorecard indicated by Kaplan and Norton (1996c).

5.3 Thesis contributions

This thesis makes both practical and theoretical contributions. In terms of practical contribution to the area of performance measurement, this thesis helps PV Power getting the method of a comprehensive approach to improve its performance measurement system with Balanced Scorecard. In addition, in terms of theoretical contribution to the area of Balanced Scorecard, the perceptions gathered from PV Power’s managers on the interactions between non-financial and financial indicators presented above may generally support the theoretical foundations of Balanced Scorecard that there is a sequential dependency among the four Balanced Scorecard perspectives. Moreover, the finding of this research, which illustrates the prediction that implementation of Balanced Scorecard would lead to the improvement of PV Power’s financial efficiency, may support the studied result of Ong et al. (2010) as their finding is that the cause-and-effect relationship of Balanced Scorecard will lead to improved business efficiency and profitability. The reason for this argumentation is that Ong et al. (2010) studied the adoption and implementation of Balanced Scorecard by using a survey method through 100 companies in Malaysia, and my research studied the perceived impact of Balanced Scorecard implementation on PV Power’s financial efficiency through qualitative research method. Although two researches implemented in different contexts and extents but in terms of nature the objectives of two researches are to examine whether the emphasis on non-financial indicators of three perspectives among the four perspectives of Balanced Scorecard will eventually lead to the better financial performance of companies.
REFERENCES


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Quang, N. N. (2011). *Phan Tich Bao Cao Tai Chin (Financial Statement Analysis)*: Nha Xuat Ban Tai Chinh (Financial Publisher).


Stenvall, J. (2010). *Lecture of Strategic Planning and Management In Public Sector*: University of Tampere.


APPENDICES

APPENDIX 1: INTERVIEW QUESTIONNAIRE

I. Interview introduction

Hello, my name is Do Thi Thanh Binh and I am a master student in University of Tampere. As a part of my thesis, I am undertaking a study what kind of performance measures does PetroVietnam Power Corporation use; how does PetroVietnam Power Corporation use performance measures; how do PV Power’s managers perceive the interaction between learning and growth, internal business production process, customer and financial measures; and do PV Power’s managers perceive that improved non-financial measures would lead to the improvement of PV Power’s financial efficiency. Thank you for agreeing to participate in this research. Shortly, I will ask you a series of questions about the use of performance measures in your institution, but first I would like to ask you a few questions about your self.

Name of company: ___________________________

Date: ___________________________

Start time of interview: _______________________

Finish time of interview: _______________________

Interviewee details:

Name: ___________________________

Contact Details: ___________________________

Sex: _____ Male               _____ Female

Position: ___________________________

Number of year in this position: _______________

II. Interview questionnaire
1. What are the keys financial performance measures formally reported to the top manager? (Examples: Cost reduction, sales growth, profitability, cash flow, return-on-capital-employed (ROCE), return-on-investment (ROI), return on assets (ROE).

2. What are the key non-financial performance measures formally reported to the top manager? 

(Examples of non-financial measures:

+ Learning and growth: Performance appraisal completed, employee turnover, employee’s morale, employee’s satisfaction, employee productivity, training, employee’s skill, etc.

+ Internal business production process: Electricity output, process safety, worker safety, number of shutdown of power plant, reduction of duration of power plant shutdown, power plant operational cost savings, settlement of urgent issues occurring during production, innovations, lower input material cost, lower operational cost, etc.

+ Customer: On time delivery, selling price, customer satisfaction, customer retention, relationships with key suppliers, increase market share, customer acquisition, etc.

3. How do you assess the level of adequacy of information in operational and financial reports?

4. How important are financial and/or non-financial indicators to the top manager for the purpose of decision making to improve performance measurement in short-term and long-term business production plan?

a. Importance for decision making in short-term business production plan (short-term is defined as one year).

1. Only non-financial measures are important.

2. Non-financial measures are more important than financial measures.

3. Non-financial and financial measures are equally important.

4. Financial measures are more important than non-financial measures.

5. Only financial measures are important.
b. Importance for decision making in long-term business production plan (long-term is defined as a five-year period).

1. Only non-financial measures are important.
2. Non-financial measures are more important than financial measures.
3. Non-financial and financial measures are equally important.
4. Financial measures are more important than non-financial measures.
5. Only financial measures are important.

4. If you see that the reports that you receive is inadequate and there is a lack of indicators in the reports, how do you want to add up the lack indicators?

5. Then, which type of indicators (financial or non-financial) do you wish to add up in the reports for your better performance management?

6. Could you please tell me how to improve performance measurement of PV Power?

7. It is said that there are impacts and interactions between the following non-financial and financial measures. Would you please tell me how do you think about this impact and interaction?

a. Learning and growth measures

1. How do you think about interaction between performance appraisal and productivity improvement?

2. How do you think about interaction between the increase of employee turnover and the raise of employee's moral and employee's satisfaction?

3. How do you perceive the interaction between the improved employee’s morale and the duration of power plant shutdown, innovations, the increase of productivity, the improvement of employee’s satisfaction?

4. How do you perceive the interaction between employee's satisfaction and employee's productivity? How to increase employee's productivity?)
5. How do you perceive the interaction between training and the improvement of employees' skills?

6. How do you perceive the interaction between well trained employees (employee’s skills) and the reduction of number of shutdown of power plant, the reduction of duration of power plant shutdown, the reduction of production and operational cost, the increase of customer satisfaction, the improvement of relationships with key suppliers?

b. Internal business production process measures

1. How do you perceive the interaction between safety production process and the reduction of number of power plant shutdown, and the increase of power plant operation savings?

2. How do you perceive the interaction between the reduction of duration of power plant shutdown and the reduction of production costs, and the improvement of productivity?

3. How do you perceive the interaction between the timely settlement of urgent issues occurring during production and the reduction of the duration of power plant shutdown, the reduction of production costs and the improvement of productivity?

4. How do you perceive the interaction between innovation and the increase of power plant operation savings and the improvement of productivity?

5. How do you perceive the interaction between the improvement of productivity and sales growth?

6. How do you perceive the interaction between the decrease of input material cost and the reduction of goods selling price?

7. How do you perceive the interaction between the decrease of operational cost and the reduction of selling price?

c. Customer measures

1. How do you perceive the interaction between on time delivery and customer satisfaction?
2. How do you perceive the interaction between the reduction of selling price and customer satisfaction?

3. How do you perceive the interaction between customer satisfaction and the increase of sales growth, market share, customer retention, profitability?

4. How do you perceive the interaction between customer retention and the expansion of market share, and the increase of sales growth?

5. How do you perceive the interaction between customer acquisition and the expansion of market share and the increase of sales growth?

6. How do you perceive the interaction between the improved relationships with key suppliers and the reduction of input material costs, production costs, and the increase of profitability?

d. Financial measures

1. How do you perceive the interaction between cost reduction and the increase of profitability and financial efficiency?

2. How do you perceive the interaction between the increase of sales growth and the increase of financial efficiency, cash flow, return on assets (ROA) and return-on-investment (ROI)?

3. How to increase of financial efficiency, cash flow, return on assets (ROA) and return-on-investment (ROI)?