MASTER THESIS - PUBLIC VERSION

PERFORMANCE MEASUREMENT IN A DECENTRALIZED ORGANISATION

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Preface

At the end of the master course, each student in business administration must complete a master thesis. The report should focus on the respective area of study, in my case business administration with a specialisation in information management. In the years that I studied business administration, I have been exposed to many facets of 'managing' and research design within organisations. I developed a preference for information management. My bachelor report was therefore focused on information management at the Dutch Tax Authority and after that I chose a specialisation in Information Management as my master course.

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Tom Kalfsvel

Table of contents

1. Introduction

This chapter provides a proposed outline of the thesis and describes the context. In the first section the organisation of research will be presented, followed by the problem context in Section 1.2. Section 1.3 presents the purpose of the research, and in Section 1.4 the research design will be outlined. In Section 1.5 the research questions are discussed and finally, the structure of the report is listed in Section 1.6.

1.1 Problem Context

Frequent delivery of corporate performance results is necessary for all organisations, for it shows the current and future health of the organisation (Neely, Gregory, & Platts, 1995). Especially in decentralised organisations with multiple divisions, like Organization X, it is difficult to harmonise all measurement results from the divisions in time and in a secure manner. Sales information not received on a short term could lead to delayed reactions to market changes and problems could be detected too late (Neely, Gregory, & Platts, 1995). In this research, existing designs of performance measurement in several different divisions are evaluated. The evaluation includes a comparison between the theory and the practical example. The practical side is explored through interviews at two divisions. Based on the evaluation, the indicators at the two divisions are matched and the common KPIs have been planned to be used to lead to new indicators that are useful at corporate level. Based on the problem context described above, the thesis is guided by the following central research question:

How can Organization X implement consistent and comprehensive performance measurement?

1.2 Purpose of the research

With this study, the researcher wants to add practical information about the implementation and harmonisation of performance measurement to available scientific literature on the subject. The system of using performance indicators has become accepted in most organisations, however, though broadly accepted, it is still important to ensure that the indicators fit the organisation. In some organisations and described in some articles, attractive systems are developed, but they only exist on paper or on a computer (Mastenbroek, 2009). The idea behind key performance indicators was first used in 1961 by Daniel and Rockart of McKinsey & Organisation. The term ‘performance measurement’ was first mentioned in 1979. At the end of the 1980s, the idea of success factors was sharpened further by Rockart. In 1992, Kaplan and Norton attempted to display organisational performance in a dashboard with four perspectives, called the ‘balanced scorecard’ (Kaplan & Norton, 1992). By using the literature and comparing it to the practical experience at Organization X, new success factors and points of interest in a centralised organisation could be added to the literature. For Organization X, a practical point of view is expected to be far more interesting than the academic part. Therefore, this thesis attempts to combine both practical and academic views. The thesis should lead to a report that Organization X could use in the optimisation process of performance measurement and to the development of KPIs. Recommendations provided in the report will provide opportunities that could, for instance, lead to improving the involvement of the personnel in sales activities. It could also lead to better control of business processes: more frequent

and more reliable updates provide more certainty in choosing the path to follow. The challenge in the research is that Organization X consists of many divisions that are spread over the world. Differences in cultures and expectations could exist and need to be taken into account. The reason for Organization X to ask an external researcher is because an external person has an open and new perspective. Existing employees could have created 'blinkers' for new innovative developments. According to Neely, external participants are often useful as they provide a different viewpoint. Organisations often include consultants, academic or corporate staff. There are advantages to using external participants because they generally arrive without the assumptions that members of the business unit carry and are more likely to be experienced in the process (Neely, 1999).

1.3 Research questions

In this section, the research questions that will be answered in the report are described. The main research question will be answered in Chapter 6 (conclusion). During the last few decades, information technology has enabled organisations to store and collect enormous amounts of data. To manage these volumes, organisations need to be certain about the performance and need to maintain a high standard of data quality (Haug, Zachariassen, & van Liempd, 2011). Performance measurement can help organisations create 'a single version of the measures', where it plays an important role in responding to a number of business drivers such as financial management, customer management and internal business management. In this thesis the relevant literature and already implemented cases are compared with the actual state of performance measurement at Organization X. As mentioned in Section 1.1, the thesis is guided by the central research question 'How can Organization X implement consistent and comprehensive performance measurement?' In order to answer this question, a literature study on the concepts and technologies of both Key Performance Indicators (KPIs) and Performance Measurement (PM) is performed. The central research question is complemented by four sub-questions. The sub-questions are stated in order to answer the central research question.

Sub-question 1 should help to clarify the topic. KPIs are key performance indicators that make performances of different systems or departments measurable. Key processes can be made measurable in KPIs by defining them and measuring them on a regular basis. KPIs need to be SMART (Specific, measurable, ambitious, realistic and timely) and need the full support of the organisation to work well. Important in performance measurement is how to measure those KPIs. In measuring performance, there is often the risk that the wrong performance measures are used. That could lead to nothing but a lot of work. Moreover, it could lead to wrong decisions made by managers. Therefore, sub-question 1 will be answered in Chapter 2.

Sub-question 1: *How can the performances of the key processes be measured?*

Section 2.6 describes the differences in cooperation between a functional and a divisional structure. In 2007, Anand and Daft studied the differences between different organisational designs. The functional and the divisional designs have been studied and differences in cooperation between divisions are described in Chapter 2. As the two divisions both have their own products and own markets, the differences are expected to be present in the performance-measurement systems of

both divisions. The following sub-question will support the main research question since the organisational structure influences the evolvement of performance measurement.

Sub-question 2: Does the organisational structure have an impact at performance measurement?

Performance measurement consists of measures that could be divided into different sections. At first, Keegan et al. proposed a balance between financial measures and nonfinancial measures. Organisations were used to be monitoring only the financial measures as those measures reflected the last period's results. Nonfinancial measures are able to predict future results including for instance that customer satisfaction influences longer term sales. By dividing measures into external and internal perspectives, the organisation is able to split up its efforts. Therefore the following research question will support the main research question and will be described in Chapter 2.

Sub-question 3: *What are the differences between financial and nonfinancial, external and internal results in performance measurement?*

The theory in Chapter 2 proposes a framework where information about performance measurement is presented that has been derived from the literature. As a more practical section of the thesis, in Chapter 4 the interviews are summarised. In this chapter, the KPIs that are used in both scorecards are displayed and the opinions of the interviewees about their performance-measurement system are gauged. In Chapter 5, remarkable differences and similarities between the theory and the practical part are mentioned. In order to support the main research question, the following sub-question proposes the different measures that are derived from the theory.

Sub-question 4: *In what way do the performance measures at both divisions differ from the relevant literature?*

1.4 Report structure

In this section the research structure will be described. The report consists of seven chapters. The following chapter (Chapter 2) consists of the examples from the relevant theory where performance measurement and its facets are explained. Chapter 2 gives examples of existing models that have been described in the literature. In Chapter 3 the methods are proposed. The organisation, Organization X, is outlined and also the research design is detailed. Following the methods section, in Chapter 4 the actual research is described. At two divisions, evaluations are carried out on the basis of the opinions of the employees and the currently used models of performance measurement. In Chapter 5, the theory from Chapter 2 and the practical information from Chapter 4 are compared. The conclusion, Chapter 6, answers the main research question and proposes recommendations. In Chapter 7, a discussion concludes the paper.

Chapter	Subject
1	Introduction
2	Theoretical Framework
3	Research design
4	Evaluation at two divisions
5	Implementation
6	Conclusion
7	Discussion

2. Theoretical Framework

In order to find suitable literature for qualitative research, the literature has been used in a manner consistent with the assumptions of learning from the participant, not only to directly address that questions that the researcher has sought to answer. As will be explained in Section 3.3, research design, one of the main reasons for conducting a qualitative study is that it is exploratory (Creswell, 2009). *The literature is presented in a separate section as a review. In the previous chapter, the practical research approach has been stated. The current chapter forms a theoretical framework to guide the reader though important theory of performance measurement.*

2.1 The development of performance measurement

Performance measurement is a broad concept. Measuring performances has been used for as long as people have sought to improve performance. In the business context, performance measurement was criticised for the first time by Banks and Wheelwright in 1979 (Bourne, 2007). Authors of other articles have argued that performance measurement lacks strategy, encourages local optimisation, is not focused on continuous improvement but rather on minimizing variances, and does not allow an organisation to be externally focused (Mills et al. 2000). At that time, many performance-measurement systems were mostly financially based (Hayes and Abernathy, 1980). In an attempt to overcome these criticisms, performance-measurement frameworks have been developed to encourage a more balanced view. In 1989, Keegan et al. proposed a balance between internal and external measures and between financial and non-financial measures. In 1989, Cross and Lynch described a pyramid of measures that integrates the concept of performance through the hierarchy of the organisation (Neely, et al., 2000). In 1992, Robert Kaplan and David Norton presented the balanced scorecard, which will be described in more detail in Section 2.4. The balanced scorecard is designed to provide a balanced view with four perspectives that should show the past and future performances of an organisation in one model. It was improved several times, in 1993, 1996 and 2000 (Kaplan & Norton, 2000).

Models of performance measurement

Modern performance measurement should be able to take a multidimensional, stakeholder-based perspective (Wettstein & Kueng, 2002). Today, businesses are often exposed to intense competition and companies therefore are focused on improving their performances. By measuring performances, organisations are able to assess whether the set goals are met. Since the rise of performance measurement, several models are introduced. In 1988, a few leading multinationals started developing the model 'EFQM', that was a reaction on models that were used to be developed in the United States of America and Japan. In the EFQM Excellence 2000-model, several dimensions of quality are processed and they can be achieved by self-assessment (Wongrassamee, Gardiner, & Simmons, 2003).

In 1991, Cross and Lynch presented the 'Performance Pyramid'. This pyramid presents 4 levels of effectiveness, starting with the corporate vision on top and the operations on the bottom. At the left side of the model, the external 'Units of Measurements' of an organisation are shown. The right side of the pyramid displays the internal 'Units of Measurement'. Neely et al presented the performance prism in 2001, where five dimensions were displayed in a prism-model. Around 2000, the rise of the internet made its way to performance measurement in organisations. Software vendors,

consultants and conference organisers have recognised the massive market interest in performance-measurement systems, hence the growing plethora of reporting packages, consulting products and performance-measurement conferences (Neely, 1999).

2.2 Functions of performance measurement

In this section, the functions of performance measurement are described. As the main subject in this report is performance measurement, the functions of performance measurement are defined.

'Recent data suggests that only 5% of the workforce understand their organisation's strategy, only 25% of managers have incentives linked to their organisational strategy, 60% of organisations do not even link budgets to strategy, and 85% of executive teams spend less than one hour per month discussing strategy' (Norton & Kaplan, 2001). Performance measurement is not only of academic interest, as the many academic articles cited in this thesis demonstrate, there is a high practical relevance as well. Probably the most important objective of performance measurement is to replace intuition with facts (Wettstein & Kueng, 2002).

Some common concerns about malfunctioning performance measurement

- *We measure everything that moves, but nothing that matters.*
- *We use 2% of what we measure, the rest is just to cover our backs.*
- *We measure the wrong things to four decimal places of accuracy.*
- *If you want to know what the inventory levels are now, come back in four weeks*
  (Neely, 1999).

Despite the remarkable progress made over recent years in performance measurement, many organisations are still primarily relying on traditional financial performance measures (Tangen, 2005). To achieve sustainable business success in the demanding world marketplace, organisations must use relevant performance measures. World-class manufacturing recognises the importance of metrics in helping to define the goals and performance expectations for the organisation. They adopt or develop appropriate metrics to interpret and describe quantitatively the criteria used to measure the effectiveness of the manufacturing system and its many interrelated components (Bourne, Neely, Mills, Platts, & Richards, 2002). Performance measurement literally makes all actions quantifiable, where measurement is the process of quantification. By improving the actions, a better performance should result. The central concern of all organisations is that they perform well. For organisations in a competitive market, performing equally or better than the competitors is often crucial. Efficiency and effectiveness therefore are key words in this context. Effectiveness refers to the extent to which customer requirements are met, while efficiency is a measure of how economically the firm's resources are used when providing a given level of customer satisfaction. There can be internal as well as external reasons for pursuing specific courses of action. Both points can influence each other. For instance, achieving a higher level of product reliability might lead to greater customer satisfaction. In terms of efficiency, it might reduce the costs incurred by the business through decreased failures and warranty claims. Performance can therefore be defined as the efficiency and effectiveness of purposeful action (Gregory, Neely, & Platts, 1995). Organisations are made up of varying numbers of people, undertaking different tasks, often in different locations, ideally with the

common purpose of delivering value to customers. Organisations cannot measure whether they deliver outstanding value to their customers without defining what is meant by value. In 1998, Anderson and Narus used value as an expression in monetary terms. Value is described as the functionality of performance of a market offering in a given customer application. Value is regarded as the cornerstone of business market management because of the predominant role that functionality or performance plays in business markets. More formally, value in business markets is the worth in monetary terms of the economic, technical, service and social benefits a customer receives in exchange for the price it pays for a market offering. (Anderson & Narus, 1998). Measures influence behaviour. Misuses like 'gaming tactics' could be adopted easily in order to achieve the level that has been set as the goal. Measures send people messages about what matters and how they should behave. When these measures are consistent with the organisation's strategies, they in turn encourage behaviours that are consistent with the strategy (Neely, 1999).

Performance measurement also implies that there could be internal and external drivers of performance. For instance, reaching a higher standard of product-quality might improve the customer satisfaction, but could also lower costs of returned broken products. Performance measurement develops steering opportunities by using the strategy, mission and objectives in order to create performance measures, like key performance indicators. According to Kaplan and Norton, performance measurement is also a management process, rather than of only having the possibility to steer within an organisation. (Kaplan & Norton, 1996) It focuses on setting objectives and checks if these targets are reached. In Figure 2, a framework for performance measurement is presented. Here, performance measurement is comprehensive. Internal and external performances are measured in order to gain a total overview of the organisation (Gregory, Neely, & Platts, 1995).

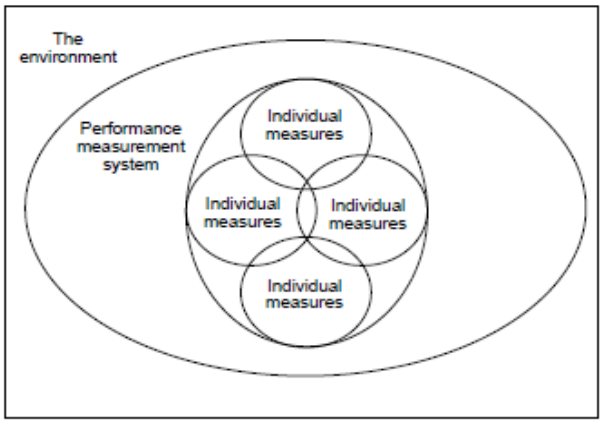

FIGURE 2: A FRAMEWORK FOR PM-DESIGN (GREGORY, NEELY, & PLATTS, 1995)

As most organisations only measure financial results, often only short-term success becomes important. For instance, a downturn in customer satisfaction will not necessarily hit sales in the short term. However, the downturn could have enormous impact on the medium term when customers choose other suppliers or competitors. A model with multiple types of measures could therefore deliver a better view of the short, medium and longer term (Politano, 2003). Different approaches will be discussed in Section 2.4 and Section 2.5. Return-on-investment and earnings-per share are measures that were previously important as individual measures (Kaplan & Norton, 1996). The problem with these measures is that they can give misleading signals for continuous improvement and innovation. Managers should not have to choose between financial and operational measures. The problem with the performance measures used in many businesses today us that they are financially biased and historically focused. Neely et al. advises organisations to list the five measures that receive most attention in a business and ask themselves:

1. Are any of them non-financial?
2. Do any of them help you to predict what might be about to happen to your business?
3. Do they simply enable you to review what happened last week, last month or even last year? (Bourne, Neely, Mills, Platts, & Richards, 2002)

All performance-measurement systems consist of a number of performance measures. There are many different models that make these measures visible, for instance the balanced scorecard. The underlying thought is that the measures are derived from an organisations strategy, because they measure what the organisation wants to become in the future. The balanced scorecard will be described in Section 2.4.

As mentioned on the previous page, poorly developed measures could make employees adopt gaming tactics. Measures send people messages about what matters and how they should behave. When the measures are consistent with the organisation's strategies, they encourage behaviours that are consistent with the organisations strategies. According to Neely et al., the process approach gives two reasons why nobody outside a business should tell the business what measures to use. It is unlikely that anyone not closely involved with the business can have sufficient understanding. People running the business know the most about these business. Organisations should have a process for extracting the knowledge and organising it in a way that can be used to design and implement a performance-measurement system. (Neely, Gregory, & Platts, 1995)

2.3 Key Performance Indicators

The purpose of Section 2.2 was to provide an answer to sub-question 1 *how can the performances of the key processes be measured?* In this section, the acronym KPI is described. Key Performance Indicators, abbreviated KPIs, make the performance of important (key) systems, processes or departments measurable. KPIs need to be SMART (Specific, Measurable, Ambitious, Realistic and Timely) and need the full support of the organisation to work well. KPIs can be both financial and non-financial. As mentioned in Section 2.2, the financial KPIs are often used more than the non-financial KPIs. That is why organisations often give the quantitative financial results the highest priority. Shareholders that have invested money in the organisation often do not look at measures other than financial ones. KPIs are useful controls for measuring performance. In organisations, control is needed to be sure that all important happenings and routines perform well. The key performances are those performances that are necessary for the survival of an organisation (Kaplan & Norton, 1996). The following steps need to be taken to implement key performance indicators:

- Planning, follow up on goals, see correlations between goals and actual activities & results
- Make sure that the decision-making persons are fully informed
- Communicate the desired outcomes throughout the organisation
- Analyse the goals and correlations
- Analyse how the activities in the organisation can be improved

2.4 The balanced scorecard

As displayed in Figure 3, the balanced scorecard by Kaplan and Norton was very frequently cited in 2002. The different versions of the balanced scorecard by Kaplan and Norton are in place 1 to 4. Due to the importance of the balanced scorecard it will be described in a separate section. Figure 3 includes the most frequently cited references in 2002. Unfortunately, the researcher is not able to provide a more recent list of most cited references from a more recent date than the year 2002.

Most frequently cited references in 2002

2000 papers	Citation – frequency
Kaplan and Norton (1996a)	35
Kaplan and Norton (1992)	26
Kaplan and Norton (2000b)	19
Kaplan and Norton (1996c)	12
Neely and Adams (2001), Kaplan and Norton (1996b, 1993)	8
Olve *et al.* (1999), Eccles (1991)	7
Sveiby (1997), Johnson and Kaplan (1987)	6
Neely *et al.* (1995), Kennerley and Neely (2000), Kaplan and Norton (2000a), Lynch and Cross (1991), Lev (2001), Keegan *et al.* (1989)	5
Neely (1998; l999), Roos *et al.* (1997), Brooking (1996), Stewart (1997), Maskell (1991), Ittner and Larcker (1998), Yin and Campbell (1994), Prahalad and Hamel (1990)	4

FIGURE 3: BUSINESS PERFORMANCE MEASUREMENT (MARR & SCHIUMA, 2003).

During a year-long research project with 12 organisations at the leading edge of performance measurement, Kaplan and Norton devised a 'balanced scorecard'- a set of measures that give top managers a fast but comprehensive view of business. Their first article was presented in 1992, and later newer, improved, and practical versions followed in 1996 and 2001. Many different organisations are using the balanced scorecard in their businesses, as it is very user-friendly and help predict future measures. It provides a way to simply evaluate the strengths of a performance-measuring system. The problem is that the indicators only provide information about the past months, weeks or year(s). The balanced scorecard includes financial measures that show the results of actions already taken. Just like in an airplane, relying on one instrument can be fatal. The balanced scorecard provides answers to four basic questions:

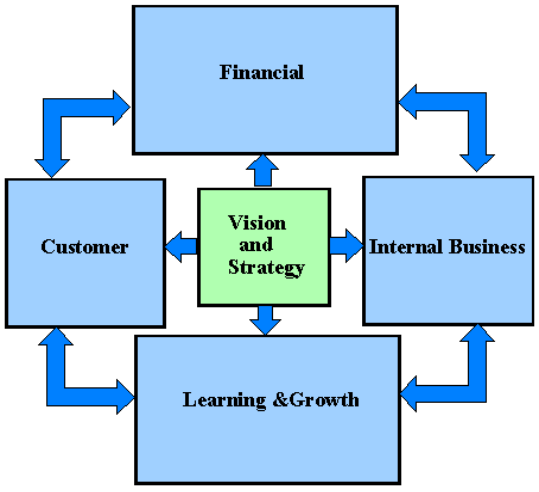

FIGURE 4: A BALANCED SCORECARD (MARTIN, 2011)

- How do we look to our shareholders? (The financial perspective)
- How do customers see us? (The customer perspective)
- What must we excel at? (The internal business perspective)
- How can we continue innovation and the creation of value? (The innovation and learning perspective)

The balanced scorecard forces managers to focus on the handful of measures that are most critical. By forcing senior managers to consider all the important operational measures together, the balanced scorecard lets them see whether improvements in one area may have been achieved at the expense of another. The measures that are divided over the different perspectives need to be specific, measurable, achievable/ambitious, realistic and time-related (SMART). The balanced scorecard puts strategy and vision at the centre. It establishes goals and the measures are designed to pull people toward the overall vision (Politano, 2003).

2.5 Performance measurement implementation

The implementation of a performance-measurement system gives a start for measuring business. Fernandes et al. have tried to implement a derivative of the balanced scorecard at a medium-sized enterprise consisting of 250 employees. Their objective was to find out if this type of performance measurement was applicable at small- and medium-sized enterprises. Often, performance measurement was implemented based on the strategic direction of the performance manager of an organisation. Fernandes et al. adopted a phased approach that enabled both creative and structured thinking. In total, eight phases were identified (Fernandes, Raja, & Whalley, 2006).

1. **Project initiation:** In this step, a research associate at the organisation is recruited.

2. **Strategy clarification**. A SWOT analysis is applied to identify and address the specific issues. Strengths, Weaknesses, Opportunities and Threats are mapped.

3. **Strategy analysis**. In this evaluation stage, a list of strategic objectives is identified, also through the use of brainstorming sessions.

4. **KPI analysis:** Existing performance measures are reviewed.

5. **Measurement analysis:** A zero-point is defined, as well as measurement frequencies.

6. **Strategy initiation:** A detailed analysis is conducted and a plan derived for attaining the targets from Phase 5.

7. **Implementation plan:** The new plan is implemented and the KPIs are added into the balanced scorecard.

8. **Formal review:** An evaluation is carried out to measure the opinion of all stakeholders.

The authors came to the conclusion that such a type of performance measurement could also be used at small and medium enterprises. For example, if sales turnover was short of the forecast from last week, how does the measuring system report this and how will it get the organisation back on track? How does it help determine what should be done next time? Does it? Recent developments suggest that performance measures should be used to communicate and clarify the strategy, check implementation of the strategy and challenge the strategy (Bourne, Neely, Mills, Platts, & Richards, 2002).

De Leeuw and van den Berg advice organisations to focus on the implementation of performance practices since managers then motivate the work floor. Focusing on getting performance practices implemented may therefore be more important than trying to select exactly those practices that have most impact (de Leeuw & van den Berg, 2011). The point is that by deciding to introduce measurements that reflect the organisations' strategies, the precise meaning of the strategies must be clarified. Once the meaning has been clarified, measurement becomes possible and the strategies themselves become explicit and well bounded.

As mentioned in Section 2.4, Kaplan and Norton's balanced scorecard is balanced because it addresses financial, non-financial, internal and external perspectives, and short- and long-term perspectives. All four perspectives interact in order to support the vision. By improving leaning and growth, the internal measures lead employees make fewer mistakes and allow employees to add more value. Better internal performances create a better service or product for the customer. The customers are more satisfied (customer perspective) and that should lead to more sales (financial perspective).

The management of an organisation needs to ask itself:

- Why do customers buy our product instead of those of our competitors?
- How can we ensure that existing customers continue to prefer us in the coming three years?
- Why would new customers leave their existing supplier and turn instead to us?

An organisation needs to ask itself: What are the combined objectives between the customer needs and the stakeholders' needs? To maintain balance in order to work towards different objectives, Neely advises the use of a definition card per KPI in order to create one formal description for each. (Neely, Richards, Mills, Platts, & Bourne, 1997)

Measure	• **Performance of delivery**
Purpose	• Stimulating improvements in delivery reliability
Relates to	• Business implications; delivery on time and minimizing overall lead times
Target	• 80% at the end of the year
Formula	• Nr. Of orders delivered in full on the promise date/total number of orders=…. *100=
Frequency	• Weekly
Who measures?	• Mr. X
Source of data	• Due date: as stated on customer schedule. Actual delivery date by asking the customer
Who acts on the data?	• Mr. Y
What do they do?	• If the performance upgrade develops well, nothing has to be done. If otherwise, ask Mr. Y why, make recommendations and perform the right changes
Notes and comments	• Notes
Data/Issue number	• 1 Dec 2011/ Issue nr. 2

2.6 Cooperation within a divisional structure

This section explains the divisionalised structure and the way of holding divisions accountable for their actions. A division is defined as a segment within the organisation where the divisional chief executive has responsibility for most of the production and marketing activities of the segment and is accountable for a profitability measure. Appendix C shows an overview of a functional organisational structure and a divisionalised structure.

In a functional organisational structure, activities are grouped together by common functions from the bottom to the top of the organisation. Functional activities are for instance accounting, engineering, human resources, and manufacturing.

The divisional structure occurs when departments are grouped together based on their organisational outputs. Most large organisations have separate divisions that use different technologies or serve different customers (Anand & Daft, 2007). A divisionalised structure involves the establishment of separate, semi-autonomous units (normally established on the basis of either individual products/product groupings or geographical regions) that are coupled together by a central administrative structure. The semi-autonomous units are called divisions – or business units- and the central administration relates to the central headquarters/ head office. The structure of a divisionalised structure is divided in accordance with the products that are made.

Many large organisations adopt divisionalised structures (Drury & Shishini, 2005). The manner in which divisional performance is controlled and measured is therefore of particular importance. In the case of a divisional structure, different performance measures should be used to evaluate the performance of divisional managers and the economic performance of the divisions, or whether a single measure should be used for both purposes.

An important issue of responsibility accounting is whether a divisional manager should be held accountable for items that he or she cannot influence by his or her actions. The management accounting literature distinguishes between the economic performance of a division and the performance of its manager, advocating that the evaluation of a manager's performance should consist of only those factors under a manager's control.

It is possible that different divisions create KPIs that fit their own business. In that case, the performance-measurement in the organisation consists of multiple scorecards and, therefore, the departments and divisions could only share the KPIs that have an equal definition.

The purpose of Section 2.6 was to provide an answer to sub-question 2: *Does the organisational structure have an impact at performance measurement?* As mentioned earlier in this section, the different performance measures in a divisional organisation should be used to evaluate the performance of divisional managers and the economic performance of the divisions, or whether a single measure should be used for both purposes.

2.7 Governance within a divisional organisation.

In this section, governance within an organisation is described. As the organisation that is studied is divisional, governance research within the organisation could explain differences or similarities between the divisions.

Governance in organisations is, according to traditional theory, based on the assumption that managers and employees do not have identical goals. Such problems are complicated because of non-symmetries in power, perspectives and aspirations between managers and employees. Consequently, the employees and managers need to be monitored and controlled. As mentioned in Section 2.1, gaming tactics could possibly be adopted. Therefore, definitions of tasks need to be clear and shared with all stakeholders. In his article, Shapira explores whether incentives or contracts are truly appropriate for solving issues in organisational governance presently (Shapira, 2000). In a divisionalised organisation, risks of asymmetries in aspirations may occur. In 1987, March and Shapira concluded that risk-taking is affected by the decision makers' resources as well as by the target she focuses on when making a choice. Given different resources within different divisions, there might be differences in aspirations between divisions that could block further cooperation between divisions, regions or hierarchical cooperation (March & Shapira, 1987).

Especially in organisations with a decentralized and divisional structure, governance is of major importance. In 1995, Argyres argued that a combination of a centralised structure with lower-powered incentives contributes to a successful effort at interdivisional coordination. He wrote an article about the variety of organisational forms, and compared heir capacities to solve coordination problems created by technological interdependence between firms' divisions. In the article, Argyres found that IBM made successful use of the structure. General Motors, on the other hand, suffered from bad coordination due to its decentralised structure supported by higher-powered incentives, which led to large losses. This suggests that for well-chosen systems innovation strategies, centralisation of decisions on key technical standards may be more efficient than decentralization of those decisions, and therefore the multidivisional structure is inappropriate (Argyres, 1995). Chandler and Williamson discuss three roles of corporate headquarters in a multi-division firm

1. Monitoring divisions' performance and auditing their activities
2. Allocating resources across divisions on the basis of perceived merit
3. Strategic planning, notably for acquisitions, divestitures and long-term investments

Multi-division form organisations should be aware of risks related to the third point (Argyres, 1995). The strategic planning could fail when the corporate management attempts to credibly commit not to intervene in the day-to-day operations of the organisation, even if opportunities for one-time gains appear (Williamson). Argyres concludes from his research that the corporate management should remain the largest vote in divisional choices. The study shows that efficient outcomes may not be achievable under full autonomy since participants might refuse to take part, unless they expect to receive a positive reward.

2.8 Maturity models in performance-measurement systems

Organisations are constantly seeking performance improvement through new technology, processes, and instruments. One instrument that has received considerable attention over the last few years is called the Performance Measurement System (PMS). A PMS tracks actual performance of an organisation, helps identify weaknesses, and supports communication and decision-making processes.

Performance-measurement System
As mentioned in Section 2.2, a performance-measurement system can be defined as the set of metrics used to quantify both the efficiency and effectiveness of actions (Neely, Gregory, & Platts, 1995). A performance-measurement system is a system that tracks the performances of an organisation. It supports internal and external communication of results, helps managers by supporting both tactical and strategic decision-making, and facilitates organisational learning.
In the following bullet points, several 'components of a performance-measurement system are described.

- **Users**: Owners of the performance-measurement system.
- **Procedures**: Definitions of performance indicators and rules for data collection.
- **Data**: Performance-relevant data. Values of performance indicators.
- **Software**: Software for extraction, transformation and loading of data.
- **Hardware**: Computers, servers, infrastructure.

There is the possibility that organisations might be further developed in some areas and less developed in others; for instance, the hardware side might be ready for more software than what is currently in use. In 2002, Wettstein and Kueng developed a maturity model for performance-measurement systems. The model can be applied as a framework for evaluating a performance-measurement system that is already running in an organisation.

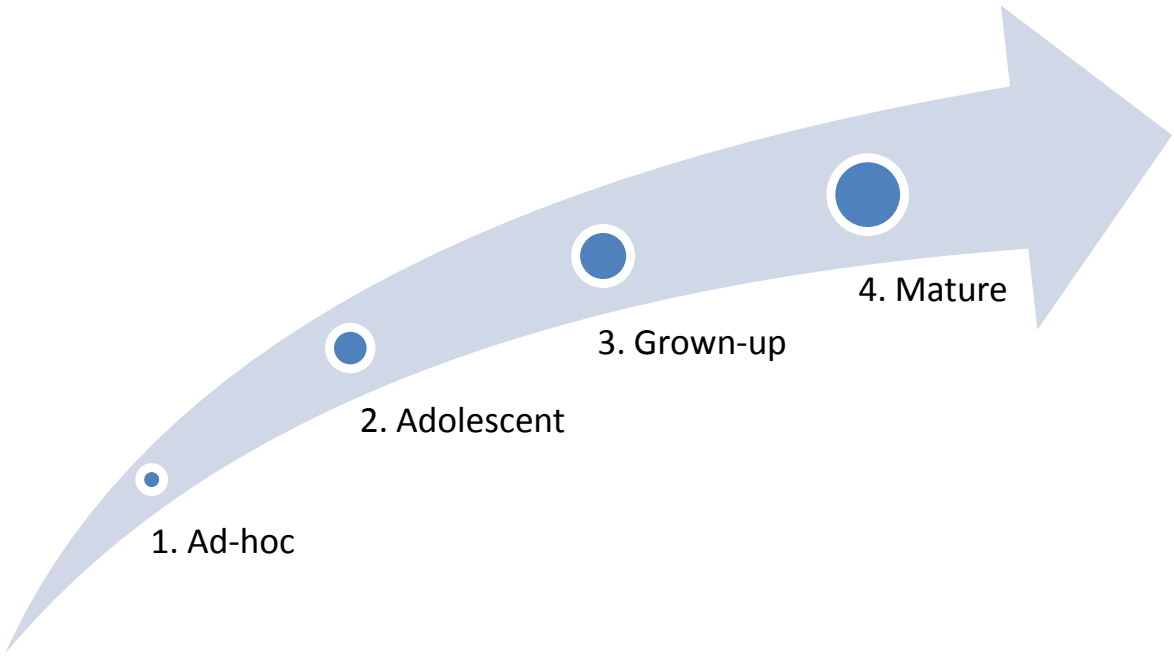

FIGURE 5: THE MATURITY LEVELS OF PERFORMANCE-MEASUREMENT SYSTEMS (WETTSTEIN & KUENG, 2002).

Figure 5 shows the four levels of maturity of performance-measurement systems. As the level of maturity increases, the kind of people that use the performance-measurement system change too. According to Wettstein and Kueng (2002), a Level 1 system is mainly used by traditional financial controllers in order to provide only financial performance measures. Most data is collected manually and the performance data is stored in various formats like spreadsheets, ring binders et cetera. A Level 2 system already uses a few non-financial indicators that are measured as well. In contrast, at Level 4 the financial and non-financial indicators are measured on a regular basis where the indicators reflect the interests of the stakeholders. Data collection does not require manual intervention. The most important forces that initiate and accelerate a shift to the next level are the following:

- **Rivalry with competitors.** Improvement of internal productivity is necessary when rivalry increases.
- **Information needs from managers.** If managers-need to shorten the decision making period, it might be necessary to therefore improve the performance measurement.
- **Company-external requirements.** External requirements of performance measurement could make it necessary to improve performance measurement.
- **IT capabilities**. New developments in IT might provide opportunities to automate processes that used to be carried out manually.

2.9 Vigilant Information systems

In this section, an example of a vigilant information system is presented .To be vigilant means to be alert and observant. A vigilant information system (VIS) includes both sensing and responding capabilities. The article by El Sawy et al. (2004) describes how Western Digital, a global hard-drive manufacturer built a vigilant information system. The dashboards at Western Digital are described as 'real time', which means they are sufficiently vigilant for the process being monitored. El Sawy et al. presented the four activities model.

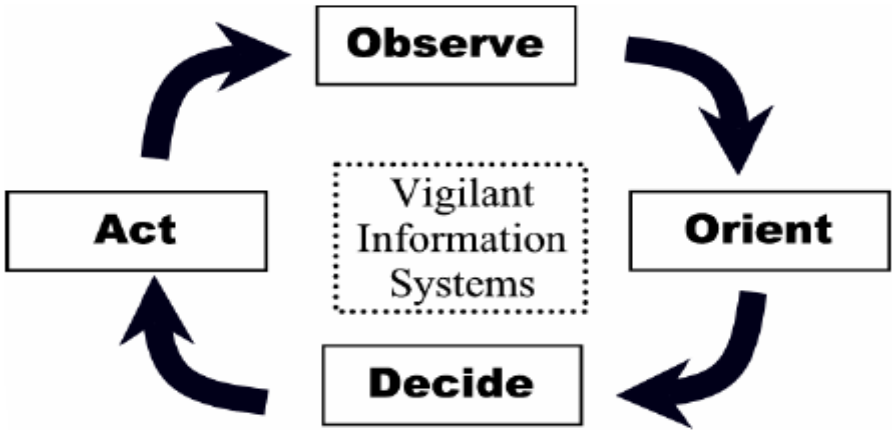

FIGURE 6: THE OODA LOOP (EL SAWY, HOUGHTON, GRAY, DONEGAN, & JOSHI, 2004).

- *Observe* (Providing visibility into the critical business processes in the enterprise's supply chain)
- *Orient* (Providing graphical dashboards that display data)
- *Decide* (Analytics for asking what-if questions)
- *Act* (Communicate decisions quickly to pre-specified others to take action)

As part of Western Digital's survival strategy, the corporate management demanded a new mode of information delivery. At first, Western Digital wanted the ability to react more quickly to changes. Second, Western Digital wanted integrated information so that they could manage enterprise-wide using a follow the sun manner in order to measure performance 24 hours a day. As multinational organisations are spread over the world, different regions could take over the measurement as the night falls in other regions.
In many enterprises, information is difficult to consolidate because there are no single sources of data. Therefore, this article is useful for this research because it describes an implementation path and it helps the reader to understand the opportunities of performance measurement. The diagram found below illustrates the opportunities of performance measurement in the way that Western Digital has implemented it. The raw data that is extracted fills the functional applications. At the dashboard level, data is extracted to form actual key indicators that are important at that level. The corporate dashboard displays indicators that are useful to justify decisions to stakeholders and the factory dashboard displays indicators that are useful to keep the factory effective and efficient.

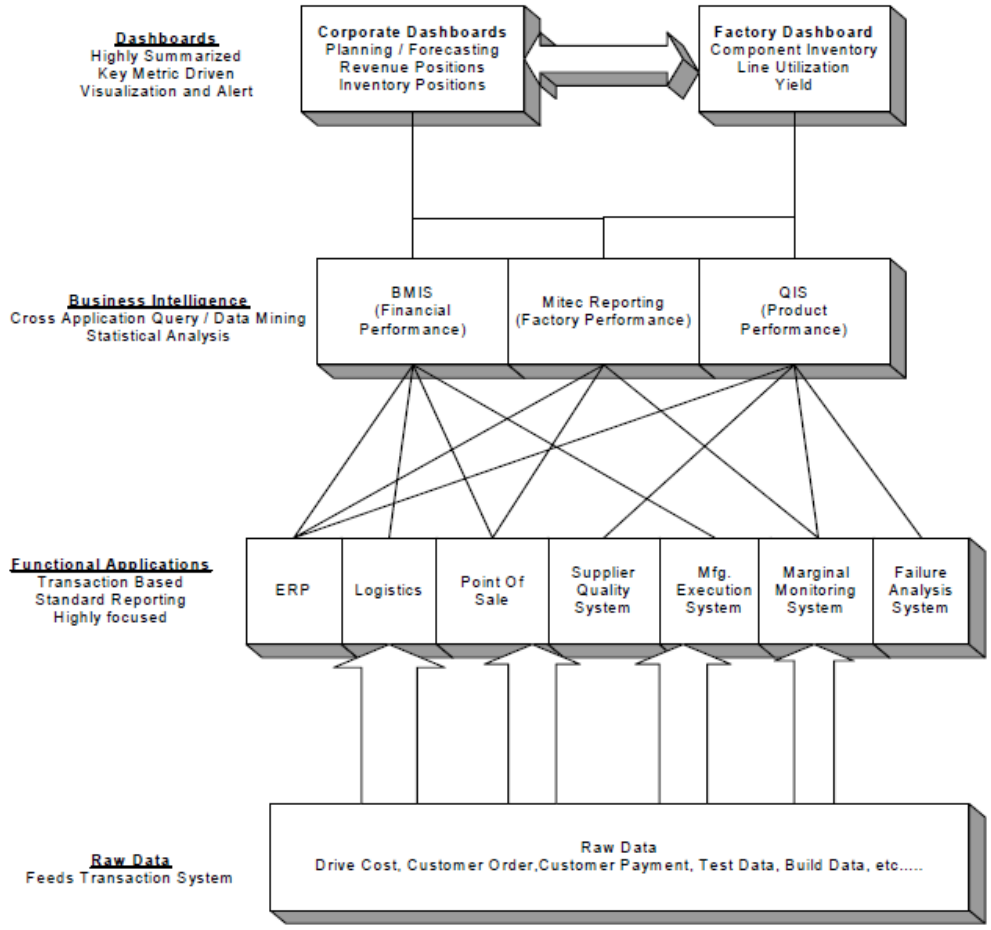

FIGURE 7: ARCHITECTURE OF A VIGILANT INFORMATION SYSTEM AT WESTERN DIGITAL, (EL SAWY, HOUGHTON, GRAY, DONEGAN, & JOSHI, 2004).

Houghton et al. recommends three critical policies:

- Align time-based objectives across the organisation: Try to translate strategic enterprise goals into measurable, time-based operational objectives for each department. The result is consistent metrics.

- Capture key performance indicators in real time. To improve corporate performance, WD needed real-time monitoring --- Horizontally across organisational groups and vertically within business units. With real-time KPIs, teams could analyse the indicators across groups and business units.

- Foster cross-team collaborative decision-making: the dashboard environment would need to enable joint decision-making and collaborative working across teams, departments, enterprises and geographic areas.

In a vigilant information system, the dashboard becomes a manager's eyes and ears into operations. These policies are aimed to ensure that decisions and actions are coordinated. Dashboards are created: one per factory, and one for group demand planning, distribution and sales information (the corporate dashboard).The dashboards tap into the information flows that are displayed in the figure above.

The four core requirements for the factory dashboard are to:

1. Show KPIs: Show the health of the department or factory.
2. Display metrics: Show when a KPI goes below a minimum.
3. Allow drill down: Give staff ways to drill down on each KPI.
4. Issue alerts: Automatically issue alerts to responsible persons.

Each KPI and metric has a target performance level and a variance setting (some set in advance and some set by the system). Exceeding a setting triggers an alert to the appropriate supervisor or manager. They also receive alerts when their targets are out of range. An even more important aspect of their job is using the factory dashboards, with a different set of KPIs, to perform "health checks" on the operational performance of the factory (that is, determining that things are working as they should). The health check is analogous to a medical health check, which measures vital signs that indicate whether or not critical body functions are within normal limits. Because of the real-time nature of the data, problems already handled by the factory's shop floor supervisors are filtered out, minimising the information overload on the production managers.

-Although not electronically connected, the factory and corporate dashboard systems are connected through the data they share and the communications and interactions of the managers who use them.
-In this example, the dashboards reduce the physical distances between the factories in Thailand and Malaysia and corporate management in California.
-As a result, people can meet virtually and resolve problems quickly. People who need either a factory or corporate dashboard should be able to access it anywhere. On the following page, the advantages of a vigilant information system are displayed. The advantages that are mentioned

should be seen as possibilities. It is important to keep in mind that especially financial advantages are difficult to predict. (El Sawy, Houghton, Gray, Donegan, & Joshi, 2004)**.**

Cost avoidance

- **Better visibility:** Inventory turns could be increased, so that the annual costs for inventory carrying are lower. In the Western Digital case, the ROI of the total project was realized in 1 year through savings in inventory carrying costs.

- **More efficient querying:** Highly paid administrators to create cross-database reports each year are expensive. Dashboards could also eliminate a large percentage of printing costs.

- **Less information overload and faster decision-making**: The average production meeting at the factories and at corporate level could take much less time after the implementation of a VIS.

Strategic advantages

- **Faster analysis and decision-making:** Executives using the corporate dashboards to identify KPI problems, experience much less information overload.

- **Immediately available information:** With the dashboards, everyone sees the same information, anytime, anywhere and always updated at the most appropriate time intervals.

- **Quicker reflexes:** The reaction time between receiving data and acting on it could be reduced from hours or sometimes days to minutes.

2.10 Summary Chapter 2

As seen in Chapter 2, there is a lot of theory available on performance measurement. The term 'performance measurement' started to develop in 1979 and is still a popular topic for organisations that want to be informed about their business. The reason why it is interesting for organisations is that there are many synergies that could result, there is a potential for reducing costs and the organisation is easier to analyse when performance measurement is optimally implemented in organisations. Different models have been described with the balanced scorecard as the mostly cited and well-known measurement tool. All models share the idea that the KPIs need to be derived from an organisation strategy. As only 5% of the workforce understands their organisation's strategy, support of the KPIs could also be low. Most organisations only measure financial results, and these results often only reflect the past. The models vary from the EFQM model to the performance pyramid, but the scorecard is the most well-known model. The balanced scorecard, or a derivate, is the most frequently cited model in the literature and is often used by organisations to measure performance. By using four perspectives that interact with each other, the model is useful to display the past, present and the future. Key performance indicators make performance of important factors measureable. The KPIs need to be specific, measurable, ambitious, relevant and timely in order to function properly.

Implementation
Wettstein and Kueng (2002) have developed a four-stage maturity model for performance-measurement systems. An organisation or division can be analysed for its level of maturity. With this model, the researcher should be able to find out in what level Organization X is situated at this moment and what consequences that has for its performance measurement. As Organization X is divisionalised, there might be differences found in levels of maturity in different divisions or levels in the organisation. Fernandes et al. have tried to implement a derivate of the balanced scorecard at a medium-enterprise. Fernandes et al. adopted an eight-phased approach that enables both creative and structured thinking. The theory of Politano (2003) is useful because examples of key performance indicators are provided and organisations are advised to make one description of the KPI that should be known by the whole organisation. As Organization X has implemented a divisionalised structure, a section is dedicated to cooperation within a divisional structure. Interestingly, a divisionalised structure involves the establishment of separate, semi-autonomous units that are coupled together by a central administrative structure.

Organisational governance
Governance within a divisional organisation provides the structure, oversight and management processes that ensure the delivery of the expected benefits in a controlled way. Organisations that are settled in a divisionalised structure should be extra focused on monitoring divisions, allocating resources and a strategic planning in order to be competitive in the longer term. The use of a divisionalised structure at Organization X makes it an especially interesting case study.

In Section 2.8, a successful implementation of an information system is described. At Western Digital, the researchers focused on the four activities model where the system is able to warn the users when limits are exceeded or alertness is required. The divisionalised structure could lead to

non-identical goals and result in the divisions heading in directions other than prescribed by the organisation. It is evident from the theory that performance measurement is a broad concept. It is difficult to find an appropriate model as each type of business demands different performance indicators. Furthermore, a divisional structure, as in the case of Organization X, demands different performance indicators. The literature has argued that there is no single performance-measurement system that is useful in many different situations, but the balanced scorecard, or a derivate of the balanced scorecard, is very often used to display performance indicators of different perspectives.

One of the purposes of Chapter 2 was to provide an answer to sub-question 3: *What are the differences between financial and nonfinancial, external and internal results in performance measurement?* Organisations are eager to use using financial indicators as those indicators are quantitative in origin and they display the financial results, profit, and therefore provide an important justification for the existence of the organisation. The literature argues that using only financial indicators could lead to problems in the future, as financial indicators only display the performances of the past. At Western Digital, an interesting performance-measurement system has been implemented. It converts raw data into functional applications. The data of the functional applications is extracted and leads to corporate dashboards and factory dashboards. Both dashboards show the desired performance indicators. When an organisation is implementing a new performance-measurement system or reconfiguring a performance-measurement system, it needs to look at the current system and KPIs in order to understand what the employees expect and what fits best for the organisation.

3. Methods

In this chapter of the report the method is described that will be used to answer the research question 'how can performance measurement successfully be optimised at Organization X?' First, the respondents that have participated in the research are described. In the second section, the interview questions are described.

4. Evaluation of the two divisions

The theoretical part of the thesis is composed of information from a literature study. In Chapter 2, the literature has been described and actual performance measurement is tested in practice. The literature also provides guidance on how to carry out the study. The comparison of the literature with the actual findings will lead to answers to the research questions mentioned in Section 1.4 Research Questions (Swanborn, 1981)*. Chapter 4 describes the interviews that provide useful insights into business practice related to the adoption of nonfinancial leading indicators for steering the business. Possibilities for cooperation are also presented.*

5. Implementation

In this chapter, the findings from Chapter 4 are compared to the findings from theory outlined in Chapter 2. Chapter 5 describes similarities and differences and presents possible explanations for why differences occur.

6 Conclusion

Based on the problem context described in Section 1.1, the thesis is guided by the following central research question 'How can Organization X implement consistent and comprehensive performance measurement?'. In Chapter 6, a conclusion will be presented and detailed based on the comparison of Chapters 2 and 4, which was described in chapter 5.

- The markets differ enormously.
- Both divisions have a incomparable product portfolio.
- In the divisions there are different levels of management.
- The divisions do not use a standard model for measuring performance.
- Organisation X does not ask them to use a prescribed model.

6.2 Recommendations

In this section recommendations derived from the study are explained. The research question was 'How can Organization X implement consistent and comprehensive performance measurement?' Recommendations are derived from the conclusions of Chapter 5 and Chapter 6.

- Organisation X should ask itself if these large differences are desirable, especially when changes need to be carried out.
- Regions should complement each other more in, for instance, areas of HR, waste disposal, corporate social responsibilities, et cetera.
- As the performance measurement models of the two divisions are incomparable, Organisation X should use a system that consolidates relevant data from multiple sources.

7. Discussion

In this chapter the research contribution, limitations and point for further research are discussed. The research described in this study has attempted to analyse performance measurement within a divisionalised organisation. As in most articles and studies, there are limitations to this study. These limitations could be avoided in future research. The limitations are described in Section 7.2; the recommendations for future research are described in Section 7.3. In the first section of this chapter, Section 7.1, the research contribution is discussed.

7.1 Research Contribution

The research contributes to both science and practice. This study has attempted to describe factors and insights of different articles and has combined them in a theoretical framework (see Chapter 2). The high degree of autonomy of the divisions was not seen in other scientific articles found in the boundaries of this study. The added-value, therefore, is that the study contributes to the literature by reporting on performance measurement within a large, divisionalised organisation. The researcher has interviewed respondents at different levels within the organisation, and this can be inferred to provide a clearer collective opinion of the divisions. Combined with literature, this perspective of an external researcher, instead of the viewpoint of someone who is already used to the practice of performance measurement, should give the organisation unique insights (Bourne, Neely, Mills, Platts, & Richards, 2002).

7.2 Research Limitations

This study has some research limitations. As the nature of the study is exploratory, the theory form the literature that is used for the study has not been fully tested in practice. Though some of the cited theory has been tested in practice, the organisations that are described in these studies differ significantly from Organization X. Therefore, literature has been chosen that seems most applicable to the organisation in question. As the entire division could not be interviewed, the conclusions are limited in some ways. A new study that might follow this study should be able to place more focus on the connection between the divisions and the corporate level. A larger study where the divisions confront each other and are asked to cooperate could be helpful. As the respondents are the persons who have developed the current performance-measurement system, they know the pros and cons of the current system best. As the divisions are able to develop their own scorecard, it is expected that they fully support the one that they are using (Salancik, 1979). Though with all the knowledge they poses of the divisional activities, the respondents might have created a single view. A more in-depth study at, for instance, one division could add more value as more respondents at multiple levels could give their opinion. As every organisation is different, the findings from this research might not be relevant or even to an organisation that is expected to be more or less equal. A further possible research limitation could be the fact that the researcher's native language is Dutch and all the respondents had English as their mother tongue. This implies that there is the possibility of misunderstanding and misinterpretation of the interviews.

7.3 Further research

'Performance measurement is a means to an end, not an end in itself' (Neely et al, 2002).

The real benefits of performance measurement come from closing the management loop and ensuring that the measures stimulate appropriate improvements in business performance. This study explored the field of performance measurement at a divisional organisation. The literature and practical findings are combined in recommendations. With the recommendations that are provided, Organization X should be able to reconsider its view of the structures as it became clear in this study that a model of performance measurement that in a pyramid structure through the whole organisation is very difficult to implement. The outcomes of this study can be tested at other divisional organisations within Organization X. For further research it would be useful to select a larger number of respondents to increase the reliability and to interview respondents from more levels in the organisation. New research could focus more on the evolution of the differences between the divisions and focus on future performance measurement.

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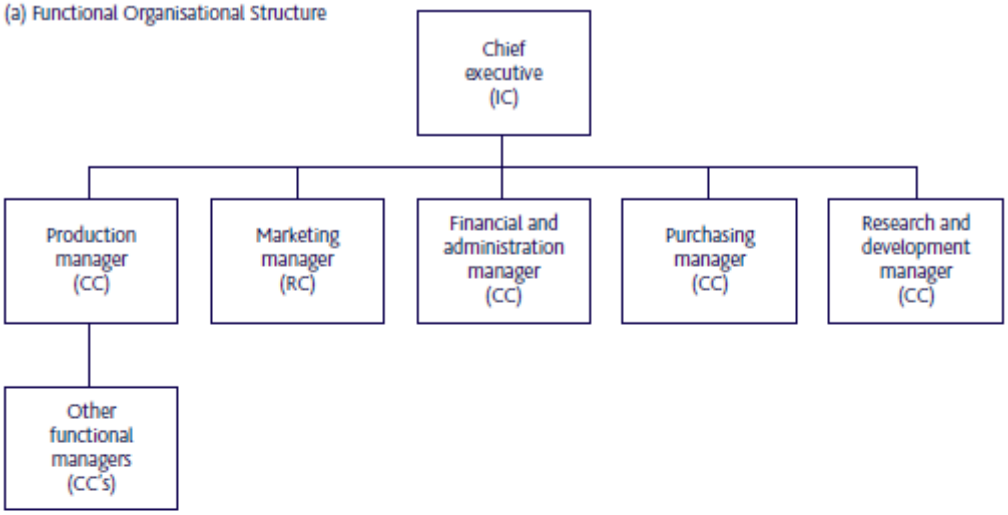
Appendices

A. Interview questions

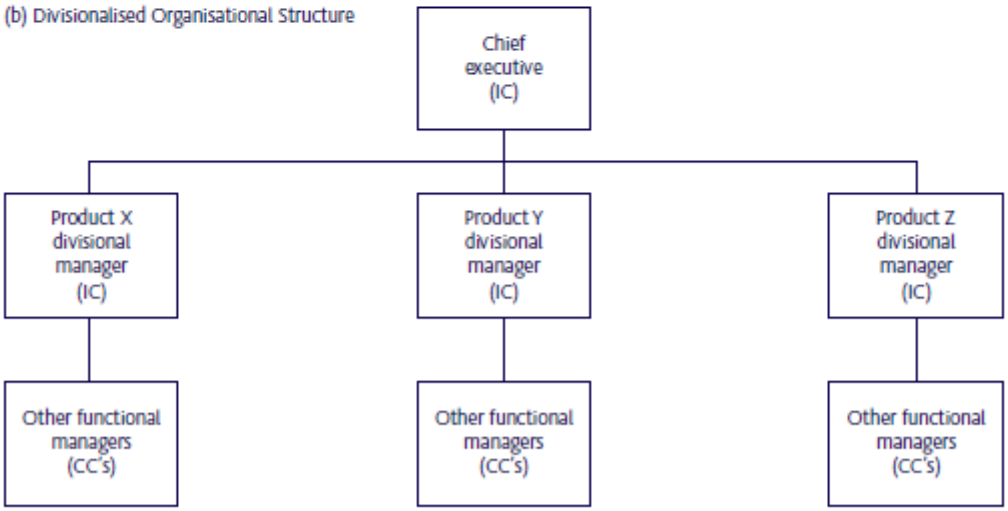
B. Overview project approach

C. Functional and Divisional structures

(a) Functional Organisational Structure



(b) Divisionalised Organisational Structure



IC = Investment centres
CC = Cost centres
RC = Revenue centre