Developing a management control system for a Dutch hospital – a design science approach

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Date: 28-07-2016

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Master thesis – Business Administration

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Management summary

The research concerns how to (re)design the management control system for a Dutch hospital. Currently, major reforms taking place in the Dutch healthcare system. This forces hospitals to adjust their working process and organizational structure to stay in competition. This research is performed by the request of the ZGT, which is a hospital in the Netherlands that also faces the challenges of a changing environment. The ZGT is going to transform their organization into a network organization, which exists of a compact high-tech core hospital with around it smaller specialized focus clinics and business units. In the network organization, physicians, managers and other employees get more responsibilities to take decisions on their own. This means that the organization becomes more decentralized. Decentralization is mentioned by Anthony et al. (2014) as a reason to implement management control systems. Management control is ''the systematic process by which the organization's higher-level managers influence the organization's lower-level managers to implement the organization's strategies' '(Anthony et al, 2014, p.4). Overall, the primary function of management control is to influence employees behaviour in a goal congruence way.

The research followed the design science research methodology to answer the research question: *What is an appropriate management control system for the ZGT as they want to decentralize responsibility and control?* The research goal is to obtain knowledge about management control systems and to advise the ZGT how to (re)design their management control system. A combination of the frameworks of Malmi and Brown (2008) and Anthony et al. (2014) is used to develop the management control system. The research starts by investigating the environment of the ZGT. Next, the control structure, which exists responsibility centres and a transfer pricing system, is developed. Finally, the different phrases of the management control process are developed. The whole management control process exists the following phrases: planning and budgeting, performance measurement and analysis and compensation and incentives. All elements together present a management control system. The different elements needs to be developed as package of systems, instead of holistically as single systems.

Prior to developing the management control system, first the management control environment needs to be clear. ZGT's environment is partially explained by the specific characteristics of non-profit organizations and healthcare organizations. Such organizations have the following characteristics: absence of a profit measure, special source of financial support, many professionals such as physicians, governance involvement, a difficult social system, third-party payers and importance of quality control. Additionally, important stakeholders of the ZGT, such as healthcare insurers, patients, government and other hospitals, are explained. Finally, a description of the ZGT as network organization is given.

Then, the management control system is developed based on the assumption that the ZGT wants to delegate responsibilities and control. Developing the management control system starts with designing the management control structure which exists of responsibility centres and a transfer pricing system. At this moment, all units within the ZGT are discretionary expense centres. It is advised to transform port specialism departments and focus clinics into profit centres. These units can control both revenues and costs. Besides, assisting departments, such as anaesthesia, can be pseudo profit centres. They can only partially control the revenues because they depend on the request of the other units. Finally, service and supporting units can be discretionary expense centres

because management determines the amount to spend in these departments. Additionally, the ZGT needs a transfer pricing system for the transfer of goods and services from one profit centre to another within the same organization. It is recommended to implement cost-based transfer prices. Therefore, standard costs plus a profit mark-up can be used.

Afterwards, the management control process is developed. At first, the planning and budgeting phrase is described. At this moment, the ZGT uses a top-down budgeting approach. It is advised to transform the budgeting into a more bottom-up approach. Then, lower level managers and employees are involved in the budgeting process. This is in accordance with the decision to decentralize responsibilities. Next, the performance measurement system is designed. It is advised to make use of both financial and non-financial measurements. This can be achieved by the implementation of a balanced score card. Financial performance can be measured by performing variance analysis. Finally compensation and incentives are discussed. Both extrinsic and intrinsic motivation are important in hospitals. Therefore, it is advised to make use of both types of incentives. First, medical specialists get a fixed pay. Additionally, it is advised to make use of non-financial incentives, such as given them autonomy, power and opportunities to participate in important decision-making processes.

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1 Introduction

1.1 Background

Currently, major reforms taking place in the Dutch healthcare system (de Bakker et al., 2012). This change is mainly due to the high and rising pressure on healthcare costs. The latest reform started with the Health Insurance Act in 2006. This act represents universal mandatory health insurance scheme for all Dutch citizens. This reform was also a transition from supply-side regulation towards managed competition. Besides, a product classification system was developed based on combinations of a patient's diagnosis and average treatment pattern. This resulted in a categorization of different Diagnosis Treatment Combinations (DTCs) and hospitals were paid by prices per DTC (Van de Ven & Schut, 2008). Implementing financing based on DTCs causes a shift from functional budgeting towards performance-based budgeting. In the past, hospitals received a fixed amount of money for the whole year. Now, they only receive money for the care they deliver (Dutch Healthcare Authority, 2014).

The aim of managed competition is to decrease prices and improve quality. Additionally, it should result in better capacity planning, shorter waiting lists, faster throughput, correct price setting and price consciousness of all involved (Schaepkens, 2002). Hospitals are judged on the relationship between output and input. They are forced to reach a balanced relationship between costs and revenues. As a consequence, hospitals are compelled to act like other organizations, which are exposed to market forces and are totally responsible for their own business. Hospitals need to timely adjust their working process and organizational structure to stay in competition (Asselman, 2008).

Lega and DePietro (2005) observed a common trend to cope with the several pressures. The trend seems to drive the reshaping of hospitals delivering processes around the needs of care processes (and patients) and away from the traditional functional and physicians centred view. This new way of working possess challenges to the hospital's internal organization. The shift towards a care-focused organizations, also means a shift towards more decentralization. Anthony et al. (2014) argue that decentralization is the single most important reason why organizations need to implement management control systems, further referred to as MCS. As, in decentralized organizations, lower level managers have the authority to take decisions on their own, such organizations need formal mechanisms and routines that facilitate goal sharing and cooperation between organization's participants. On the other hand, higher-level managers needs a mechanism to monitor and control lower level manager's decisions. However, most literature related to MCSs is based on manufacturing organizations. Simply applying these systems to non-profit organizations is not possible, because these organizations have some characteristics which are opposite of for-profit organizations (Anthony and Young, 2003). This research will study how a MCS can be implemented in a Dutch hospital and how such a MCS can look like.

The study is performed at the request of Ziekenhuis Groep Twente (ZGT). The ZGT is a hospital in the East part of the Netherlands. This hospital faces the before mentioned regulatory and environmental changes. As a consequence, they want to change their organization. Accordingly, the ZGT developed itself into a network organisation, with business units and focus clinics (ZGT, 2016). This change forces changes in the underlying systems. They want to (re)design the MCS to support the new organizational structure. Therefore, the aim of this study is to develop a MCS for the ZGT.

1.2 Problem statement

The forgoing section described the developments in the environment of hospitals. Also the ZGT noted the rapid changes in the healthcare sector, changes in legislation and changes in the relationship with medical specialist in their annual report (ZGT, 2015). They know they are facing challenges. Top management is working on a new business policy and starts thinking about how the hospital should look and perform in the year 2020 (ZGT, 2016). They recognized that a typical hospital is not flexible enough to respond to the changing world. The ZGT wants to change to a network organization to respond to the new and constantly changing environment. The network organization, as illustrated in figure 1.1, exists of a compact high-tech core hospital with around it smaller specialized clinics and business units. The clinics have freedom to develop their own policy which fit within the overall policy of the ZGT. This allows the ZGT to react faster to the changing circumstances, it provides new possibility for entrepreneurship and innovation and it provides possibilities to cooperate with other parties. Section 4.5 explains the ZGT as a network organization more in-depth.

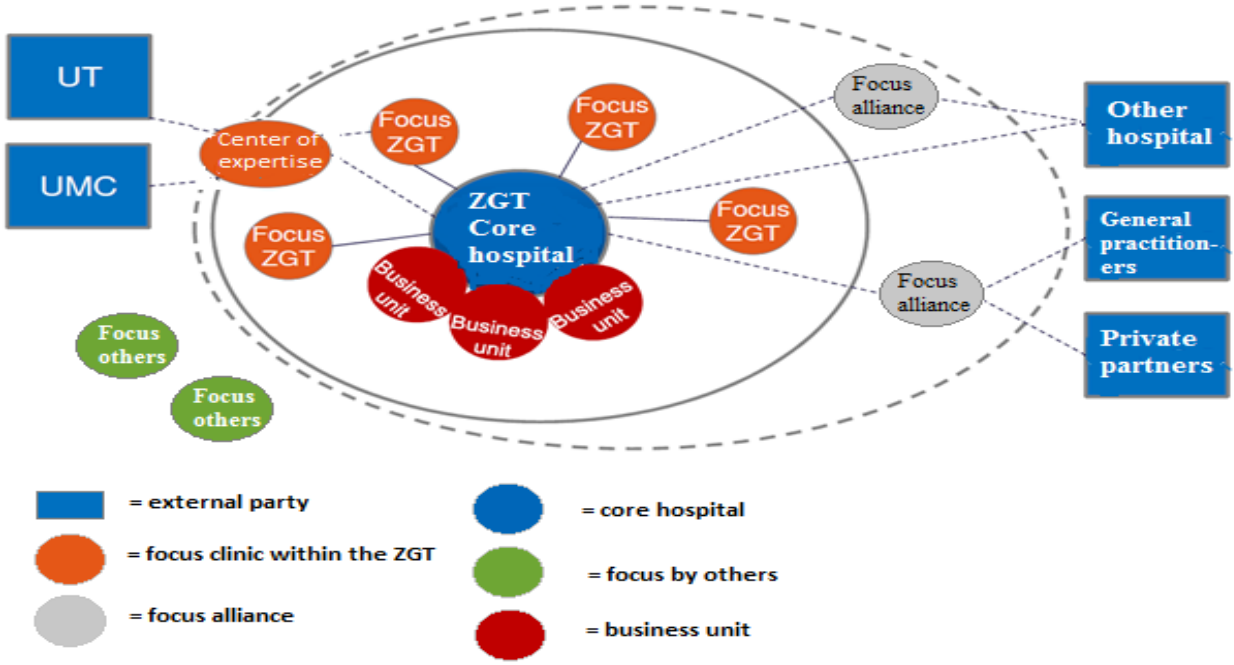

Figure 1.1: The ZGT as a network organization. Adapted from http://www.zgt2020.nl/onze-organisatie/

Decentralization and freedom for employees are characteristics of a network organization. The ZGT wants to implement a MCS to achieve goal-congruence by all employees. A MCS could be helpful in achieving the organizations overall goals (Anthony et al., 2014). Accordingly, the research purpose is to achieve knowledge about how to develop a MCS. And the research objective is to develop a MCS which fits the specific situation of the ZGT. All elements of a MCS will be discussed separately and all elements receive separate recommendations for the specific situation of the ZGT. At the end, the ZGT have to make a decision which management control elements and in which forms they want to implement in the organization.

1.3 Research question

Before the research question can be formulated, first the research goal needs to be determined. The problem of the ZGT is that they wants to decentralize responsibility and control but they do not have a MCS that supports this decentralization. Therefore, they want to (re)design their MCS. Accordingly, the research goal is to obtain knowledge about MCSs in decentralized hospitals and to advise the ZGT how to (re)design their MCS. The ZGT can use both the theoretical information that will be described and the advice that will be given to re-design their MCS.

In order to reach the research goal the following research question will be answered: *What is an appropriate management control system for the ZGT as they want to decentralize responsibility and control?*

Appropriate means that the MCS fits the specific characteristics of the ZGT. There is no guarantee that the system also fits other hospitals or other businesses. Each business has its own characteristics and therefore needs to develop its own MCS. As already discussed in the previous section, want the ZGT to become a network organization. The network organization exists of a core hospital, business units and different types of focus clinics. In focus clinics medical specialists get more responsibilities than in the traditional hospital. They can, for example, develop their own policy. Decentralization of responsibility and control needs to be supported by the MCS. Focus clinics within the ZGT will be used as example to explain decentralization within the ZGT. Therefore, other parts of the network organization are excluded from this study. However, the ZGT can adapt the discussed theory also to other parts of the organization.

There are some sub questions that needs to be answered in order to be able to answer the central research question. In the first place, there needs to be a clear understanding of what a MCS is and of which subparts a MCS exists. Next, an internal and external analysis will be performed. Understanding about the operating context is important in developing a MCS (Anthony et al., 2014). This information is related to the Dutch healthcare system and the special characteristics of a hospital. Finally, different parts of a MCS will be researched and developed for the ZGT. Each part of the MCS (responsibility centres, transfer pricing, planning and budgeting, performance measurement and compensation and incentives) will be discussed in separated chapters. These chapters start with a description of existing literature related to the specific part of a MCS. This part is followed by a description of the special characteristics of a hospital related to this specific part of the MCS. Finally, a description of how to implement that part of the MCS in the ZGT, the implications of the implementation within the ZGT and a conclusion will be given.

The following sub questions will be answered:

- What kind of management control systems are present in scientific literature? (Literature review)
- How functions the internal and external environment of the ZGT?
    - Internal environment = characteristics of a hospital
    - External environment = Dutch healthcare system
- How should the different parts of a management control systems be designed?
    - Different parts of a management control system are: responsibility centers, transfer pricing, planning and budgeting, performance measurement and analysis, and compensation and incentives.

1. What is the theoretical background of the specific management control system element?
2. What are the specific characteristics of a hospital related to the specific part of the management control system?
3. How should the specific part of the MCS be implemented in the ZGT?
4. What are the implications of the implementation within the ZGT?

1.4 Practical and academic contribution

The primary aim of the research is to develop a MCS which is useable for the ZGT. However, the practical use is much broader because also other hospitals can use the results of the research to (re)structure their MCS. Dutch hospitals face the need to change their organization, to fit changing environment. The ZGT wants to be a pioneer in all fields, so also in the management control field. This study is broad applicable because also the general characteristics of a hospital are included in the study.

Management control and MCSs are frequently studied. However, these studies are mostly based on for-profit organizations. Non-profit organizations has some characteristics that are opposite to that of for-profit organizations. These characteristics needs to be taken into account when developing a MCS. Therefore, simply adopting a MCS from other companies is not possible. This research will give general suggestions that could be applied in other organizations. Additionally, this study will use a relatively new research approach in the field of management control studies, a design science research approach.

1.5 Outline

The thesis is organized as follows: The first chapter describes the background for this research. The next chapter gives an answer to the first sub question. There is a discussion of literature related to MCSs and finally a method will be chosen that will be applied in the research. Chapter 3 describes the research methodology that will be applied in this research. This chapter discusses the research design and the way the data is collected. Chapter 4 answers the second sub question and describes the management control environment. This chapter analyses the internal and external environment of a Dutch hospital. Then, the final sub question will be answered in separated chapters. The different parts (responsibility centres, transfer pricing, planning and budgeting, performance measurements, and compensation and incentives) are explained in different chapters. Every part of the MCS is discussed in a separate chapter, all these chapters are constructed in the same way. The chapters start with a description of relevant literature. Both general literature and literature specified in hospitals are analysed. After this description, the literature is applied to the ZGT. A description about how to implement the specific part of the MCS within the ZGT is given. Additionally, some implications related to the implementation and a summary is given. The final chapter gives an overview of the whole MCS for the ZGT. Finally, the conclusion and discussion. This chapter explains the key findings, limitations of the research and gives suggestions for further research.

2 Literature review – Management control system

The research starts with a thorough literature review to familiarize with the main concepts of management control. The review starts with a broad description of different management control definitions. Followed by a discussion of MCSs and a presentation of some dominant management control frameworks. Next, the reasons why organizations need MCSs are described. Finally, a conclusion, which describes which framework will be applied in this research and a summary of the chapter, is given.

2.1 Management control system definitions

Management control is a frequently studied topic. However, researchers define and use the concepts related to management control in different ways (Anthony et al., 2014; Malmi & Brown, 2008; Merchant & Van der Stede, 2012). Malmi and Brown (2008) argue that many researchers have tried to achieve consensus on key concepts, but that the terms are still not used consistently. There is not an universally accepted definition (Merchant & Van der Stede, 2012). Therefore, it is important to define the concept of MCS so that it is clear what is meant by the term. Below is a discussion about several definitions formulated by influential management control researchers.

Anthony et al. (2014) define management control as ''the systematic process by which the organization's higher-level managers influence the organization's lower-level managers to implement the organization's strategies' (p.4). Besides, management controls are defined by Malmi & Brown (2008) as ''the systems, rules, practices, values and other activities management put in place in order to direct employee behaviour'' (p. 290). And finally, Merchant and Van der Stede (2012) take a broader view. In their approach includes management control ''all the devices or systems managers use to ensure that the behaviours and decisions of their employees are consistent with the organization's objectives and strategies'' (p. 6). They all argue that when the different controls are a complete system, this can be called a MCS. Overall, the primary function of management control is to influence employees behaviours in desirable ways. Then, the benefit of management control is the increased probability that the organization's objectives will be achieved.

The definition of management control assumes that employees do not automatically perform in line with the organization's overall objectives. Anthony et al. (2014) find three reasons why managers may deviate from the organization's strategies. That is because they do not understand the strategies, do not support those strategies, or lack the resources to accomplish the organization's strategies. This is in line with Merchant and Van der Stede (2012) who also note three possible issues with employees in relation to organizational objectives. They name it lack of direction, motivational problems and personal limitations. In other words, managers might not know what to do, might not want to do it, or they are not able to do it. MCS are used to overcome these issues.

The definition of Anthony et al. (2014) will be used for the remainder of the study. This definition encompasses influencing employees behaviour to implement the organization's strategies. Thus, the goal of MCS is to implement organizational strategies. A good MCS influences the behaviour of all employees in a goal-congruent manner. This means that the goals of an organization's individual members are consistent with the goals of the organization itself.

2.2 Management control system frameworks

The whole MCS consists of different control tools and techniques. Different researchers use different frameworks to describe MCSs. This part describes the frameworks developed by Malmi and Brown (2008), Merchant and Van der Stede (2012) and Anthony et al.(2014).

First, Malmi and Brown (2008) argue that all controls within the organization should not be defined as a single system, but as a package of systems. They provide a conceptual typology of a management control system package. The typology is developed by an analysation of four decades of MCS research. Their framework is presented in figure 2.1. The most typical characteristic of this framework is the view of different controls in relation to each other. They argue that there are five groups of control that can have several types of control. These five groups are: planning, cybernetic controls, rewards & compensation, administrative controls and cultural controls. (Malmi & Brown, 2008).

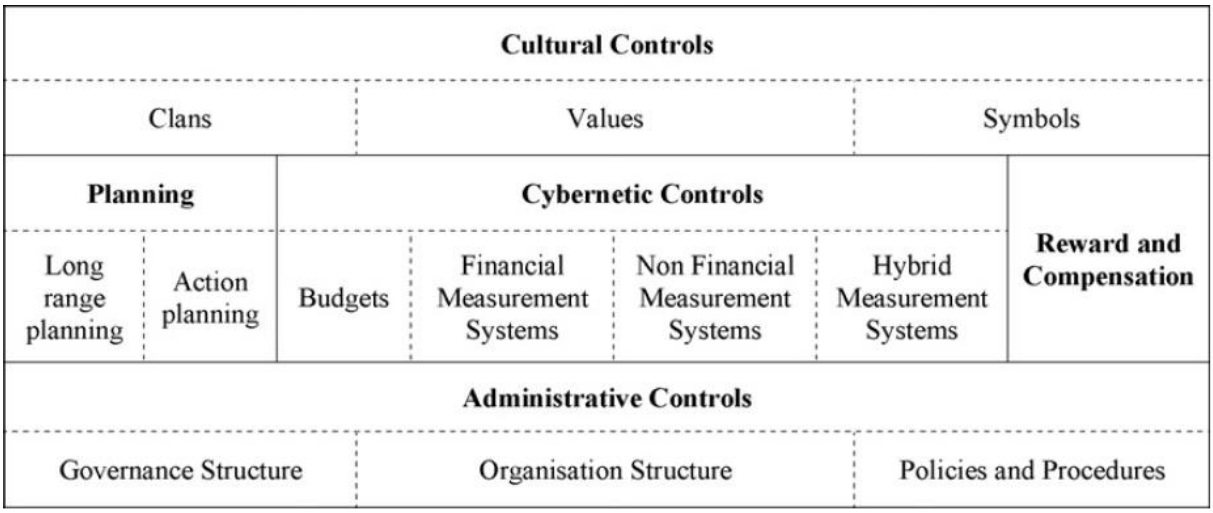

Figure 2.1: Management control systems package. Reprinted from *"Management control systems as a package – Opportunities, challenges and research directions"* by T. Malmi and D.A. Brown, 2008, Management accounting research, 19(4), p. 291.

Planning is described as an ex ante form of control. The planning phrase exists of long-range planning (longer than one year) and action planning (12 months or less). Planning is a separated step in the framework of Malmi and Brown because it has a major role in directing employees behaviour. Next, the cybernetic controls. There are four basic cybernetic systems: budgets, financial measures, non-financial measures and hybrids that exist of both financial and non-financial measures. Then, the reward and compensation controls focus on motivating and increasing the performance of individual employees and groups. This is accomplished by achieving congruence between individual's goals and activities and those of the company. Reward and compensation systems are separate elements in this typology because organizations also provide rewards and compensations for other reasons than based on cybernetic controls only. Administrative control addresses the structure and procedures of the organization. Administrative control is about directing employees behaviour, the monitoring of behaviour and who you make accountable for their behaviour and the process of specifying how tasks and behaviour are to be performed. Finally, cultural controls is the set of values, beliefs and social norms which are shared by members of an organization, and influence their thoughts and actions (Malmi & Brown, 2008).

Second, the 'object of control' framework which is proposed by Merchant and Van der Stede (2012) will be discussed. They described the use of results controls, actions controls and personnel/cultural controls to affect employee's behaviours. First, result controls involve controls for rewarding employees for generating good results. Results can be in monetary compensation, such as pay-for-performance, but can also be in other ways, such as job security, promotions, autonomy and recognition. Action, personnel and cultural controls can supplement or replace results controls. Action controls involve ensuring that employees perform certain actions that are beneficial to the organization. Besides, personnel controls are designed to make it more likely that employees are experienced, honest, and derive a sense of self-realization and satisfaction from performing tasks. Finally, cultural controls are used to shape organizational behavioural norms and to encourage employees to monitor and influence each other's behaviours. The different types of management control are not equally effective at addressing each of the management control problems. Table 2.1 presents a summary of which control types address which types of management control problems. For example, behavioural constraints do not help to solve lack of direction problems. Then, if lack of direction is a significant problem in the area of concern, managers will have to consider other forms of control.

Control types	**Lack of direction**	**Motivational problems**	**Personal limitations**
Results controls			
• Results accountability	X	X	
Action controls			
• Behavioural constraints		X	
• Pre-action reviews	X	X	X
• Action accountability	X	X	X
• Redundancy			X
Personnel/cultural controls			
• Selection and placement	X	X	X
• Training	X		X
• Provision of necessary resources			X
• Creation of a strong organizational culture	X	X	
• Group-based rewards	X	X	

Table 2.1: Control types and control problems. Reprinted from " Modern Management Control Systems: Text and Cases" by K.A. Merchant, 1998, Upper Saddle River, NJ: Prentice Hall, p. 253

Finally, Anthony et al. (2014) argue that the whole management control process takes place in the context of an organization's goals and the broad strategies determined by senior management. The formal management control process has four principal phases. These phases occur in a regular cycle, and together they constitute a closed loop. This framework is presented in figure 2.2. In the first step, the strategic planning phrase, senior management determines the major programs the organization will undertake during the coming period and the approximate expenses that each will incur. These decisions need to be made within the context of goals and strategies that emerged from the strategy formulation activity. In the second step, the budget preparation phase, the plans made in program terms are converted into responsibility terms. Budgets are determined in negotiation between responsibility centre managers and their superiors. The end product of these negotiations is a statement of the outputs expected during the budget year and the resources to be used to achieve

these outputs. In the third step, the operating and measurement phrase, actual operations are supervised by managers and accounting staff records the actual inputs and outputs. In the fourth and final step, the reporting and evaluation phrase, is accounting information, together with other information, summarized, analysed and reported to those responsible for knowing what is happening in the organization as well as those charged with attaining agreed-upon levels of performance. These reports enable managers to compare planned outputs and inputs with actual results. (Anthony et al.,2014; Anthony & Young, 2003)

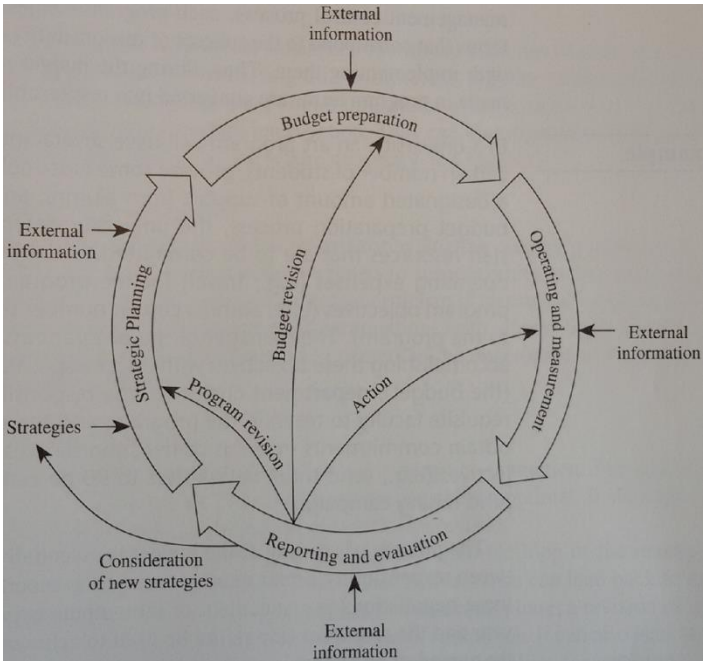

Figure 2.2: Phases of Management Control. Reprinted from ''Management control in nonprofit organizations'' by R.N. Anthony and D.W. Young, 2003, New York: NY: McGraw-Hill Education, p. 19

Malmi and Brown's (2008) research provide a conceptual framework of a MCS as a package. Their aim is to facilitate and stimulate discussion and research in the management control area, rather than suggesting a final solution to all related conceptual problems. The methods of Anthony et al. (2014) and Merchant and Van der Stede (2012) study the management control elements in separate parts and more in debt, whereas Malmi and Brown study a broad scope of controls in the MCS as a package. For this study a combination of the frameworks of Malmi and Brown and Anthony et al. will be used. Their frameworks exists of the same parts, but they give it other names and presents it in a different manner. Figure 2.3 presents a combination of both frameworks as used for this research. The outlook of Malmi and Brown's figure is used because this makes it possible to show the distinction between management control structure and management control process. On the other hand, Anthony et al.'s theory is used because they provide more in-depth explanation of the different control elements.

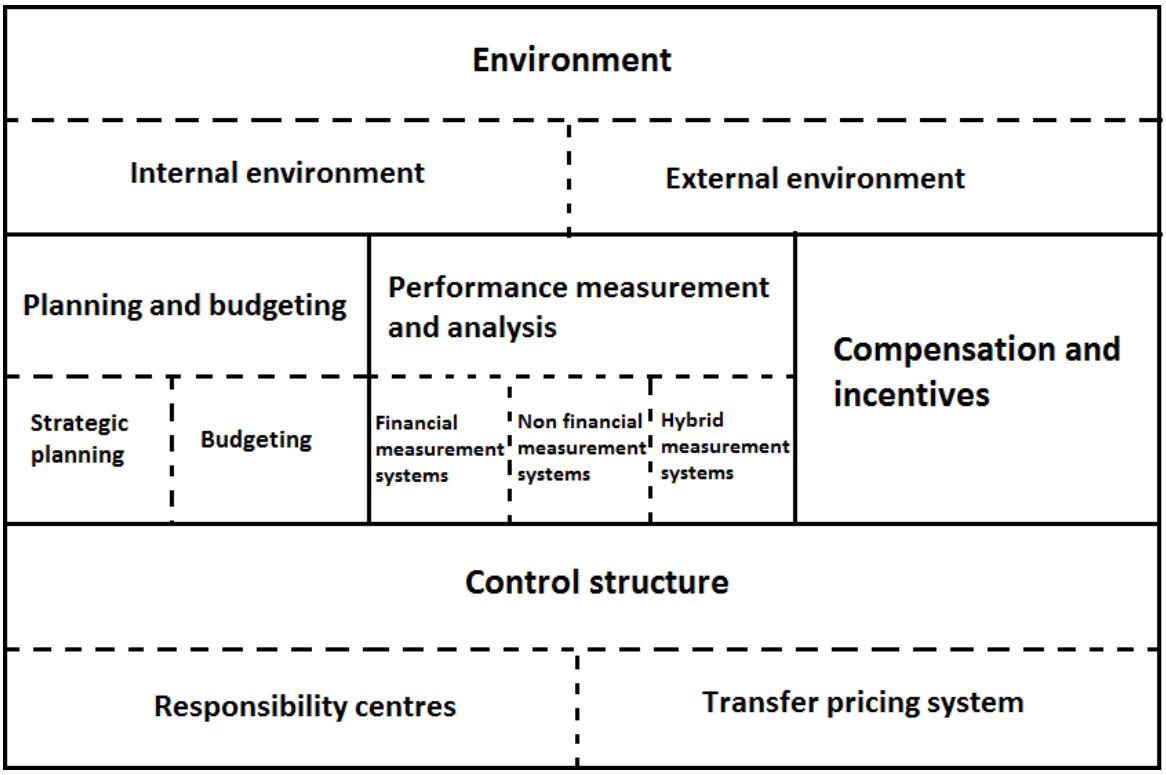

Figure 1.3: Management control framework used in this research.

The environment is pictured at the top to indicate that this is just a broad and subtle control. The environment is assumed to be slow to change and, therefore, provides a contextual frame for the other control types. Then, in the middle of the figure are the planning and budgeting, performance measurement and analysis and compensation and incentive controls. These processes are tightly linked and are presented in sequential order from left to right. At the bottom is the control structure which creates the structure in which planning and budgeting, performance measurement and compensation and incentive controls are exercised. Although Anthony et al. described the management control framework occurring in a regular cycle and Malmi and Brown described the management control framework as a package, both agree that if there is any dysfunctional in the process or if controls are disconnected, severe control problems can arise. So, organization's controls should not be defined holistically as a single system, but instead as a package of systems.

2.3 The need for management control systems

The previous section explains what management control is and which framework will be used to develop a MCS for the ZGT. Additionally, it is important to know why firms use MCS's. Decentralization can be determined as the main driver to implement MCS's (Anthony et al., 2014). Lower-level managers have authority to make their own decisions in a decentralized organization. This gives the individual members a certain freedom to act. Accordingly, this freedom causes the need for mechanisms and routines that facilitate goal sharing and cooperation between organization's individuals. Without this, organizations may go roam and do not achieve their objectives.

2.4 Conclusion

A combination of the frameworks and theories of Anthony et al. and Malmi and Brown will be used for this research. This framework makes a distinction between the management control environment, the management control structure and the management control process. The framework starts with explaining the environment, which analyses both the internal and external environment of the organization. Then, the management control structure must be in place. This is done by developing responsibility centres and a transfer pricing system. And finally, the steps of the management control process: planning and budgeting, performance measurement and analysis and compensation and incentives need to be developed as sequent steps. The whole management control process and controls needs to be connected with each other.

In general, the primary function of management control is directing employees behaviour in a desirable way. The desirable way refers to a goal congruence way, which means that employee's individual goals are consistent with the goals of the organization itself. Organizations need a MCS because managers and employees do not automatically perform in line with the organizations overall objectives. Decentralization is mentioned as the main driver to implement MCSs. In decentralized organizations, lower-level managers have authority to take their own decisions. Accordingly, this freedom causes the need for mechanisms and routines that facilitate goal sharing and cooperation between organization's individuals

3 Research methodology

The following chapter describes how this research has been carried out. The chapter starts with a description of the research method. The MCS will be developed according to the design science approach. Then, a description of the data collection is given. Finally, the research design is presented.

3.1 Research method

This research needs a research method that looks to an individual case in combination with the application and adoption of existing theories and models. Van Aken (2004) notes that the scientific research approach is too broad and too general for providing relevance for research in practice. He argues that a problem-solution oriented research method is an appropriate method to do management research. This approach describes a problem upfront and suggests the theoretically based best possible solution while following the actual process. Design science research is a method that has shown its value in social research in recent years. The research methodology is, for example, used in studies related to information systems (Hevner, March, Park & Ram, 2004), in accounting systems (Geerts, 2011) and in management studies (Van Aken, 2004). This demonstrates the value of design science research. Design science research can help to build theory that is applicable for a specific situation, instead of descriptive research that through its generalizable nature can not consider every unique context. A design science research perfectly fits the requirements of this study.

Peffers, Tuunanen, Rothenberger & Chatterjee (2007) developed a framework for doing design science research. They developed the Design Science Research Methodology (DSRM) as a structure to conduct design oriented research and also as a template for researchers to evaluate design oriented research. Figure 3.1 shows the DSRM as presented by Peffers et al. The DSRM consists of six activities: (1) problem identification and motivation; (2) defining the objectives for a solution; (3) designing and developing the solution artifact; (4) demonstration of the solution artifact; (5) evaluating the effectiveness of the solution; and finally (6) communicating the findings. This framework will be used to develop a MCS for the ZGT.

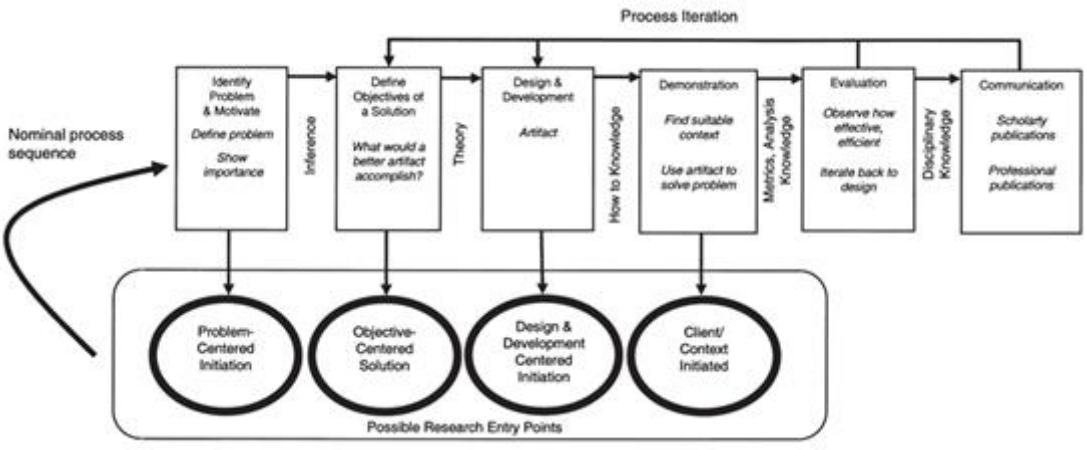

Figure 3.1: DSRM Process Model. Reprinted from ''A design science research methodology for information systems research'' by. K. Peffers, T. Tuunanen, M.A. Rothenberger & S. Chatterjee, 2007, Journal of management information systems, 24(3), p. 54.

Geerts (2011) used the framework presented by Peffers et al. (2007) to describe the application of the DSRM in accounting information systems. He translated the framework into a table with 3 columns. This research will also use this table to describe the application of the DSRM for the specific research problem. The first column in the table lists the six activities that make up the DSRM as a nominal sequence. Column two further describes each of the activities in detail. The third column links the required knowledge base with the activities in de previous column. Table 3.1 shows the application of the DSRM framework for this research.

The first activity of the DSRM is problem identification and motivation. The result of this activity is the problem definition and a justification of the solution. Problem definition will be used to develop an artifact – a design, method, model, or construct – that can provide a solution. Motivating the value of a solution first encourages the researcher to achieve a solution and besides explains the reasoning of the researcher's perception of the problem. The problem identification and motivation of this study are part of the introduction. In short, the problem is that hospitals becomes more decentralized and as a consequences needs more control. The ZGT wants to implement a MCS to achieve more control in the organization.

Next, the solution objectives have to be defined. The solution objectives indicate what a better artifact will accomplish. Objectives could be either qualitative or quantitative. The objectives should be distracted from the problem specification. Knowledge about the state of problems and the current solutions are required in this stage. The artifact – in this study a MCS- should better fit the changing environment and organization structure of the ZGT. As a consequence the ZGT will increase the probability to achieve their overall objectives.

The third activity is related to creation of the artifact, such as a model or method of which the research contribution is embedded in the design. This step includes determining the artifact's desired functionality, its architecture and then finally creating the artifact. Theory about MCS in general and the different elements of a MCS is needed. This will be achieved by a literature study. The result of this activity is the development of a MCS.

Activity four is the demonstration of the use of the artifact to solve one or more instances of the problem. This could be the use of experimentation, simulation, case study, or other activities. Due to a lack of time, this research will use peer review to demonstrate the artifact (Van Aken & Andriessen, 2011). The findings of the previous steps, a MCS design, will be presented to the Board of Directors and the CFO, they will be asked to review the design. This information is input for redesigning the system.

In the next activity, the evaluation activity, one observes and measures how well the artifact supports a solution to the problem. In order to do so the solution objectives will be compared to the results of the demonstration. At the end of this activity the researcher can decide whether to go back to activity 3 to try to improve the design or to continue on to communication and leave further improvements to subsequent projects. Due to a lack of time, it is not possible to resign the MCS again. Remaining problems or imperfections will be reported to the CFO at the end of the research period.

The final activity, is the communication. This study will be made available through the publication website of the University of Twente. Additionally, the study will be made available for interested of the ZGT.

DSRM activities	Activity description	Knowledge base
Identify problem and motivate	*Define problem and show importance.* The changing organizational structure and external pressures requires a (re)design of the MCS.	Literature review. Understanding current solutions and their weaknesses according to MCS.
Define objectives of a solution	*What would a better artifact accomplish?* A (re)design of the MCS will better fit the changing environment and organizational structure of the ZGT. As a consequence the organization will increase the probability to achieve their overall objectives.	Knowledge of management controls system elements that fit the specific characteristics of a hospital.
Design and development	*Artifact* Design of MCS.	Theory related to MCS's and specific elements of a MCS (responsibility centers, transfer pricing, planning and budgeting, performance measurement and incentives)
Demonstration	*Find suitable context and use artifact to solve problem* Perform a peer-review by Board of Directors and CFO	Theory about peer-reviews
Evaluation	*Observe how effective, efficient and iterate back to design* Make a comparison between the objectives of the solution and the opinion of Board of Directors and CFO.	Definition of the objectives by CFO.
Communication	*Scholarly publications and professional publications* This research will be made available on the website of the University of Twente. Besides the results will be presented to the ZGT.	Literature review about how to present this research in the required way.

Table 3.1: The design science research methodology applied to this research

3.2 Data collection

The aim of data collection is to gain information about MCSs. Most information is collected by performing literature review. Literature review is used in the problem description and is also used for gaining knowledge about MCS. Hereby, the reliability and validation of the sources have been assessed by using scientific databases, such as, Google Scholar and Scopus. Secondary data such as annual reports, long-term policy vision and staff meetings will also be included in the study in order to gather relevant context about the ZGT. Descriptive research particularly uses a theoretical frame, which is defined from a specific theoretical perspective such as the agency theory. However, design science research rarely uses such a framework. Instead, this research methodology uses everything that can give insight for the development of the system (Van Aken & Andriessen, 2011). Also in this research everything that can give insight will be used in developing a MCS for the ZGT.

Additionally, personal opinions and interpretations of people of the ZGT are needed. This will be obtained in different ways. In the first place, there will be a close collaboration between the researcher and the financial director of the ZGT. The researcher will present the findings to the financial director once a week. Besides, the researcher will attend meetings related to the development of focus clinics. The researcher will make notes during these meetings. These meetings will be important input for the development of the MCS.

3.3 Research design

Figure 3.2 presents the research design which is used to answer the research question. The design presents a combination of the design science research methodology, the sub questions and the outline of the report.

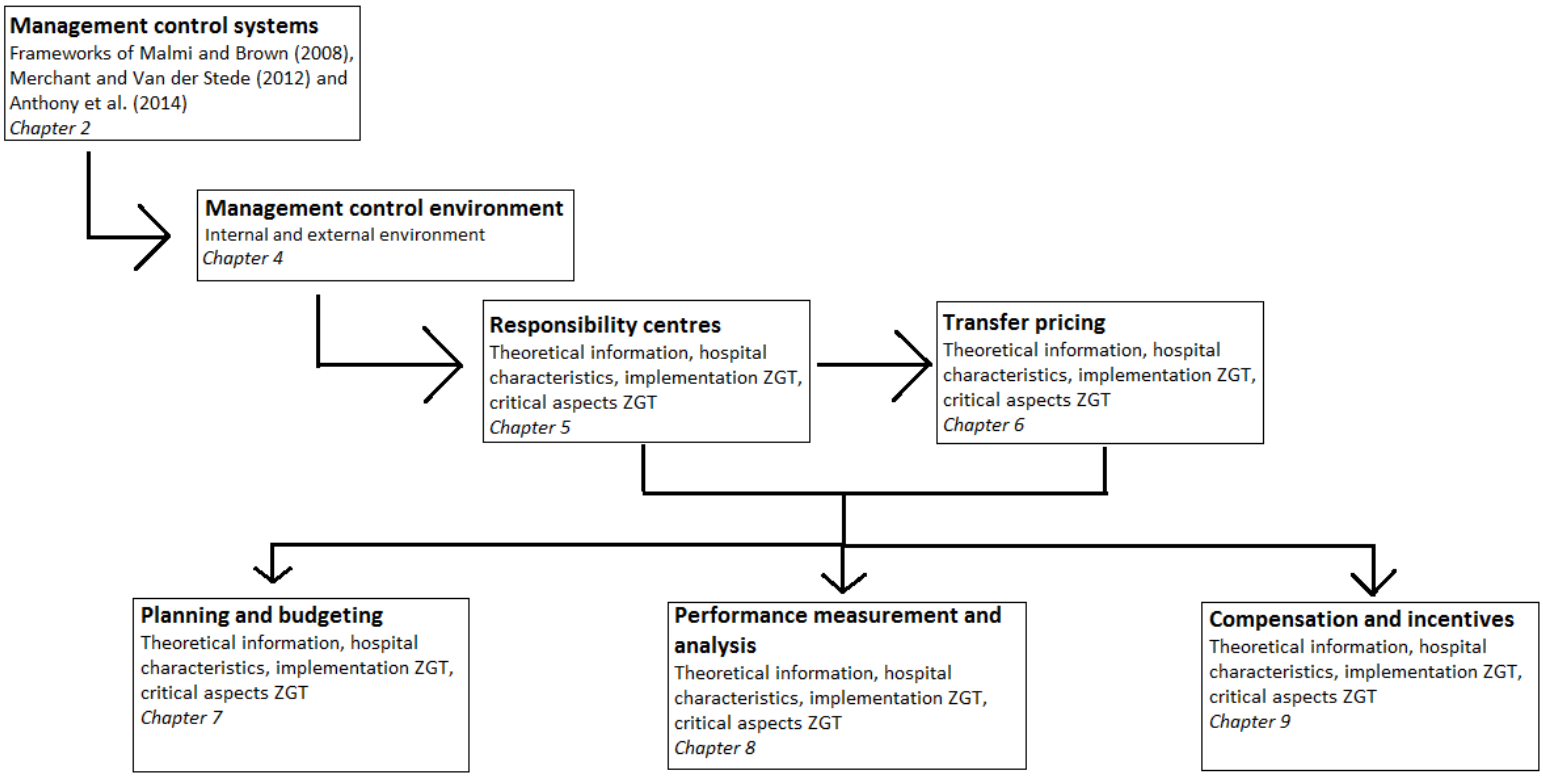

Figure 3.2: Graphical presentation of the research design used in the research.

The research starts with a literature review in which three different management control frameworks are discussed. This chapter ends with a description of the framework that is applied to answer the research question. The application of the framework is elaborated in subsequent chapters. First, the organizations internal and external environment is discussed. This chapter answers the following question: What kind of management control systems are present in scientific literature? This is done by a literature review about the Dutch healthcare system, characteristics of a Dutch hospital and a description of the ZGT. Information described in this chapter is used as input in developing the different management control elements as discussed in the next chapters. Then, the MCS is developed according to the steps as presented in the framework of Anthony et al. (2014). All these chapters answer the following sub questions: What is the theoretical background of the specific MCS element? What are the specific characteristics of a hospital related to the specific part of the MCS? How should the specific part of the MCS be implemented in the ZGT? And what are the implications of the implementation within the ZGT? Accordingly, these chapters are structured in the same way. They start with a description of general theory about the subject and next the specific characteristics for a hospital are discussed. This information is used in developing the implementation for the ZGT and discussing the implications for the ZGT. All chapters end with a conclusions.

4 Management control environment

This chapter gives an explanation about the management control environment of a Dutch hospital. There is no universal way to structure a MCS. MCS differ because organizations differ in the way they are structured, their environment and their internal organization. Therefore, understanding the management control environment is critical for developing a MCS (Anthony et al., 2014). This chapter describes the internal and external environment of the ZGT. It starts with a description of the Dutch healthcare system and specific characteristics of a Dutch hospital. The environment of a the ZGT is explained by an internal and external analysis. Next, the ZGT as a network organization is explained. Finally, a conclusion, which summarizes the important points to take into account for developing a MCS for the ZGT, are given.

4.1 Dutch healthcare system

This section is about the Dutch healthcare system. A hospital is an important part of the overall healthcare system. The Dutch healthcare system changed through the years. These changes must be taken into consideration when developing a MCS. This section describes the changes in the healthcare system and explains how the system is now working.

4.1.1 Evolution of Dutch healthcare system

The Dutch healthcare system had dramatically changed in the past. Until 2000 there were three major waves visible in the Dutch healthcare system. These waves are explained by Van de Ven and Schut (2008). Until 1941 there was no government regulation in relation to health insurance. Doctors were allowed to set their own prices and as a consequence the healthcare costs increased dramatically. The first wave (1940-1970) was about universal coverage. Until the 1970s the government promoted public health and wanted to make sure all Dutch citizens had access to basic health services. People with a low- and middle income got a mandatory health insurance scheme. The second wave (1970-2000) was about cost containment by the government. By the end of the 1960s the Dutch government became worried about the growth in healthcare spending. This rise was a consequence of the universal access to basic care. In an attempt to stop the rising healthcare expenditure implemented the government in 1983 for the first time a budgeting system. In the past medical specialists received lump-sum payments. This system is later replaced by a fee-for-service system and integration of hospitals and medical specialists. The third wave (from 2000) was about managed competition. The first market-oriented reforms were implemented in the beginning of the early 1990s. The transition from supply-side regulation towards managed competition came together with a mandate for individuals to purchase healthcare insurance.

4.1.2 System of managed competition

The Dutch healthcare system is characterized by managed competition. One can speak about managed competition if there are restrictions imposed on the open market by legislation and regulation. Figure 4.1 shows how managed competition is developed in the Dutch healthcare system. There is a distinction between three markets and three market participants. The dotted line represents the interaction between the insured and healthcare providers. The interaction is constituted through the insurers, which act as intermediary and sign contracts with both the insured and healthcare providers (Van de Berg et al., 2014).

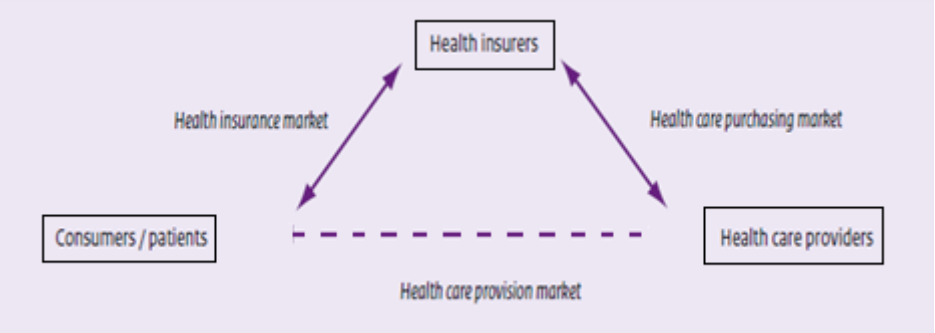

Figure 4.1: Adapted from ''Dutch Healthcare Performance Report 2014'' by M.J. van de Berg et al. (2014), p. 339

A hospital operates on the care purchasing market and care provision market. They treat patients on the healthcare provision market. On the other hand, hospitals negotiate with health insurers about prices, quality and volume. Healthcare insures can decide not to contract a specific healthcare provider. The possibility to be not contracted should motivate healthcare providers to compete with each other about price and quality. The care provision market is characterized by bringing together insured and healthcare providers by insurers.

Since 2005, Dutch hospitals are financed based on diagnosis and treatment combinations (DTC). A DTC represents a patient's clinical pathway from the diagnosis up to the final check-up. A DTC coverages a package of care which is usually undertaken for a certain treatment. The price of a DTC is determined by the average costs of all activities undertaken for a specific diagnosis. These activities are nationally prescribed and are based on one particular diagnostic and therapeutic strategy that generally needs to be followed to accomplish a DTC. Both the hospital and the medical specialist are responsible for the correct registration of the performed treatment and matching these treatments with the correct DTC care product (Custers, Arah & Klazinga, 2007).

The latest change towards more cost efficiency in healthcare organizations is the implementation of bundled payments and macro control. Hospitals have to declare all treatment costs that were made. Next, the hospital and medical specialist have to divide the payment in a part for the hospital and a part for the medical specialists. In the past medical specialists get a fixed amount, also called an 'honorarium'. Besides, government implemented macro control to further control the healthcare expenses. Macro control is the control of the total expenditures of medical specialistic care by introducing a price ceiling (Ministry of Health, Welfare and Sport , 2013)

4.2 Characteristics of a Dutch hospital

This section describes the characteristics of a Dutch hospital. A hospital has two determinative characteristics. It is a non-profit organization and a healthcare organization. The first part describes the characteristics of a non-profit organization and the second part describes the characteristics of a healthcare organization.

4.2.1 Non-profit organizations

An important characteristic of a Dutch hospital is that it is a non-profit organization. The goal of for-profit organizations is to earn a profit for its owners. While, in non-profit organizations the goal is to provide services. Service is a vague and hard to measure concept (Anthony & Young, 2003). Anthony et al. (2014) define non-profit organizations in a somewhat different way. They argue that a non-

profit organization is an organization that cannot distribute assets or income to its members, officers or directors. This definition prohibits the distribution of profits. Accordingly, the way profit is distributed is the most defining difference between for-profit and not-for-profit organizations. Additionally, there are some other characteristics affecting the MCS of non-profit organizations which will be explained below:

- *Absence of a profit measure:* Non-profit organizations have several goals, which are difficult to measure by quantitative amounts. Anthony and Young (2003) argue that ''the absence of a single, satisfactory, overall measure of performance comparable to the profit measure is the most serious problem non-profit managers face in developing effective management control systems for their organizations'' (p. 53).
- *Source of financial support:* A for-profit organization obtains the needed financial resources from the sales of good and/or services. Some non-profit organizations receive financial support from sources other than revenues for services rendered (Anthony & Young, 2003). Dutch hospitals receive their revenues from different sources. They obtain the main part of their revenues through billing their services to insurers. Additionally, they receive revenues directly from patients for not-insured treatments, from other hospitals for doing outsourced treatments and from subsidies for giving trainings.
- *Professionals:* In hospitals, success in achieving goals depends upon the behaviour of the professionals (e.g. physicians) in the organization. Professional organizations are labour intensive (Anthony et al., 2014). A specific characteristic of professionals is that their motivation is inconsistent with good resource utilization. As Abernethy (1996) observes, the primary loyalty of physicians belongs to their profession rather than to the employing organization. Physicians want to do the best job they can, regardless of its costs. Another characteristic of professionals is their preference to work independently.
- *Governance:* Generally non-profit organizations are governed by boards of trustees. This is also the case for hospitals. Trustees generally exercise less control than the directors of a business corporation, because trustees are generally unfamiliar with business management. But, there is a strong need for a governing board in non-profit organizations. The governing board may be the only effective way of detecting when the organization is in difficulty. In other types of organization a decrease in profit signals this danger automatically (Anthony & Young, 2003).

4.2.2. Healthcare organizations

Before mentioned characteristics are general characteristics for non-profit organizations, which are also applicable to hospitals. Besides these characteristics Anthony et al. (2014) and Anthony and Young (2003) pay special attention to healthcare organizations, which show additional some specific characteristics:

- *Difficult social system:* There is a worldwide quest for more efficient healthcare. As a consequence, there is a steam of initiatives to improve healthcare costing and reimbursement systems. However, the cost per treatment is inevitability increasing with the development of new drugs and new equipment. And on the other hand, also the number of ill people is increasing because medical advantages prolong the lives of elderly people (Anthony et al., 2014). Healthcare delivery needs to and definitely will change in the future.

Healthcare organizations must be aware of these changes.

- *Change in mix of providers:* Recently there is a significant change in the way in which healthcare is delivered and, hence, in the viability of certain types of providers. For example, services that traditionally were provided in hospitals are now provided in outpatient clinics or in patients homes. Hospitals must be flexible to adapt to these changes, either by providing more outpatients services themselves or by eliminating inpatient services that are no longer profitable (Anthony et al., 2014). This forces hospitals to make strategic decisions to stay in competition.
- *Third-party payers:* In the Netherlands insurance companies take care of health financing. As mentioned before, patients pay to the insurers for coverage of healthcare costs. Next, the hospital receives revenues on the basis of diagnostic related groups. Hospitals are reimbursed for these amounts, regardless of the actual length of stay or the actual care incurred for individual patients. The implementation of the DTC system and the increase in hospital cost per patients causes the need for information that focus on outputs (e.g. patient care), and also on inputs (e.g. cost per laboratory test). Using this information is quite new for hospitals (Anthony et al., 2014).
- *Importance of quality control:* Because a hospital deals with human lives, the quality of the service it provides is very important. Quality of healthcare providers became more important in the past. Patients want to get more transparency related to quality. For example, they want to know the mortality rates. Also insurers make judgements about the price-performance ratio and set requirements related to quality. Transparency increased and as a consequence it is of great importance to get and maintain the quality at a certain level. However, quality measurement is always related to personal opinions (Anthony et al., 2014).
- *Physicians:* Knowledge of medical specialists is the primary asset of a hospital. Most medical specialists are self-employed. They are partners in their own within-hospital firm. Physicians work in hospitals for their self-interest, they need the organization because of the following reasons: they can share resources, it is a way to get patients, they can cooperate with other physicians to serve more patients and it allows patients to be transferred between different specialties/medical specialists.

4.3 External and internal analysis

The two previous sections describe the characteristics related to non-profit and healthcare organizations. This sections describes more in general the external and internal aspects that needs to be taken into account when developing a MCS. The external analysis is described according to the stakeholders view and contingency theory. Next, the internal analysis describes the strategy and organizational structure.

4.3.1. Stakeholder view

The stakeholder view focuses on the effects that different stakeholders have on the organization. There is a variety of actors in the external environment of hospitals. Important stakeholders are: insurers, patients, government (the ministry of WVC) and other hospitals. The MCS have to focus on these stakeholders.

Insurance companies have much bargaining power in negotiations about the external budget for hospitals. In the Netherlands there is a concentration of healthcare insurers. There are just a few and big insurance companies. Patients dependent on their insurers whether a treatment will be reimbursed. Consequently, hospitals revenues depend on patient choices, but indirectly, hospitals depend on insurers for their revenues. Hospitals and insurers negotiate about the price and amount of treatments a hospital can perform. Quality requirements are important in these negotiations. For instance a minimum amount of surgeries can be one of the requirements. Related to quality, insurers are important watchdogs. This forces a change in the relationship between insurers and hospitals. The changing relationship with insurers force hospitals to make strategic choices in order to stay in competition. Hospitals need to specialize in the services they offer to a specific market segment. The MCS must support this view.

Besides, competition is changing. There is a growing suppl of independent treatment centres, in the form of private clinics. These clinics concentrates on specific, elective and easy to treat diseases. However, private clinics just make sense in elective healthcare. Acute care, intensive care and complex multidisciplinary care for patients with more diseases cannot be treated in private clinics. Patients need hospitals for this complex kind of healthcare. Competition from other hospitals is limited because there are just a few hospitals in a region and generally people wanted to be treated near to their homes. Only for much better quality, or forced by the insurers, they want to travel to another hospital. So in accordance with Anthony and Young (2003), healthcare organizations have fewer competitive pressures than a typical for-profit business.

4.3.2 Contingency theory

According to Chenhall's (2003) contingency theory is the environment of great importance in developing a MCS. He argues that management control needs to be designed in line with the environment. Environment can be explained by different factors; stability, certainty and simplicity. The Dutch healthcare system has a relatively stable environment, with a constant customer demand. The future is uncertain because of the political influence, which point of view can change year by year. The environment is complex because the customers demand a great variety of services. Besides, technological changes become much more important in hospitals. This makes the future of hospitals uncertain.

Another contingency factor that influences management control is culture. Culture refers to the shared values, assumptions and norms and behaviour (Chenhall, 2003). Some types of planning and control systems will be more effective in different cultures. For example, the presence of many professionals is a cultural characteristic of a hospital. Professionals prefer to work individually (Anthony et al., 2014).

4.3.3 Strategy

Strategy is also a factor to take into consideration when designing a MCS (Anthony et al., 2014). The MCS should be adjusted to the requirements of specific strategies. ''Different strategies require different task priorities, different key success factors and different skills, perspectives and behaviours'' (Anthony et al., P144, 2014). Thus, a continuing concern in designing MCSs must be whether the behaviour induced by the system is the one called for by the strategy.

Porter's competitive advantage framework is probably the easiest strategic framework to fit to specific MCSs. A business unit or company can choose to compete either as a differentiated player or as a low-cost player. With a cost leadership strategy a company competes with prices and with a differentiation strategy it competes with quality or special features that customers are willing to pay for. These strategies need different aspects of MCSs. In a low-cost strategy there is need for a MCS that focuses on low cost and high efficiency. On the contrary, in a differentiation strategy the MCS must focus on innovation and customization (Anthony et al. 2014). Hospitals can operate under both strategies. Even between departments there can be a difference in strategy. For instance acute care will focus on efficiency and prices. On the other hand, elective care will focus on operational excellence and quality.

4.3.4 The organizational structure

The internal environment characteristics are determined by the boundaries of the organization. The boundaries of an organization are determined by its organizational structure. The organizational structure refers to the formal reporting relationship between managers and other employees (Anthony and Young, 2003). An organizational structure can take several forms. However, the organizational structures can be grouped into three general categories. The first is a functional structure, in which each manager is responsible for a specified function such as marketing or production. Second, in a divisional structure are managers responsible for most of the activities of their particular division, like clients, regions or programs. Finally, the matrix organization is a combination of both forms in which the functional units have dual responsibilities (Anthony et al., 2014).

The ZGT has several hierarchical levels, with the board of directors on the top. They have final responsibility for the whole organization. At the next level down, are 26 different medical departments which are divided on their medical field. These departments include all organizational units, such as the clinic, policlinic and functional department. The departments are managed by a medical manager and a business manager. Then, within the departments are the providers of healthcare services, such as medical specialists and nurses.

4.4 The ZGT

The previous sections describe some general characteristics of (Dutch) hospitals. This section concentrates on the specific situation of the ZGT. These specific characteristics are important input for developing a MCS for the ZGT. ZGT top management developed a strategic plan, in which they described how they will look and perform in 2020 (ZGT, 2016). This document is the main input for this section.

The environment of the ZGT is characterized in the document by:

- Competition and uncertainty
- Pressure of growing costs and growing demand for care
- Change in relationship between hospital and insurers
- Growing importance for quality and safety

The ZGT wants to change their organization. This change will lead in the long term to a different positioning of the hospital in the 'care market'. Accordingly, they need to make a shift in the strategic positioning. The hospital wants to deliver a broad range of treatments, primarily to inhabitants of the region Twente. To be able to deliver these treatments in the future, the ZGT has to collaborate with other hospitals, general practitioners or private organizations. Besides, they want to distinguish themselves from competitors on three priority areas. These areas are: the matabolic syndrome, vulnerable elderly and cancer. The hospital will invest more in these areas and so qualitatively distinguish themselves from other care providers. The ZGT, additionally, wants to differentiate as hospitable and a expert.

Traditionally, all types of care are focused under one organizational roof. This type of organization is not flexible enough to respond to the changing world. Therefore, the ZGT wants to change to a network organization to respond to the new environment. This provides the possibility for entrepreneurship, innovation and development of working relationships in the organization and with other parties. The ZGT as network organization is presented in figure 4.2 .

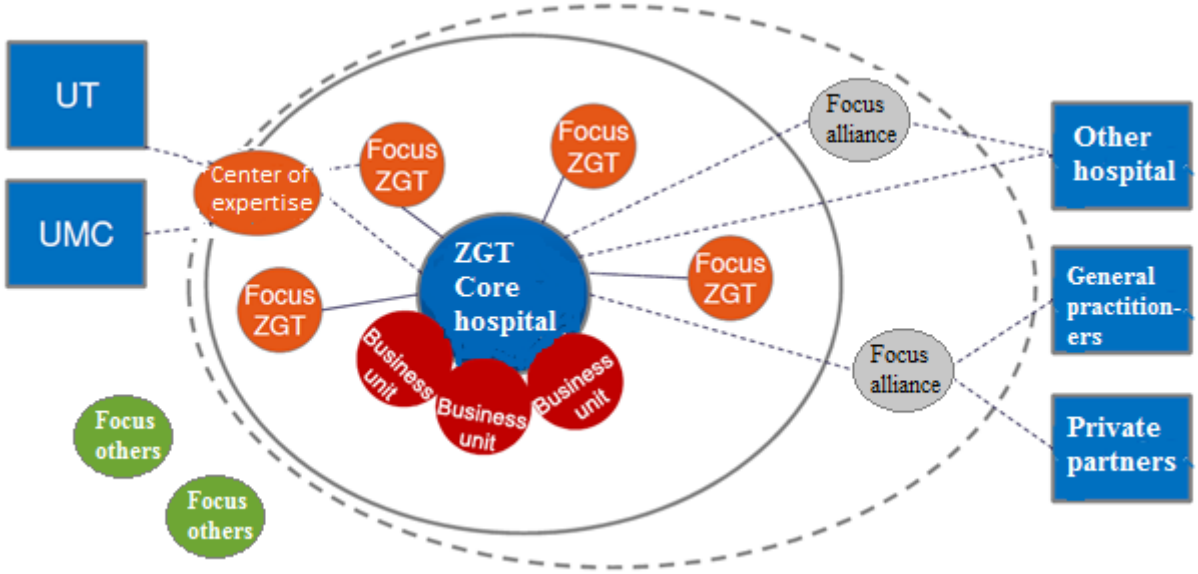

Figure 4.2 – The ZGT as a network organization. Adapted from http://www.zgt2020.nl/onze-organisatie/

Different types of care will be positioned in the organization based on content and market considerations. The organization still has a coherent governance structure, including forms of participation (e.g. governance, policy and property) by medical specialists or any other third parties. Within the overarching governance and joint identity is space for different types of control, an 'own face' and own policy.

The core hospital is the one with the WTZi-licence. In the future, the core hospital will change to a decease-oriented organization. The business units within the hospital have an independent position, own management and own income statement within the core hospital. Strategic reasons are the main reasons for management to force business units to stay within the core hospital. Focus clinics differ from business unit because they are an own entity which competes with the whole market. The hospital will be part of the governance or will be a shareholder of clinic. Other shareholders are the medical specialists. In a focus clinic alliance are, besides the hospital, also third parties that

participate. A focus clinic with others is outsourcing activities without being a shareholder. These focus clinics have their own licences to provide care. Finally, a centre of expertise is a centre in which the hospital only contributes in knowledge sharing and this knowledge can be used either within or outside the hospital. Table 4.1 presents the different parts of the network organization in one table.

	Core hospital	Business unit within hospital	Focus clinic ZGT	Focus clinic alliance
Medical profile	- High complex /high risk - Strong content synergy / multidisciplinary	- Low complex / chronic - Limited content synergy / multidisciplinary	- Low complex / elective - Chronic - Mono or (limited) multidisciplinary	- Low complex / elective - Mono or (limited) multidisciplinary
Market profile	- Focus on medical quality - Strategic important for hospital	- Focus on medical and service quality - Market-oriented approach - Strategic important for hospital	- Focus on price and (service) quality - Competitive market-oriented	Focus on volume, price and (service) quality - Competitive market-oriented
Control profile	- Dual management of care unite	- Quite self-employed - Own management chosen by executive board	- Self-employed - Own management chosen by shareholders - Executive board majority shareholder	- Self employed - Own management chosen by shareholders - Executive board majority/minority shareholder
Financial	Budgeted within hospital	Own income statement within hospital	Own balance sheet and income statement	Own balance sheet and income statement

Table 4.1 – An overview of the different organizations forms within the ZGT as a network organization.

High complex care has some specific characteristics, such as the need for intensive care, multidisciplinary and/or the use of expensive facilities, which makes this care is preferably located in the core hospital. Also acute care best fits within the core hospital, because of the availability function. Low complex care also can be performed either inside or outside the core hospital. In particular in low complex care is competition growing (e.g. private clinics). This creates price pressure and besides both medical- and service quality are important. This care can be incorporated in focus clinics to be able to operate flexible and competitive. For a business unit should be chosen if there is strategic relevance. In particular focus clinics will perform elective care, which is also the main difference between business units and focus clinics. For chronic care, is the relationship with general practitioners and service quality of high importance. Chronic care can be divided to a business unit, a focus clinic, or a focus clinic in collaboration with general practitioners.

The network organization provides the desired flexibility and entrepreneurship wherein the regulatory responsibilities and responsibilities for quality and continuity of care are guaranteed. Besides, there is common interest, common ambition and shared responsibility for the hospital and the medical specialists. The WTZi-licence determines the type and amount of ownership. The license holder is the one who negotiates with the insurers. The license holder will have majority shares because this entity is responsible for quality and insurers contracts. There will be a separation between strategic management and operational management. Strategic management will be performed by the governance board and board of executives in collaboration with the shareholders of the focus clinics. Besides development of autonomous focus clinics, is consistency with the hospital an important element of strategic management. For example, the board of executives will still make decisions about important investments. Focus clinics have some freedom about tactic decisions, for example in the development of processes and procedures, production planning and operational management.

4.5 Conclusion

This chapter discusses the external and internal environment of the ZGT. This is important input for developing a MCS. The Dutch healthcare system is characterised by managed competition, a fee-for-service system based on DTC, bundled payments and macro control. Additionally, hospitals belong to the non-profit and healthcare organizations. These organizations have some specific characteristics. Non-profit organizations have the following characteristics: absence of a profit measure, special source of financial support, many professionals and governance involvement. The specific characteristics of healthcare organizations are: a difficult social system, change in mix of providers, third-party payers, importance of quality control and physicians. Additionally, healthcare insurers, patients, government (the ministry of WVC) and other hospitals are important stakeholders for hospitals. And hospital's competition is changing, but there is still few competition for hospitals. The ZGT wants to change their organizational structure towards a network organizations which exists of different types of organizations. The network organization exists of a core hospital, business units, focus clinics within the ZGT, focus clinics with others, focus clinics alliance and expertise centres. These organizational forms, all have different characteristics. This can cause differences in the MCS.

Now the management control environment is clear, it is time to start developing the MSC. The next two chapters discuss the management control structure. This is graphically presented in figure 4.2.

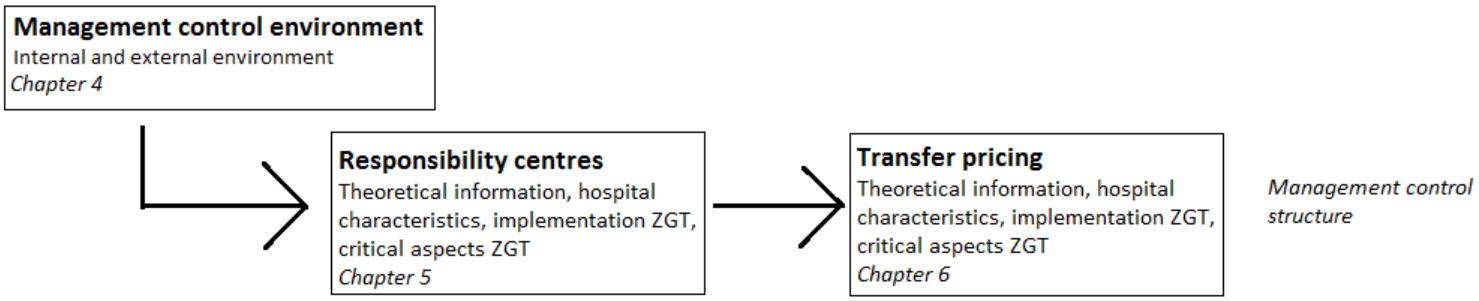

Figure 4.2: Research design chapters four, five and six.

5 Responsibility centres

As already discussed in the previous chapter, the ZGT wants to become a network organization. This implies that the organization becomes more decentralized and as a consequence they need a MCS. The first step in developing a MCS is the assignment of responsibilities. This step is important to ensure the effectiveness of the whole MCS. This chapter discusses the considerations involved in assigning responsibilities to organizational units. The chapter begins with a description of theoretical information regarding responsibility centres. This part describes the nature of responsibility centres in general, the different types of responsibility centres and how to determine which responsibility centres to use. Next, the specific characteristics related to responsibility centres in hospitals are described. A description of how to assign responsibility centres in the ZGT and implications related to these description are given. Finally, a conclusion is given in which a summary and important points for the ZGT are described.

5.1 Theoretical information

5.1.1. Definition of responsibility centres

The formal organizational structure for management control purposes is defined in terms of responsibility centres. Assignment of responsibilities, in the form of responsibility centres, is the first step in designing a MCS. The whole planning and control system depends on the type of responsibility centre. Therefore, the responsibility centres constitute the ´skeleton´ of a MCS. Anthony et al. (2014) defined a responsibility centre as an organizational unit that is headed by a manager who is responsible for its activities. Responsibility centres are closely related to the organizational structure of a company. A responsibility centre can be viewed as a box in the organizational chart. Together the responsibility centres forms the hierarchy of a company. The whole company can be viewed as a collection of smaller responsibility centres.

Merchant and Van der Stede (2012) have a different point of view in assigning responsibility centres. They use responsibility centres as part of the financial results control system. They distinguish general responsibility centres and financial responsibility centres. General responsibility centres represent the apportioning of responsibility for a particular set of outputs and/or inputs to an individual (or a group of individuals). The responsibilities can be expressed in terms of physical units of output, particular characteristics of the services provided, quantities of inputs consumed, or financial indicators of performance. In financial responsibility centres, individuals' responsibilities are defined at least partially in financial terms. These responsibility centres define the apportioning of accountability for financial results within the organization.

5.1.2 Purpose of responsibility centres

Companies have some goals. Top management adopts a strategy to achieve these goals. The objective of responsibility centres is to help to achieve the organization´s goals. If all responsibility centres achieve their goals, the whole organization will achieve its goals. Responsibility centre's performance have to be both efficient and effective. These criteria are related to the inputs and outputs of the responsibility centres. A responsibility centre receives inputs (e.g. labour, materials and services). By using working capital, equipment and other assets, the responsibility centre performs its particular function, with as final objective to transform its inputs to outputs (e.g. goods and services). This is graphically presented in figure 5.1 (Anthony et al., 2014).

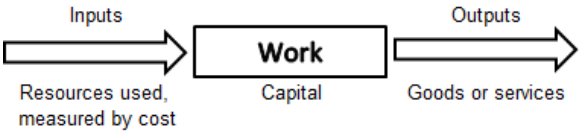

Figure 5.1 – Responsibility centre. *Management control systems, First European Edition* (p. 229), by Anthony et al, 2014, Berkshire, MA: McGraw-Hill Education

Inputs in responsibility centres are physical quantities. These amounts can be easily translated into monetary terms. The monetary amounts are determined by simply multiplying the physical quantity to a price per unit. Hence, the inputs of responsibility centres can be easily expressed as costs. In contrast, the output of responsibility centres is much more difficult to measure. Revenue is an important measurement of output in for-profit organizations. However, revenue is not a complete expression of all the different outputs. In many responsibility centres, outputs cannot be measured adequately. Some organizations decide not even attempt to measure outputs or decide to use approximations (Anthony et al., 2014).

5.1.3 Types of responsibility centres

There are four standard types of responsibility centres. These centres can be classified according to the nature of the monetary inputs and/or outputs that are measured for control purpose: revenue, expense, profit and investment. The centres are: cost centres, revenue centres, profit centres, and investment centres. Their characteristics are shown in figure 5.2. In cost or expense centres, inputs are measured in monetary terms and the manager is responsible for expenses only; in revenue centres, both inputs and outputs are measured in monetary terms but there is no optimal relationship between them, the manager is only responsible for revenues; in profit centres, both revenues and expenses are measured in euros and the manager is responsible for profit; and in investments centres, the relationship between investments and profits is measured and the manager is responsible for both capital investment and profit. The four types of responsibility centres are a useful starting point when thinking about how to assign responsibilities in decentralized organizations. But in practice, not all responsibility centres fit exactly into one of the four standard types. For example, managers of revenues centres are often also responsible for some expenses, such as salaries of salespeople and accounts receivables. Manufacturing units are often treated as expense centres, but these managers also influence revenues because product quality and timely delivery are important for customer satisfaction. Next, all types of responsibility centres are explained more in-depth(Anthony et al., 2014).

Expense centres are responsibility centres for which inputs are measured in monetary terms, but for which outputs are not measured in monetary terms. Expense centres can be further divided into engineered expense centres and discretionary expense centres. Engineered costs are elements of costs for which the ‘‘right’’ amount of costs that should be incurred can be estimated with a reasonable degree of reliability. This amount is the output multiplied by the standard costs. Direct labour and direct materials are examples of engineered costs. On the other hand, discretionary costs are costs for which no such engineered estimate is feasible. These amounts of costs depend on management’s judgement about the amount that is appropriate under the existing circumstances. Administrative and support units are examples of discretionary expense centres (Anthony et al., 2014).

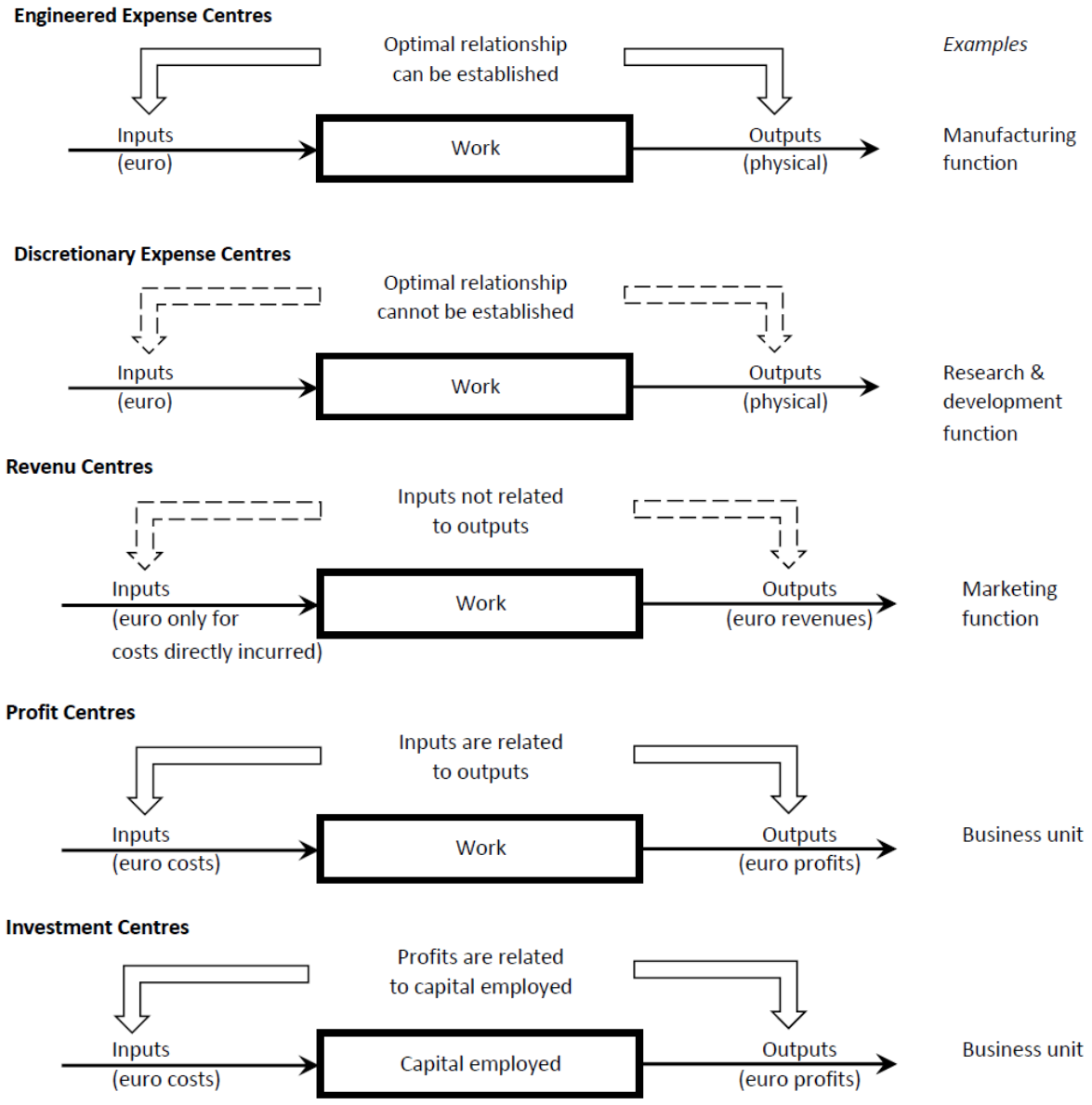

Figure 5.2 – Types of responsibility centres. *Management control systems, First European Edition* (p. 232), by Anthony et al, 2014, Berkshire, MA: McGraw-Hill Education

In a revenue centre outputs are measured in monetary terms, but there is no formal attempt to relate inputs to outputs. As an example, marketing units are often revenue centres because managers cannot control the cost of the product they market, nor of the investments which are made. The centre can influence the revenues , for example, by setting the selling prices. Besides, they are responsible for expenses incurred directly within the unit, such as salespeople's salaries and promotional expenses. As measurement, actual sales are compared against standards. Therefore, there needs to be a reference point to which the actual revenues can be compared.

In a profit centre is financial performance measured in terms of profit, which is the difference between revenues and expenses. The inputs are related to outputs. Profit centre's managers have authority for both production and sales, but they have no authority to determine the level of capital investment in their units. These managers are responsible for expense/revenue trade-offs. Profit can be measured in different ways, such as: contribution margin, direct profit, controllable profit, income before taxes and net income. Which profit to use, is determined by manager's influence over certain costs, such as allocated costs or taxes.

Investment centre's managers are held responsible for both profits and investments made to generate those profits. The managers cannot only influence profits, but can also influence the assets employed in earning it. Efficiency and effectiveness is mostly measured by a ratio of the profits earned to the investment capital used. There are many variations to measure this, such as: return on investment (ROI), return on capital employed (ROCE), return on net assets (RONA), return on total capital (ROTC) and many others.

An overview of the different types of responsibilities centres is presented in table 5.1. This table gives a brief explanation of the different responsibilities centres. Besides, it describes the advantages, disadvantages and restrictions related to certain responsibility centres. The advantages can be compared with the reason why one wants to implement a type of responsibility centres. Besides, the advantages and requirements needs to be taken into account, because this may ensure that the benefits are not met. It is important to note that the table is only related to financial control. Many disadvantages are related to a lack of financial controllability. These potential disadvantages can be reduced by the implementation of non-financial performance measures, which will be explained in chapter 9. The table can be used in determining which responsibilities centres to implement in an organization. Management must decide, for example, whether the advantages of giving responsibility offset the disadvantages.

Finally, there are also some variations of fully fledged profit responsibility that organizations can play with. Even sales- and cost-focused units can be threatened as profit centres. A sales-focused unit, such as marketing units, can be a profit centre by charging the units managers the standard costs of the products sold. Then, these managers can be held responsible for the gross margin. Nevertheless, sales-focused units could only be a profit centre if they can make cost/revenue trade-off decisions. Another limited form of profit centre is created when cost-focused units, such as manufacturing units, are assigned revenues based on a simple function of costs. Also internal profit centres that do not directly interface with the market and have no control over revenues in a competitive sense can be profit centres. If employees do not have significant control over the revenues assigned, these units are pseudo profit centres. This is merely a way to charge the buying entity a cost-based approximation of a market price so that their profit is not overstated and can be compared with other units that source externally (Merchant and Van der Stede, 2012). Finally, also service and support units can be threatened as profit centres. They charge customers for services rendered, with as final objective to generate enough business so that their revenues equal their expenses. If service units are organized as profit centres, their managers are more motivated to control costs in order to prevent their internal customers going elsewhere, while managers of the receiving units are motivated to make decisions about whether using the service is worth the price (Anthony et al., 2014).

	Engineered expense centre	Discretionary expense centre	Revenue centre	Profit centre	Investment centre
Typical examples	Manufacturing units	Administrative, support units and R&D	Marketing and sales units	Business units and functional units	Business units and company
Performance measurement	Actual cost compare at theoretical cost (standard cost *output)	Actual expense compared at budget	Actual sales compared at budget	Difference in actual profit (contribution margin, direct profit, controllable profit, net income) and budgeted profit	Ratio of the profits earned to the investment capital used (e.g. ROI)
Advantages	- Possibility to perform detailed variance analysis (where did a variance come from?)	- Alternative when optimal relationship between input and output cannot be determined	- Simple and effective way to motivate salespeople	- Quality and speed of decision making improves - Greater attention on profitability	- Most adequate way of measuring profits - Possibility to compare with outside companies
Disadvantages	- Other important tasks (e.g. quality, volume and efficiency) not measured by expenses alone - Never a totally engineered expense centre(indirect costs vary with management discretion)	- Based on judgement of higher-management - Hard for management to effective determine a reference point - Staying within the budget does not necessarily indicate efficient performance	- Little incentive to manage expense and working capital wisely - Loss of goal congruence - Little incentive to promote most profitable product/service (for company as a whole)	- Top management loses control - Increase of friction between units - Additional costs for management, staff, and recordkeeping - Lack of competent unit managers - Emphasis on short-run profitability	- Difficult to measure the investment base - Problems regarding how to measure the assets employed
Requirements	Units should perform repetitive tasks for which standard costs can be determined	Not appropriate in large organizations, because management cannot know about all activities	Need for reference point to compare actual revenues to	- Access to relevant information to make expense/revenue trade-offs - Effectiveness of expense/revenue trade-offs should be measured	Investment base should be calculated reliable

Table 5.1 – Overview of different control aspects related to different types of responsibility centres

5.1.4 Criteria for assigning responsibility centres

The core operations of the unit and the measurement possibilities of inputs and outputs are the starting point in assigning responsibilities. The next factor in selecting one type of responsibility centre over another is control. This is also known as the controllability principle. The controllability principle states that managers and employees could be held accountable only for what they can control. A manager can totally control a measure if it is affected by his actions or decisions only (Merchant and Van der Stede, 2012). Top management's objective is to hold the centre's manager responsible and accountable for only those inputs and outputs over which he can exercise a reasonable amount of control. The key question top management has to ask in determining which responsibility centre to use is ''Who controls what resources?'' Overall, a manager's responsibility must be connected to the resources he reasonably controls (Anthony & Young, 2003). Besides, the organizational structure should also be taken into account. The responsibility centres msut be coincident with the manager's areas of authority. And sometimes strategic concerns affect the choice of responsibility centre structure (Anthony et al., 2014).

A decision in determining whether a unit should be a profit centre, is whether the manager can make trade-offs between revenues and expenses. Therefore, the manager needs to have influence over both revenues and costs. That means that managers have access to relevant information and there must be a way to measure the effectiveness of the trade-offs. Besides, Anthony and Young (2003) use five criteria in determining whether a responsibility centres can be a profit centre:

- Degree of influence: managers must be able to exert reasonable influence over both revenues and expenses of the centre. A profit centre manager should be able to exercise some control over the volume of activity, the quality of the work done, the centre's variable unit costs and its direct fixed costs.
- Perception of fairness: The manager should perceive that the profit reported for the centre is fair as a measure of its financial performance.
- Absence of dysfunctional incentives: The competitive spirit that the profit centre concept fosters should not have any dysfunctional consequences to the organization.
- Existence of transfer pricing: There should be an internal transfer pricing system for the use of internal services and products.
- Low recordkeeping costs: The benefits of having a profit centre should be greater than the extra cost of recordkeeping and other administrative activities it requires.

Merchant and Van der Stede (2012) developed financial responsibility centres within the context of financial result control systems. In this control system, results are defined in monetary terms, most commonly in terms of accounting measures such as revenues, costs, profits or returns. Merchant and Van der Stede link the financial statement line items to different types of responsibility centres. This is presented in table 5.2. However, much more important than simply labelling financial responsibility centres are the decisions that have to be made in designing financial responsibility structures. The question that have be answered is: Which managers can be held accountable for which specific financial statement line items? These decisions are important because they affect the behaviour of managers and employees. People pay attention to the measures for which they are held accountable. So, managers should be held accountable for the line items management want them to pay attention to (Merchant and Van der Stede, 2012).

Selected financial statement line items	Revenue centre	Cost centre	Profit centre	Investment centre
Income statement				
Revenue	x		x	x
Costs of goods sold		x	x	x
Gross margin			x	x
Advertising and promotion		x	x	x
Research and development		x	x	x
Profit before tax			x	x
Income tax			x	x
Profit after tax			x	x
Balance sheet				
Accounts receivable				x
Inventory				x
Fixed assets				x
Accounts payable				x
Debt				x

Table 5.2 – Typical examples of financial responsibility centres. Reprinted from *Modern management control systems: Text and Cases* (p. 303), by K.A. Merchant, 1998, Upper Saddle River, NJ: Prentice Hall. (x signifies that the responsibility centre managers is (or could be) held accountable for some elements included in that financial statement line item)

Profit and investment centres are the two most far-reaching forms of formal decentralization. However, even in a profit centre there are some restrictions related to the profit centre manager's authority. These restrictions have to be incorporated in designing and operating profit centres. First, there are some restrictions from other business units. These restrictions are determined by the extent to which business units have control over three types of decisions. That are the product decisions (e.g. what services to sell), the procurement or sourcing decisions (e.g. how to obtain the services) and the marketing decisions (e.g. how, where and for what price are the services to be sold). Besides, there are also some restrictions from corporate management. These restrictions can be grouped into three types: those resulting from strategic considerations, such as financing decisions, those resulting because uniformity is required and those resulting from the economies of centralization (Anthony et al., 2014).

The degree of restrictions from other business units are determined by the degree of integration within the company. Generally, the greater the degree of integration, the more difficult it becomes to assign responsibility to separated business units for production, procurement and marketing decisions. The other restrictions come from corporate management, for example, when the financial decisions are taken at corporate level. Business units have to convince top management to get funds for investments. As a result, business units have to compete with one another for getting a share of the available funds. Besides, there are some constraints related to a proper corporate image. For example, the delivered services need to be of a certain level of quality. Another closely related limitation is the need for uniformity. Overall, Anthony et al. (2014) argue that these corporate restrictions do not have to cause severe problems. Business unit managers have to understand the necessity for the limitations and have to accept them.

To conclude, the controllability principle is the principal factor in determining which responsibility centre to use. Manager's responsibility has be related to the influence a manager has over specific resources. Besides, there are some restriction that needs be taken into account. Table 5.3 represents a summary of the resources that can be influenced in the different types of responsibility centres. This table is based on Merchants table, presented on the previous page, which give typical examples of financial responsibility centres. Merchant (1998) used responsibilities over financial statement line items in determining one type of responsibility centre over another. Table 5.3 shows a broader view in determining responsibility centres than Merchant did.

Control items	**Revenue centre**	**Engineered expense centre**	**Discretionary expense centre**	**Profit centre**	**Investment centre**	**Concern**
Revenues:						
Price	X			X	X	
Amount	X	X		X	X	
Costs of goods sold						
Direct costs	X	X	X	X	X	
Gross margin	X	X		X	X	
Indirect costs		X	X	X	X	
Profit before tax						X
Income tax						X
Profit						X
Fixed assets					X	X
Non-current assets:						
Inventories	X	X	X	X	X	
Accounts receivables	X			X	X	
Liquidity						X
Equity						X
Debt						X

Table 5.3 – Control items delegated per type of responsibility centre (x signifies that the responsibility centre managers is (or could be) held accountable for some elements included in that financial statement line item)

The first difference between this table and the table of Merchant, is that engineered expense centre and discretionary expense centre are presented separately. In engineered expense centres, the optimal relationship can be established. Therefore, these managers can control the amount of output. This is represented by the X in the revenue amount. Another difference is that the overall concern is added. All items that are not delegated to other centres are the responsibility of the concern. This is partly explained by the restrictions as mentioned by Anthony et al. Another point that is added is the difference between current assets and non-current assets. Generally, all responsibility centre can influence working capital. Managers can make day-to-day decisions that affect the level of these assets. For example, if inventory is too high or when capital is tied up unnecessary. And on the other side, if inventories are too low, treatments cannot be performed. Additionally, equity is added to the control items. Strategic considerations are part of the restrictions from corporate management. Top management makes judgements regarding the amount of debt and equity. Consequently, equity is influenced by the concern.

5.2 Characteristics related to hospitals

Anthony and Young (2003) argue that discretionary expense centres, standard expense centres and profit centres are the most common responsibility centres used in non-profit organizations. In a hospital there will be a difference in responsibility centres between different types of departments. For example the producing departments, like laboratory and radiology, which produce on the request of other departments. And on the other hand, the requesting departments like cardiology and neurology, in which diagnosis and treatment takes place. One of the related concerns is the responsibility for the costs of the producing departments. The producing departments have to be placed into separated divisions which operate on the request of the requesting departments (Zuurbier, 1993).

This is in accordance with Young (2008) who argues that when using profit centres, a hospital needs to resolve two organizational issues. The first problem is related to clinical service departments, which are mentioned by Zuurbier (1993) as the producing department (e.g. radiology, and anaesthesiology). In a healthcare system which is based on DRG payments only clinical care departments earn revenues. Accordingly, senior management needs to decide whether, and how big, portion of its revenues have to go to the clinical service departments in exchange for processing lab tests, providing radiological procedures and performing other services. In this case, the hospital needs a transfer pricing system. The other problem relates to the role of clinical care departments in a service line strategy. Oncology, cardiology and women's health are examples of service lines. In these service lines there is need for collaboration between historically independent departments for providing services with coordinated comprehensive and timely care. If a hospital makes a shift to a service line strategy, it needs to make a shift in the type of responsibility centre of these service lines, and the clinical service departments (Young, 2008).

A problem related to hospitals, when creating responsibility centres, is the difference between the hierarchical and functional organization of the firm. A hospital is an organization of departments with further hierarchies within the departments. Besides, patients are administered within the hospital according to clinical decisions and when they go through the hospital they may cross many department boundaries. This makes it hard to set up responsibility centres and to control and measure results of the different entities (Nyland & Pettersen, 2004).

Merchant and Van der Stede (2012) describe an example of profit centres in hospitals. Profit centres are used to relate the cost of patient care in various clinical groups directly to the revenues received either from the patient or though insurance payments. Then, the primary goal of the profit centre is to assess and manage the costs of medical care with the constraints applied by the funds available. These profit centre managers allocate resources (costs) in relation to the funds available (revenues), thus they are making cost-revenue trade-offs. Besides, Merchant and Van der Stede argue that it is not necessary for a profit centre to generate revenues from outside the organization. Many profit centres derive their revenues from selling their products or services to other units within the same organization. Then, these sales are made at transfer prices.

5.3 Developing responsibility centres within the ZGT

At this moment, all result responsible units are discretionary expense centres. They are judged on the difference between budgeted and actual costs. However, due to decentralization, smaller units get more responsibilities. As a consequence, responsibility centres will change from expense centres, towards responsibility centres with more responsibilities. It is important to analyse the conditions before delegating profit responsibility. Management must decide whether the advantages of giving profit responsibility offset the disadvantages.

There are some issues that have be analysed before an organization changes its types of responsibility centres. First, core operations and possibilities to measure inputs and outputs must be determined. Hospital´s core operation is the treatment and cure of patients. The input of a hospital exists of patients and resources like labour, capital and use of products (e.g. bandages, medicines, energy). Output definition is not that straightforward, but performing a successful treatment and finally achieving health gains for the patient is the primary goal. Revenues earned is one measure of output in a hospital. But these monetary terms relate to the quantity of services rendered, not to the quality. Overall, both revenues and expenses can be measured in monetary terms and the optimal relationship between output and input can be established. Also the organizational structure is important. The ZGT wants to become a network organizations, with different types of smaller within organizations. Therefore, it is possible that there are different types of responsibility centres within the organization. There could also be differences in the way they can control and their strategies.

First, the general hospital departments (port specialization) will be discussed. These departments are responsible for diagnosis and treatment of patients. Generally, they perform high-complex and acute care, operate with multidisciplinary teams, are capital intensive and needs to be available for patients. All these aspects make it complicated to determine the optimal relationship between inputs and outputs. However, recently, cost prices per treatment are developed. These prices can be used in determining the optimal relationship between inputs and outputs. Top management wants to delegate authority to medical specialists and other employees. Therefore, focus have to be on profit measures. As a consequence, port specialism can be transformed into profit centres. As a consequence, there needs to be a transfer pricing system because many treatments in the core hospital are multidisciplinary.

Port specialism receives inputs from other, assisting, departments in the hospital. As already described in the previous section, there have to be a difference between the producing (assisting departments) and requesting departments (port specialism and focus clinics). A typical example of such a department is radiology, which performs activities (e.g. photo and scans) on the request of the port specialization. These departments have the same characteristics as manufacturing units. Whether these cost-focused departments can be profit centres depends on the extent to which the employees can influence the revenue figure. These supporting departments have no control over the revenues, in a way they cannot set the selling prices and the requested amounts. But the employees have significant control over the revenues assigned, so they can be (pseudo) profit centres.

Additionally, have to be determined what type of responsibility centre should be assigned to service and supporting units. These departments provide services for other departments (e.g. port specialization, assisting departments). They can charge the customers for the services rendered. However, it is difficult to determine the optimal relationship between input and outputs. Their final

objective is to generate revenues that equal their expenses. When these units becomes profit centres, this means more record keeping. The advantages of giving profit responsibility to these units, will not offset the disadvantages of the additional recordkeeping. According to these arguments, it is advised to let service and supporting departments be discretionary expense centres.

In focus clinics, primary focus is on both price and quality. The medical content is low-complex and elective. Elective care means that inputs can be easily related to output. Managers are able to exert a reasonable influence in both revenues and expenses. They have ability to exercise some control over the volume of activity, the quality of the work done, the centre's variable units cost and its direct fixed costs. The manager is not allowed to set their own prices. These are determined by negotiations between hospitals sales team and the insurer. The doctors have autonomy about the whole process, so they will perceive that profit is a fair measure of its financial performance. There is absence of dysfunctional incentives, because the different departments have to cooperate with each other. Finally, there needs to be an internal transfer pricing system for the use of internal services and products. The internal transfer pricing system will be explained in the next chapter. To conclude, focus clinics can be profit centres. Overall, the application of responsibility centres within the ZGT is presented in table 5.4

5.4 Implications for the ZGT

As mentioned in the previous section, there are some restrictions related to the profit centre manager's authority. First, the most important restrictions from other business units, is the procurement and sourcing decision. All units within the hospital are related to each other, the departments have to purchase services from, for example, the radiology department. Additionally, the restrictions from corporate management are even more notable. As mentioned in the strategic plan, remains consistency with the core hospital an explicit element of strategic management. On the other hand, related to operational management is more freedom than in a general hospital. For example, financial decisions will be taken at the corporate level and as a consequence business units and focus clinics have to convince top management to get some funds for investments. The hospital receive the revenues primarily from insurers. As a result, the different business units and focus clinics have to compete with one another for getting a share of the available funds. Besides, uniformity is an important point for the ZGT. Even the focus clinics needs to insert the logo of the ZGT. For the outside world the core hospital, business units and focus clinics within the hospital are one common organization. Business units and focus clinics needs to understand the necessity for these constraints and have to accept them.

Delegating profit responsibility to focus clinics is for the ZGT the starting point in becoming a more decentralized organization. Awareness have be created that doctors and managers needs to accept the consequences of these responsibilities. Doctors get, as they wanted, more autonomy. Consequently, they are also judged on the decisions they take. Generally, doctors are not aware of the financial consequences of the decisions they take. Practice would show if they also wanted to accept the consequences of their decisions. Otherwise, the perceived advantages of profit centres will not be achieved.

	Current situation	Port specialism	Assisting (producing) departments	Service and supporting units	Focus clinics
Core operations	Treatment of patients	Treatment of patients. High complex and acute care.	Medical supporting other departments.	Supporting other departments with non-medical activities.	Treatment of patients. Low-complex and elective care.
Measurement possibility of inputs and outputs	Inputs can be measured easily, but hard to relate inputs to outputs.	Inputs and outputs can be measured. Cost prices determine the optimal relationship.	Both inputs and outputs can be measured. The optimal relationship can be established.	Inputs can be measured, but it is difficult to determine the optimal relation between input and output.	Both inputs and outputs can be measured. The optimal relationship can be established.
Organizational structure	Top management makes important decisions. Patients cross the borders of different departments.	Managers are on the top of the department. Patients cross the borders of different departments.	Managers are on the top of the department. Perform tasks for different departments/ units.	Managers are on the top of the department. Perform tasks for different departments/ units.	Small unit within hospital. Focus is on a specific specialism or disease. ''Doctors in the lead''.
Controllability principle	Direct and indirect costs.	Revenues (volume), quality, working capital, variable and direct fixed costs.	(partly) revenues, quality, variable and direct fixed costs.	Direct and indirect costs.	Revenues (volume), quality, working capital, variable and direct fixed costs.
Strategic concerns	Availability feature and strategic important.	Availability feature and strategic important.	Focus on efficiency.	Performing tasks for other departments	Focus on price, quality and efficiency.
Type of responsibility centre	Discretionary expense centre	Profit centre	(pseudo) Profit centre	Discretionary expense centre	Profit centre

Table 5.4 – Application of responsibility centres within the ZGT.

5.5 Conclusion

This chapter describes the assignment of responsibility centres. A responsibility centre is an organizational unit that is headed by a manager who is responsible for its activities. Responsibility centres help the organization to achieve their goals. There are four standard types of responsibility centre that are classified according to the nature of the monetary inputs and/or outputs that are measured for control purposes. That are: revenue, expense, profit and investment centres. However, in practice, not all responsibility centres fit exactly into one the four types of responsibility centres.

Then, the different types of responsibility centre are discussed in more detail. Expense centres can be divided into two types: engineered and discretionary expense centres. In engineered expense centres, typically a manufacturing unit, the 'right' amount of costs that should be incurred to produce a given level of output can be estimated. The performance of this type of responsibility

centre is determined by the difference between the theoretical and the actual expenses. On the other hand, in discretionary expense centres determines management the budgets. It is not possible to determine the optimum levels of these expenses. Therefore, performance is measured by a comparison between actual and budgeted expenses. In a revenue centre, typically a marketing unit, outputs are measured in monetary terms, but there is no formal attempt to relate inputs to outputs. For performance measurement, actual sales are compared against budgeted sales. Therefore, control in revenue centres depends on the right establishment of a reference point. In a profit centre both revenues and expenses are measured in monetary terms. Inputs are related to outputs. Profit centre's managers generally have authority for both production and sales. Then, they can make revenue/expense trade-off decisions. Finally, in the latest type of responsibility centre, an investment centre, are managers responsible for profit and additionally for the investments made to generate those profits.

Next, organizations have to determine what type of responsibility centre is appropriate for their organizational units. To start, the core operations and possibilities to measure input and output needs to be determined. Also the general organization structure and controllability principle have to be taken into account. And sometimes strategic concerns affect the choice of responsibility centre structure. If top management wants to delegate profit responsibility, some specific criteria must be met: managers should be able to influence both revenues and expenses, manager should believe that profit is a fair measurement, there should be no dysfunctional incentives, there should be a transfer price and finally there should be low recordkeeping costs.

There are also some aspects that one needs to keep in mind related to the specific hospital setting. Hospitals have to distinguish producing (e.g. laboratory) and requesting (e.g. cardiology) departments. The producing departments must be placed into separated divisions which operate on the request of the medical divisions. Consequently, there should be a transfer pricing system to ensure that also the producing departments receive a portion of the revenues. Finally, also the difference between the hierarchical and functional organization needs to be taken into account.

Finally, a description about how to implement responsibility centres in the ZGT is given. At this moment all units within the hospital are discretionary expense centre. They are judged on the difference between budgeted and actual costs. This have to change towards responsibility centres with more responsibilities to support the change to become a more decentralized organization. Employees within port specialism more authority. These departments can be held responsible for profit because they have some control over both expense and revenues. The assisting or producing departments can be transformed into (pseudo) profit centres because for these departments the inputs can be related to the outputs but they can only partially influence the revenue figure. The service and supporting units have to be discretionary expense centre because management determines their budget and they only have to stay within the budget. Lastly, focus clinics, can be profit centres because they perform low-complex and elective care for which the optimal relationship can be easily determined. Besides, they can control both revenues and expenses.

6 Transfer pricing

As discussed in the previous chapter, the ZGT wants to become more decentralized and will implement profit centres. Consequently, the organization needs a transfer pricing system for the transfer of goods or services from one profit centre to another centre within the same organization. This chapter discusses the considerations involved in developing transfer pricing systems. The chapter begins with theoretical information. This part describes the definition and purpose of transfer pricing, different transfer pricing methods and the administration of transfer pricing. Next, the specific characteristics related to transfer pricing in a hospital are described. A description of how to design a transfer pricing system for the ZGT and important points for the ZGT are given. Finally, a conclusion is given in which a summary and important points for the ZGT are described.

6.1 Theoretical information

6.1.1 Definition of transfer pricing

Transfer prices are used as accounting method in the case of transfers of goods or services from one profit centre to another within the same organization. Some writers refer with the term 'transfer price' to the amount used in accounting for any transfer of goods and services between responsibility centres (McAulay & Tomkins, 1992; Kuntz & Vera, 2005). Whereas Anthony et al. (2014) use a narrower definition and limit the term transfer price to the value placed on a transfer of goods or services from one profit centre to another profit centre within the same company. Organizations can use transfer pricing if two or more profit centres are jointly responsible for product development, manufacturing and marketing. Each centre will share in the revenue that is generated when the product is sold or when the service is performed. The transfer price will be used as mechanism for the distribution of revenue.

6.1.2 Purpose of transfer pricing

Transfer prices are used when one department supplies products or services to other departments within the same firm. The price determined for such a transfer directly affects the revenues of the selling department, the costs of the buying department and, consequently, the profits of the whole organization. One of the purposes of transfer prices is to provide a proper signal so that the affected managers will make good decisions. It provides the units with the relevant information it needs to determine the optimum trade-off between costs and revenues. The price will influence both the selling manager's decisions about how many services to supply internally and the buying manager's decisions about how much service to buy internally (Anthony et al., 2014).

Kuntz and Vera (2005) state that transfer prices contribute to right decision making within organizational units. The basic principle behind transfer pricing is that anyone who have to pay for something will try to use it, the good or service, as efficient as possible. For this reason, the determined transfer price has a significant influence on the financial performance of the entire organization. It should induce goal-congruent decisions, lead to a reasonable measure of managerial performance, whilst ensuring that divisions autonomy is not undermined. Organizations have to establish an internal pricing system that ensures autonomy, and besides, motivate, coordinate and control the allocation of economic resources in a way that the overall organizational goals can be achieved. Finally, it will help to measure economic performance of the business units individually (McAulay & Tomkins, 1992).

Sometimes transfer prices are used for inappropriate purposes, for example to move profits between departments or locations. There are several factors that can motivate mangers to use transfer prices in such a way. One of the reasons is to minimize taxes when the business operates in different countries, with different tax systems. Sometimes companies use transfer prices to shift profit between wholly owned business and entities where the profits are shared with other parties.

6.1.3 Transfer pricing methods

Anthony et al. (2014) describe two decisions that must be made before one unit can sell or buy products or services to another unit. The first question is related to the sourcing decision. This question is: must the company produce the product inside the company or can the company purchase it from an outside vendor? The other question is related to the transfer pricing decision. This question is: at which price should the product be transferred between profit centres?

In the ideal situation, market price-based transfer prices will be used. This could be the price of an identical or similar product or service, the actual price the selling department charges external customers or the price a competitor is offering. Anthony et al. (2014) list some conditions that must exist to induce goal congruence by the use of market price-based transfer prices. First, should the personnel involved in negotiation and arbitration of transfer prices be competent and be interested in the long-run as well as the short-run performance. Second, there have to be a market price that reflects the same conditions, such as quantity and quality, as the product or service for which the transfer price applies. Third, alternatives for sourcing needs to exist and managers have to be free to buy from outside or sell to outside. Fourth, managers needs to have excess to full information about the available alternatives and the relevant costs and revenues. Finally, there should be the possibility for both the selling and buying unit to negotiate about the price.

Freedom to source is an important consideration in setting transfer prices. It might be possible that freedom to source is not feasible, or it might be constrained by corporate governance. Even if there is not an option to sell or purchase outside the company, a competitive price still can provide a good indication for a satisfactory transfer price. But how can a company find out what the competitive price is if it does not sell or buy the products or services in an outside market? Anthony et al. (2014) give four possibilities to set competitive prices. Published market prices can be used to establish transfer prices. This could be the prices actually paid and the condition of the outside market should be the same with the ZGT. Besides, market prices can be set by bids or by using the price the selling unit asked in the outside market. Finally, if the buying profit centre purchases similar products from the outside market, this price can be used to set the transfer price. In setting market-based transfer prices, firms typically eliminate costs for advertising, financing or other expenses that the seller does not incur in the internal transaction.

If there is no way to set valid competitive prices, the other option is to develop cost-based transfer prices. When using cost-based transfer prices, two decisions must be made: how to define cost and how to calculate a valid price rise for profit. For defining costs, standard costs are preferred over actual costs because production inefficiencies will be passed on to the buying unit with actual costs. The next question is how standard costs should be calculated. Companies can use for instance full costing or activity-based costing. A proper costing system is the basis for an efficient cost-based transfer pricing system.

Related to profit mark-up, there are also two questions to consider: where the profit mark-up should be based on and the level of profit allowed. The simplest and also most used method is the use of a percentage of costs. However, with this base no account is taken of capital required. For this reason, it is better to use a percentage of investment as base, but calculating the investment applicable to a given product may cause a practical problem. Another problem is related to the profit allowance. Top management will judge the performance of a profit centre by the profit it shows. Hence, the profit allowance have to approximate the rate of return that would be earned if the business unit was selling to outside customers. The profit allowance should be based on the investment required to meet the volume needed by the buying profit centre (Anthony et al. 2014).

6.1.4 Administration of transfer prices

When the transfer pricing policy is determined, the next step is to determine how to implement this policy. This is related to the degree of negotiation, methods for resolving transfer pricing conflicts and classification of products according to the appropriate method. Generally, transfer prices are not set by a central staff unit, but business unit negotiate with one another about transfer prices. This will ensure that both buyer and seller agree on the price and that both can influence their profitability. A negotiated transfer price is often the result of compromises made by both the buyer and the seller. Additionally, business units managers usually have the best information about markets and costs and, therefore, are best able to arrive at reasonable prices. Business units must know the ground rules within which these transfer price negotiations are to be conducted. If there is freedom to outsource services, then the price should be set in the outside market. But in many companies, business units are required to deal with one another. In these instances, top management must develop rules that govern both pricing and sourcing of intra-company products or services (Anthony et al., 2014).

There may be instances in which business units are not able to agree on a price. For this reason, there must be a procedure for arbitrating transfer price disputes. There can be different degrees of formality in transfer price arbitration. This can be assigned to a single executive or to a whole committee. The extent and formality of the sourcing and transfer pricing rules depend to a large extent on internal transfers and the availability of markets and market prices. The more internal transfers and missing market prices, the more formal and specific the rules must be. Overall, it is important that the arrangements are not so complicated that managers have to spend a lot of time in transfer pricing negotiations (Anthony et al., 2014).

6.2 Characteristics related to hospitals

Healthcare organizations have become increasingly complex over the past twenty years. Hospitals become more decentralized and the divisions or units are divided into different types of responsibility centres. Cost centres and profit centres are often used in hospitals. Consequently, the use of transfer pricing becomes more important in hospitals. Anthony and Young (2008) argue that the principles to set transfer prices in for-profit organizations can be easily adapted to non-profit organizations. Like in for-profit organizations, there is no single best approach to establish prices. However, if there is a valid market price for a product or service, this price should be the basis for the transfer price. Otherwise, prices can be based on either full cost or standard cost, or be determined by negotiation.

The article of Kuntz and Vera (2005) investigate the use of transfer pricing for anaesthesia services. The authors conducted a study to test the result of introducing a transfer price between surgeons and anaesthesiologists. The results showed that when the surgery department was forced to directly pay for the resources of the anaesthesiologists on an hourly basis, the surgically time of operation significantly reduced. The study concluded that transfer pricing mechanisms lead to an increased awareness of the financial consequences of behaviour. This caused particularly an increase in cost awareness.

The article of Kuntz and Vera can be used as an example to explain the use of transfer prices in hospitals. They started their article by explaining the clinical surgical process. A patient needs to receive surgical treatment by a surgeon in a hospital. To do this surgery, the surgeon demands the services of an anaesthesiologist, who gives an anaesthesia to the patient. Both the surgeon and the anaesthesiologist need to be present in the operating room over a particular period. The efficiency of the surgeon-anaesthesiologist interaction is measured by the time consumption of the physicians involved in providing the anaesthesia. Next, they identified the difference by physicians that are employed by the hospital and physicians that are self-employed. A difference in the payment mechanisms for physicians will influence the extent to which physicians are forced to work efficiently. For instance, when the incentive includes the amount of patients threatened, physicians are forced to work more efficient and so more patients can be threatened. Overall, the authors argue that transfer pricing may be used in almost any department of a hospital. But, the transfer pricing systems have to be adjusted to the special requirements of the corresponding departments. Particularly the specification of a reference unit for the calculation of the transfer price is important.

6.3 Developing a transfer pricing system for the ZGT

In hospital there are many internal services between departments. Some departments, such as surgery, anaesthesia and nuclear medicine, are supporting departments. Radiology is an example of a department that only diagnoses and does not directly treat patients. On the other side, rehabilitative care is a department that only treats patients but their patients are located in different departments. Supporting departments do not receive direct payments from insurers or patients. The departments are jointly responsible for the diagnostic and treatment of the patients. These supporting departments are identified as profit centres. Therefore, internal services will be accounted by the use of transfer prices. The transfer price will be used as mechanism for distributing revenues.

According to Anthony et al. (2014) start developing a transfer pricing system for the ZGT with discussing the scouring possibilities. Hospital units or departments are forced to work with one another. This is partially due to the high investments needed for equipment. For example, a MRI machine or a X-ray machine on the radiology department, are really expensive. Indirectly, almost all departments in a hospital make use of these machines. The well-being of patients is another reason why departments make use of internal services. It will take the patient much more time when he have to go to an outside organization, on the other side of the town or even on the other side of the country, for just a photo or scan. This would be inefficient and undesirable for both the patient and the medical specialist. Overall, hospital departments are forced to use each other services.

Another question that will be answered is related to the transfer pricing decision. Hospital's staff needs to determine, in consultation with different departments, at which price internal services will be performed. Merchant and van der Stede (2012) and Anthony et al. (2014) argue that market price-based transfer prices are the fairest transfer prices. Anthony et al. lists five criteria to determine whether market price-based transfer price can be used. These criteria are not met in hospitals. For instance the following criteria are not met: there should be a market price that reflects the same conditions, alternatives for sourcing should exist, and there should be possibilities for both the selling and buying unit to negotiate about transfer prices. Consequently, it is advised to use cost-based transfer prices instead of market-based transfer prices. When using cost-based transfer prices also two decisions must be made. First have to be determined how costs will be defined. And next, a valid price rise for profit needs be determined. It is recommended to use standard costs instead of actual costs. Besides, the cost prices, as developed by the financial department, can be used to determine standard costs. Finally, the profit mark-up needs to be determined. It is recommended to base the profit mark-up on a percentage of costs.

6.4 Implications for the ZGT

It is important to recognize the importance of transfer pricing. Transfer prices affect the revenues of the selling department, the costs of the buying department and, consequently, the profit of the whole organization. Therefore, it is important to invest enough time and effort in setting the right transfer prices. Additionally, it is important that departments involved support the transfer pricing system and the determined transfer price.

The underlying costing systems must be in place if the ZGT is going to use cost based transfer prices. Nowadays, the ZGT is in the process of developing cost-based cost prices. Transfer prices will be based on these cost prices. Therefore, management must be convinced that they have developed the right prices per treatment. Otherwise, management will make wrong decisions because transfer prices have a wrong basis.

It is advised to use standard costs for determine the transfer price. Some potential pitfalls of using standard costs needs to be taken into account. As Anthony et al. (2014) argued, an incentive is needed to set tight standards and improve the standards. Therefore, a profit mark-up needs to be included in the transfer price, otherwise only the standard costs can be covered.

6.5 Conclusion

The ZGT needs a transfer pricing system for the transfer of goods and/or services from one profit centre to another centre within the organization. Transfer prices are used as accounting method in the case of transfers of goods or services from one profit centre to another centre within the same organization. A proper transfer pricing system will ensure relevant information and motivation (goal-congruence) to managers to make the right decisions, such as trade-off decisions between costs and revenues. A transfer price directly affects the revenues of the selling department, the costs of the buying department and, therefore, the profits of the whole organization.

Two decisions are involved in designing a transfer pricing system. First, the sourcing decision: should the company produce the products inside the company or should the company purchase it from an outside vendor? And the second question is related to the transfer pricing decision: at what price should the product be transferred between profit centres? In first instance, market based- prices are

preferable. This could be the price of an identical or similar product or service, the actual price the selling department charges external customers or the price a competitor is offering. Then, these prices have to be adjusted for the costs not incurred in internal transfers, such as advertising and financing costs. However, if there is no way to set valid competitive prices, the other option is to develop cost-based transfer prices. Then, two decisions must be made: how to define costs and how to calculate a valid price rise for profit. It is preferable to use standard costs instead of actual costs. The profit mark-up can be based on a percentage of costs or on a percentage of investment.

Then, the characteristics related to hospitals are discussed. Generally, the principles to set transfer prices in for-profit organization can be easily adopted to non-profit organizations. A study that analyses the use of transfer prices between surgeons and anaesthesiologists concluded that the use of transfer prices increased the awareness of the financial consequences of behaviour. Additionally, they argue that all departments within a hospital should make use of transfer prices.

Finally, a suggestion for the implementation of transfer prices in the ZGT is given. The ZGT needs a transfer pricing system because there are many internal services between departments. The supporting departments do not receive direct payments from insurers or patients. Therefore, transfer prices are needed for distributing revenues. First, the sourcing question have to be answered. Sourcing possibilities are limited in hospitals because departments are forced to work with one another. This is due to the high investments needed for equipment and the well-being of the patients. Next, the pricing decisions have to be answered. It is advised to use cost-based transfer prices, because the possibilities to use market-based transfer prices are too limited. The cost prices as developed by the financial department can be used to set transfer prices. It is recommended to use standard costs plus a profit mark-up.

Now the management control structure is developed. Next, the management control process needs to be developed. This is graphically presented in figure 6.1. Overall, the management control structure and management control process needs to support each other.

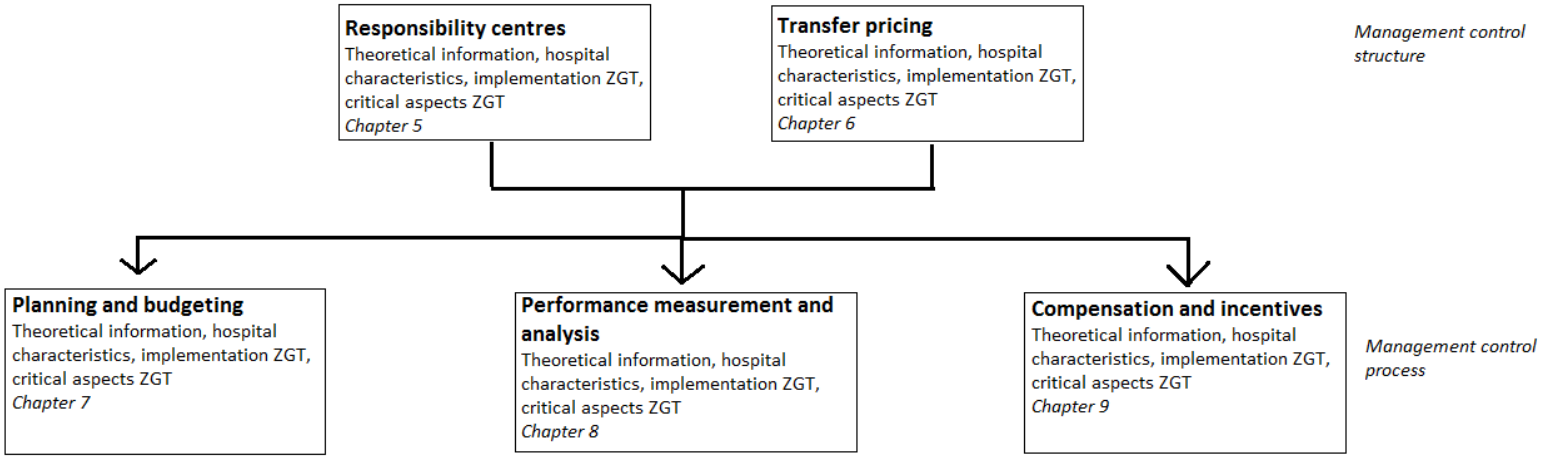

Figure 6.1: Research design chapters five, six, seven, eight and nine.

7 Planning and budgeting

Now it is time to turn to the management control process. The management control process involves strategic planning, budgeting, the design and use of performance measurement systems and the design and use of incentive systems. This chapter is about strategic (long-term) planning and budgeting (short-term planning). The chapter begins with theoretical information related to the subject of planning and budgeting. This involves the definition and purposes of budgeting, the budgeting process and beyond budgeting criticisms. Next, the specific characteristics related to planning and budgeting within a hospital are described. A description about how to design the planning and budgeting process for the ZGT is given. Finally, a conclusion is given in which a summary and important points for the ZGT are described.

7.1 Theoretical information

7.1.1 Definition of planning and budgeting

The management control process starts with strategic planning in which the strategy of the organization is broken down into a more concrete plan. Strategic planning is the process of deciding which major programmes the organization will undertake to implement its strategy and the approximate amount of resources that will be devoted to each program. The strategic plan is input for the budgeting process. Strategic planning serves as framework for the more detailed planning phrase. Budget preparation is the next step in the management control process. In this step, the organization develops an operating budget which is a fine-tuning of the strategic plan, incorporating the most current information. The budget shows the revenues and expenses that each responsibility centre is expected to incur (Anthony et al., 2014). Overall, the whole planning and budgeting process clarifies where the organization wishes to go (objectives), how it intends to get there (strategy) and what results are expected (performance targets) (Merchant & Van der Stede, 2012).

7.1.2 Purpose of planning and budgeting

There is a broad definition of the roles and purposes of planning and budgeting. Different authors describe different purposes. However, the planning purpose is mentioned by different authors (Anthony et al., 2014; Merchant & Van der Stede, 2012). Planning involves decision making about what the organization is going to do during the budgeted period. For instance, decisions about what is going to be produced and sold, which new product are going to be developed and which organizational changes are going to be implemented. With these decisions taken, the resources can be divided to the different departments in a way the departments can fulfil their plan. Therefore, the budget is a tool to distribute resources (Anthony et al., 2014). In other words, planning is decision making in advantage. An effective planning process makes control systems proactive and not just reactive. They help managers to shape the future, instead of just responding to the conditions they face and performance they observe (Merchant and Van der Stede, 2012).

Another purpose related to planning is coordination. Budget planning forces information sharing across the organization. It is a way to ensure that all parts of the organization follows the same plan. The overall plan can only succeed if all departments fulfil their part of the plan. Accountability is the next role of budgeting. Once a budget is approved, the managers are made accountable for them. The accountability role includes two different purposes: monitoring and motivation. Monitoring is done by higher managers by checking if the lower level managers stick to the budget. Managers are required to give plausible explanations for deviations with the budget. Motivation through budgeting

can be established by setting goals. If managers have specific goals to strive for, it often increases their motivation, especially if they have set up these goals by themselves. The budget provides as basis for measuring performance of responsibility centre managers. Generally, some kind of reward is tied to reaching the goals. However, monitoring and motivation purpose may be in conflict, especially when too much monitoring may decrease the motivation that managers and employees feel to reach a certain goal (Anthony et al., 2014).

Additionally, budgeting has a process role. Sometimes the usefulness of the actual budget is limited because a number of circumstances changes after the budget has been prepared. Although, with budgeting some useful activities are performed. It forces managers to think about matters that are important in the future and to communicate complicated issues with people involved. A final role of budgeting mentioned by Anthony et al. (2014) is that it is a ritual. This means that it is no longer used for the purpose of management control but for other reasons. Sometimes it is simply a habit. This means that an organization has been budgeting for as long as anyone can remember and in some cases they do even not know why they do this. Then, budgeting has become an activity that is taken for granted.

7.1.3 Budgeting process

The budget process can be either top-down or bottom-up. Both budgeting processes are graphically presented in figure 7.1. With top-down budgeting, higher-level managers set the budgets for the lower-level managers. And with bottom-up budgeting, lower-level managers are allowed to participate in setting the budget amounts. Organizations have to decide which approach they want to apply. However, Anthony et al. (2014) argue that the approach used in organizations is usually a combination of the two, which means one of negotiation between the managers of each responsibility centres and their supervisors.

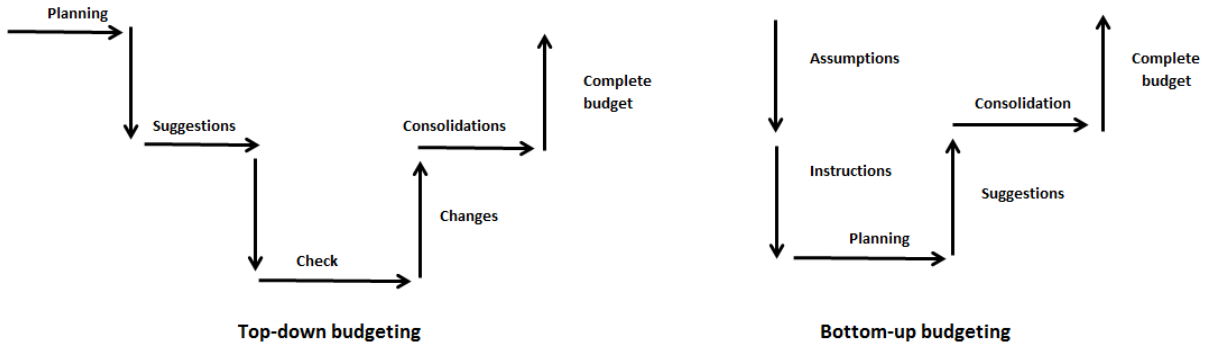

Figure 7.1 – Top-down budgeting and bottom-up budgeting. *Management control systems, First European Edition* (p. 342-343), by Anthony et al, 2014, Berkshire, MA: McGraw-Hill Education

With top-down budgeting, higher-level managers first draw up the budget or at least decide on the most important parts in the budget. Next, the budget is broken down to a more detailed level by the controlling department and send out to managers who are responsible for the different items in the budget. These managers check the figures to see if they find them realistic or not. If they find them reasonably realistic they accept them. If not, they can protest against them. They have to come up with very good arguments why they believe the figures are unrealistic. The controlling department decides what changes need to be included in the budgets before they consolidate it and **send** it to top management. Top management finally determines whether the changes are accepted. Benefits

of the top-down process are that it is relatively fast and top managers can control the end results. While the biggest problem with top-down budgeting is that it is very likely to lead to a lack of commitment by lower-level managers and employees. Generally, they do not feel committed to a budget that they were not involved in and sometimes they do not believe in it to start with (Anthony et al., 2014).

Anthony et al. (2014) argue that budget participation has a positive effect on managerial motivation. With bottom-up budgeting, managers and even ordinary employees are involved in setting up the budgets. Then, participation and involvement of managers and employees is much higher. In the bottom-up approach, managers receive budgeting guidelines by higher-level managers. Next they make their own assessment, based on the received guidelines, of how well they think they are going to perform. Then, they send their budgeting figures to the controlling department. The controlling department consolidates the budgets of different departments into a complete budget and send it to top management. This approach is more likely to generate commitment to meet the objectives and is more realistic because more specific information is incorporated by lower-level managers. However, there is a risk that managers include buffers into the budget in order to make goals more accessible. Besides, it is also likely that the figures in the consolidated budget are not in line with top management's forecast and ambitions (Anthony et al., 2014).

Since previous mentioned approaches have some limitations, a third approach is often used in practice. This approach is called iterative budgeting and is presented in figure 7.2 (Anthony et al., 2014). The first steps are the same as the bottom-up approach, but it then repeated several times until top management is satisfied with the consolidated budget figures. Some of the responsibility centres have to revise their figures in order to reach, for example, another profit figure in the budget. Sometimes revisions are, due to time limitations, made by the controlling department. With this approach, lower-level managers become involved in the budgeting process and it ensures that the figures are in line with top management's opinion. However, also this method has some disadvantages. This method tends to take a long time period and the revisions made may undermine the commitment created by making people participate.

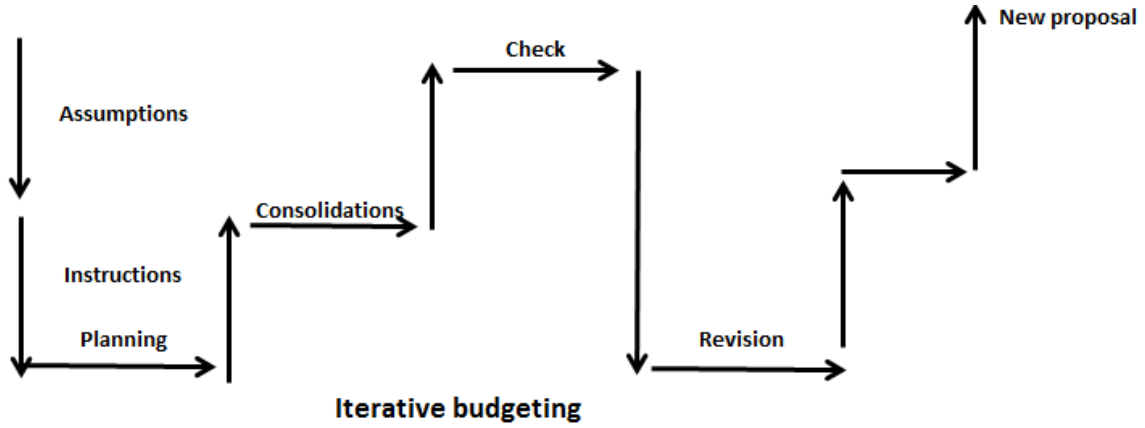

Figure 7.2 – Iterative budgeting. *Management control systems, First European Edition* (p. 343), by Anthony et al, 2014, Berkshire, MA: McGraw-Hill Education

7.1.4. Budget preparation

Anthony et al. (2014) use the iterative budgeting approach to describe budget preparation. The different steps will be explained below:

- Issue of guidelines: top management will formulate guidelines that govern the preparation of the budget for dissemination to all managers. This is, generally, the strategic plan, modified by developments that have occurred since its approval. Especially the company's performance for the year to date and its current outlook are used as input for the guidelines.
- Initial budget proposal: the responsibility centre managers, assisted by their staff, develop a budget request. This budget is based on the guidelines prepared by top management. Often, the budget is based on the existing levels (for facilities, personnel and other resources), which are then modified in accordance with the guidelines. There are two types of reasons why the current level of performance can be changed: by changes in external forces and changes in internal policies and practices.
- Negotiation: the budgetee discusses the proposed budget with his supervisor. The superior tries to determine the validity of each of the judgements. Generally, a governing consideration is that performance in the budget year should be an improvement over performance of the current year. The superior will become the budgetee at the next level of the budget process and, therefore, must be prepared to defend the budget that is finally agreed.
- Review and approval: the proposed budgets go up through successive levels in the organization. Analysts put the budgets together and examine the total. Higher-level managers studies consistency: for example, are service and support centres planning the services that are being requested from them? Besides have the budget to show a satisfactory profit. If not, the budgets are often send back for reworking.
- Budget revisions: it needs to be determined how the procedure for revising the budget is after it has been approved. Budget revision is desirable if the budget assumptions turn out to be unrealistic and that a comparison of actual numbers against the budget is meaningless. Generally, there a two types of budget revision: a systematic (e.g. quarterly) update of the budget and procedures that allow revisions under special circumstances

7.1.5 Beyond budgeting

Anthony et al. (2014) describe some criticisms against budgeting. Particularly during the 1990s, there were debates concerning the future of budgeting. This is also mentioned as the beyond budgeting movement. Budget gaming is a complicated issue that has been subject of numerous studies. Budget gaming usually refers to preparing either a better or a worse budget than the budgetee actually believes is the most likely outcome for the budgeted period. Another effect of budgeting is mytopia. This refers to sub-optimization and short term thinking. In case of sub-optimization look managers and employees for what is the best for their small part of the organization instead of what is good for the whole organization. With short term thinking, managers become mainly occupied with short-term performance and focus very much on showing good results in their next report, instead of focusing on the long-term performance of the organization.

Additionally, budgeting is very time-consuming and costs a lot of resources. However, organizations could prepare and use the budget in a less detailed way. Budgeting for the next, and a whole, calendar year is also something that has been criticized. Some argue that 12 months is a too long period to plan for because the environment changes so much during such a long period. However, organizations can prepare budgets for a shorter time period if they want to. Others argue that it is not useful to make plans at all, because everything is changing to fast. Some even say that when the budget period finally starts, the budget is already outdated. Related to previous arguments, some argue that budgets make organizations less flexible because they only want to stick to the plan.

Researchers not only criticizes traditional budgeting, they also suggested alternatives. One alternative is the move from budgeting to making so-called rolling forecasts. The main differences between traditional budgets and rolling forecasts are twofold. First, rolling forecast does not limit itself to a calendar year. The word 'rolling' indicates that this type of forecasts usually overlap each other. Additionally is a rolling forecast prepared in less detailed way. It usually focuses just on a number of key performance indicators (KPIs) and the consolidated budget and is much less concerned about individual costs or sales items. The idea to focus on fewer but highly relevant key performance measures is a central part of the beyond budgeting philosophy. Organizations could focus on KPIs, which could include both financial and non-financial measures (Anthony et al., 2014).

7.2 Characteristics related to hospitals

Anthony and Young (2003) argue that the budgeting process in non-profit and professional organizations is similar to the general process in other organizations. Anthony et al. (2014) also argue that the annual budget preparation process is usual. However, they state that the strategic planning process in hospitals become, due to increase in quantity and costs of new equipment, of increasing importance. Hospitals must decide how to allocate limited resources to different activities.

Additionally, Anthony and Young (2003) argue that the conditions in which a hospital operates are quite stable and predictable. As a hospital gears up for a certain number of beds and there are just temporary fluctuations in demand. These fluctuations do not cause major changes in spending patterns. Due to the stable circumstances, is the budget a fairly accurate statement of both the activities and the resources to be used. Besides, is the amount of resources (revenues) in a hospital restricted within quite narrow limits. As a consequence, can these organizations make careful forecasts of their revenues and make sure that expenses will not exceed revenues. The budgeting process should be based on decision about how to spend the resources. Then, the best approach to budgeting should be first, to estimate the available resources, and next to plan spending to match those resources.

The attitude of professionals must also be taken into account. The budgetee can be a physician and the supervisor a hospital administrator. The primary loyalty of physicians belongs to their professional rather than to the employing organization. They are interested in improving the quality of patient care, improving the status of the hospitals as perceived by their peers and increasing their own prestige. Generally, their interest in the amount of costs involved is secondary. On the other side, hospital administrators are primarily interested in costs, but they are aware that the costs must not be so low that the quality of care or the status of the hospital is impaired. Consequently, both parties weight the relevant factors considerably different (Anthony & Young, 2003).

In hospitals there is a difference between the internal and external budgets. A hospital receives money from external parties, with insurers as most important party. The external budget should be translated to internal parties, such as the different port specialisms and support services. Since 2005, external budgeting changed from function based budgeting towards performance based budgeting. With function based budgeting, the agreed budget instead of true production determines revenues. Then there is no risk for not achieving the production. Another aspect that recently changed is the honorarium for medical specialists. In the past received the hospital separately a revenue part for the hospital and one revenue part for the hospital. At this moment, hospitals receive just one amount and this amount is divided between the hospital and physicians based on agreements.

7.3 Use of planning and budgeting within the ZGT

The current situation can be described as follows: the board of directors determines the strategic plan. Such as they did with previous mentioned strategic plan 2020, in which they determined to become a network organization. This strategic plan is not prepared for management control purposes. The head of the medical specialists is, as representative of the medical departments, involved in the strategic planning process. Together they determine the priority points and set up the overall budget. The overall budget is then broken down to a more detailed level by the financial department. They send the budget out to the managers who are responsible for the different items in the budget. The amount that the departments received is fixed. Management can determine how to divide this amount over the different line items. This is a top-down approach in which higher-level managers set the budget for the lower-level managers. The lower-level managers do not participate in the budgeting process.

This approach does not fulfil the purposes as mentioned in section 7.1.2. The planning and budgeting approach needs to be developed in another way to achieve more of these purposes. For instance, managers can be made accountable for the budgets. The expenses of a discretionary expense centres must stay within the budget. Higher-level managers will monitor whether managers stay within the budget. If not, the budgetee have to give an explanation. Managers motivation will increase if they are more involved in budget preparation. At this moment managers are not motivated by the budgets because they are not involved in budget preparation, they do not agree with the goals and they see no consistency between the tasks they preform and the resources they receive.

The ZGT wants to delegate responsibility and control. Therefore, it is advised to let managers and employees participate in budget preparation. Managerial motivation will increase as people get involved in budget preparation. This can be achieved by are more bottom-up budgeting approach. The ZGT can use the iterative budgeting approach. This approach has the best of both bottom-up and top-down budgeting. Then, the following steps must be performed:

- Prepare guidelines: the board of directors formulate guidelines, which are based on the strategic plan. For example, the departments and diseases which are mentioned as focal point receive more money than other departments.
- Prepare budget: the responsibility centre managers, assisted by the business controllers, develop a budget request.
- Negotiation: the budgetee discusses the proposed budget with his supervisor. The

negotiation is done by the business controllers.

- Review and approval: all business controllers together prepare an overall budget. They also have to study consistency between the budgets of different departments. For instance, whether the support centres (radiology) planning the services that are requested from other departments and units.
- Budget revisions: the budget needs revision if the budget assumptions turn out to be unrealistic. However, hospital's environment is quite stable. So budget revisions is just in a few cases required. Supporting department can use flexible budgets. Then the budget is adjusted by a change in quantity.

Not only the strategic plan can be used as input for the budgeting process. Also the external budget needs to be taken into consideration. The external budget is determined by negotiations between the sale team of the hospital and the insurers. Insurers determine which amount of money a hospital receives for a DTC and the amount of specific treatments that needs to be performed. These amounts needs to be implemented in department's budgets. The price per DTC can be multiplied by the expected treatments that will be performed. This determines the revenues the hospital and the different departments will receive. This is the output. If one knows the output, also the inputs can be determined. Then, also the amounts of input can be determined.

7.4 Implications for the ZGT

Most attention in budget preparation have to be placed on budget preparation in discretionary expense centres. As Anthony et al. (2014) mention, is the main purpose of discretionary expense centre's budgets to control expenses by allowing the managers to participate in planning, sharing in discussion about what tasks should be undertaken and what level of effort is appropriate for each. Hence, in a discretionary expense centre, financial control is primarily exercised at the planning stage before the expenses are incurred. Overall, as the budget of discretionary expense centres serve as reference point, ZGT must put a lot of effort into budget preparation.

In the network organisation as ZGT wants to implement is top management responsible for strategic planning and decisions taking. Therefore, lower level are not involved in the (strategic) planning phrases. Lower level managers and employees are responsible for tactic or operation planning. This distinction needs to be taken into account in the other parts of the MCS.

The ZGT needs to be aware of the potential pitfalls of budgeting. First, budgeting, especially the iterative approach, can be very time-consuming. Consequently, a lot of resources can be used in the budgeting process. Top management has to determine how much time may be spend in the budgeting process. Other potential pitfalls are budget gaming and tactical behaviour.

7.5 Conclusion

Planning and budgeting is the first step in the management control process. In strategic planning is the strategy of the organization broken down into a more concrete plan. The strategic plan serves as framework for the more detailed planning phrase. In this step, the organization develops an operating budget which is a fine-tuning of the strategic plan. The budget shows the revenues and expenses that each responsibility centre is expected to incur. Planning and budgeting may fulfil a number of different purposes, such as planning, resource distribution, coordination, monitoring, motivating, reflection and communication. However, sometimes budgets are not used for

management control purposes. Then, it is just done out of a habit or because it is a requirement.

The budgeting process can be either top-down or bottom-up. With top-down budgeting top management has good control over end results and it is a relatively fast approach. On the other hand, the bottom-up approach takes more time, but provides more realistic figures. Also employees commitment increases with bottom-up budgeting. However, in practice, there is a combination of both budgeting methods, which is iterative budgeting. Generally, the budgeting process exists of the following steps: an initial proposal, negotiations between budgetees and the supervisors, review and approval and budget revisions during the year.

Although budgeting is used in most organization, it has also been criticized. First point of critic is budget gaming. Managers are disposed to prepare better or worse budget than the budgetee actually believes is the most likely outcome of the budget period. Other criticisms are: it may create short term thinking and sub-optimization, it is time-consuming, it is difficult to predict the future, and budget may make organizations less flexible. These criticisms are also part of the beyond-budgeting movement, which suggested that budgeting should be replaced with rolling forecasts. Rolling forecasts do no limit itself to a calendar year and focuses on key performance indicators.

At this moment, the ZGT uses a top-down budgeting approach. Top management develops the strategic plan. Then, the strategic plan is broken down to a more detailed level. The budgets are determined and send to lower level managers. In this approach lower-level managers and employees are not involved in budget preparation. Managers motivation will increase if they are involved in the budgeting process. Therefore, it is advised to transform the budgeting process into a more bottom-up approach. Then, the planning and budgeting process is performed in the following way: Top management formulates guidelines which are based on the strategic plan. Then, responsibility centre's managers assisted by the business units, develop a budget request. The budgetee discusses the proposed budget with his supervisor. Then, all business units together prepare the overall budget and communicate this with top management. Top management can decide to accept the budget or send it back to the different departments.

8 Performance measurement and analysis

With the strategic planning and budgeting process in place, it is now time to turn to the next step in the management control process. This step concerns performance evaluation. This chapter discusses how the outcome of financial performance measures can be analysed. Such an analysis is called variance analysis. However, solely relying on financial measures in performance evaluation is inadequate and can be dysfunctional (Anthony et al., 2014). Therefore, this chapter also discusses how non-financial performance measures can be included in the MCS. The chapter starts with theoretical information, which discusses the meaning and purpose of performance measurement, variance analysis, how to combine financial and non-financial measurements and the balanced scorecard. Next, specific characteristics related to performance measurement in hospitals are described. A description of performance measurement and analysis within the ZGT and implications for the ZGT are given. Finally, a conclusion is given in which a summary and important points for the ZGT are described.

8.1 Theoretical information

8.1.1. Meaning and purposes of performance measurement

Anthony et al. (2014) argue that an appropriate performance measurement system is the core element of the whole management control process. Performance measurements are the basis of performance evaluation. There is a famous statement that says: 'What gets measured gets done'. Managers have to determine on what dimensions of performance the organization wants to develop. Dimensions of performance are specified as measures that quantify performance financially and non-financially. The measurements should reflect the factors that are crucial to the company's success. The measures can be based on current and future critical success factors. As Anthony et al. (2014) describe is a performance measurement system a mechanism that improves the likelihood that the organization will successfully implement its strategy. The overall objective of performance measurement is to help to implement the strategy.

Besides, top management can assess the performance of different responsibility centres and the overall company by comparing actual performance against appropriate standards. Performance measurement systems provide important feedback to the business unit managers and employees on whether their work has been successful or not. This will foster motivation and learning within the organization (Anthony et al., 2014). Another purpose of performance measurement is the ability it gives top management to link managerial responsibilities to changes in conditions. As, for example with variance analysis, changes in revenues and expenses can be analysed. Each variance can be linked to the business unit that most likely controls it (Anthony & Young, 2003).

Top management must decide which measures they want to focus on. Besides, management have to decide which measures they want to assign to certain managers or employees. Assigning financial responsibilities is already discussed in chapter 5. In this respect is also the controllability principle described. According to the controllability principle should responsibility centre's managers be evaluated based on financial measures that are within their control. However, responsibility centres are often not 'pure' profit or investment centres. Then, managers should be evaluated on a combination of measurements. Overall, effective performance measurement requires assignment and acceptance of responsibility for performance (Anthony et al., 2014).

8.1.2 Variance analysis

After the decision about appropriate financial performance measurement is made, the next step is to discuss how the outcome of profit measures can be analysed. Variance analysis is a way to compare outcomes of financial performance measures against appropriate standards. In this way, top managers can analyse in detail the financial performance of responsibility centres. There are different ways to prepare variance analysis. The first way is to simply compare difference between budgeted and actual items of a profit calculation. However, this report does not illustrate why, for example, the revenues were higher than budgeted. It is possible to identify these causes of variance and the organizational unit responsible for it with a more thorough analysis. Anthony et al. (2014) argue that an effective system identifies the variances to the lowest level of management. Then, variances can be analysed hierarchical. Figure 8.1 shows an example of a more thorough variance analysis. It starts with the total business unit performance, which is then divided into revenue and expense variances. The revenue variances are further divided into volume and price variances. This can be done for the total business unit (or organization) and for each marketing responsibility centre within an unit. This can, additionally, be further divided by sales areas. Expense variances can be divided in manufacturing expenses and other expenses. Manufacturing costs can be further subdivided by factories and departments within factories. In this way, it is possible to identify each variance with the individual manager who is responsible for it.

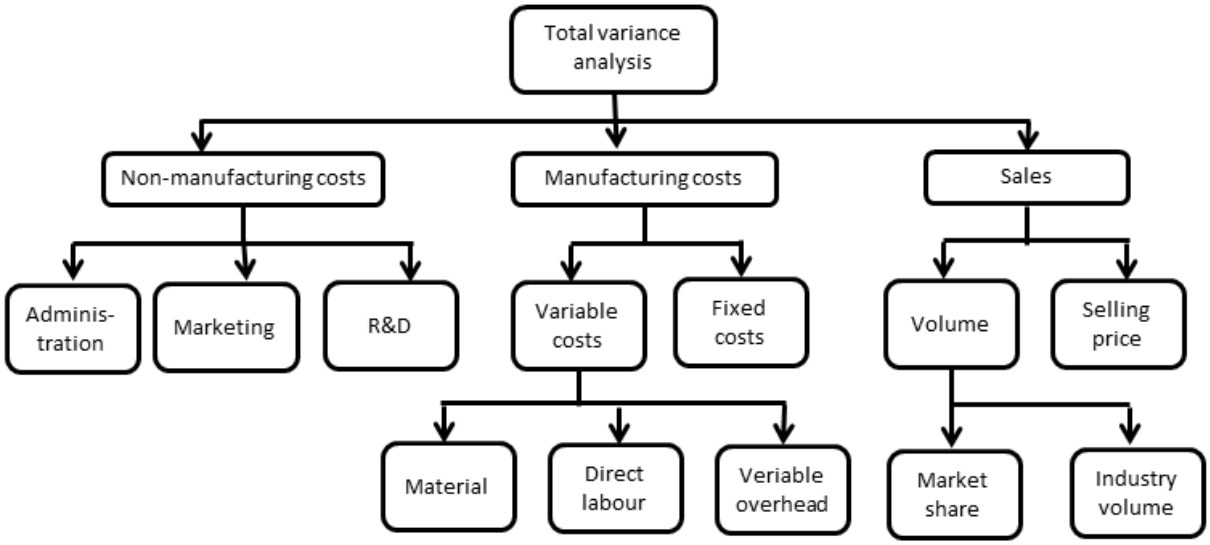

Figure 8.1 – Variance analysis disaggregation. *Management control systems, First European Edition* (p. 87), by Anthony et al, 2014, Berkshire, MA: McGraw-Hill Education

With information about variances, top management can discuss the reasons underlying each variance with the managers who are involved and who can take corrective actions if necessary. Variances are calculated to assist in understanding why actual costs diverged from budget and for exploring these reasons with the concerned managers so that, if possible, action can be taken to bring costs back in line (Anthony & Young, 2003).

8.1.3 Additional considerations about variance analysis

Besides considerations about which measures to incorporate in variance analysis, there are some additional considerations about variance analysis (Anthony et al., 2014). In the first place, the limitations of the determined standard needs be taken into account. A variance calculation is only meaningful if it is derived from a valid standard. The standard must be a reliable measure of what the performance should have been. There is a possibility that a standard is not set properly or changing conditions could have made the standard outdated. Budgets can be used as standard to compare actual performance with. But if these budgets are set in a random way, they will obviously not provide a reliable standard to be used in variance analysis. Besides, benchmarking or historical standards can be used as standards in variance analysis. Overall, examination the validity of the standard is an essential first step in variance analysis.

Additionally, top management needs to determine the amount of detail in variance analysis. For instance, revenue variances can be analysed first in total, then by volume, mix and price, and then by analysing the volume and mix variance by market share and industry volume. The analysing process continues as long as additional detail is judged to be worthwhile. The layers correspond to the hierarchy of responsibility centres. The reported variances can be associated with the managers responsible for them. Top management must decide how much is worthwhile.

Although variance analysis is a powerful tool in the management control process, it does have limitations. A limitation is that although it identifies where a variance occurs, it does not tell us why the variance occurred and what is being done about it. Simply analysing variances without a reference to mission or strategy can be uninformative and misleading. More emphasis should be put on the extent to which deviations between actual and budgeted performance are, or are not, consistent with the firm's and business unit's mission and strategy. Also a qualitative aspect needs to be incorporated in the process. For example, by a narrative explanation of the variances related to the mission and strategy. Another problem related to variance analysis is to decide when a variance is significant. This is important because a variance should only be investigated if the benefit expected from correcting the problem exceeds the costs of the investigation. Another problem of variance analysis is that as performance reports become more united, offsetting variances might mislead the reader. When, for example, different product lines at different stages of development are combined, the combination may obscure the actual results of each product line. Additionally, as variance become more united, managers become more dependent on the explanations and forecasts of employees. Business units managers know what is going on in their department but higher level managers depend on business unit manager's explanation. Finally, variance analysis may lead to too much focus on financial performance. They only look to the past and do not show the future effects of actions that managers have taken. Therefore, there is a need to measure and evaluate performance using multiple measures, non-financial as well as financial (Anthony et al., 2014).

8.1.4 Combining financial and non-financial performance measures

Anthony et al. (2014) describe four problems related to the use of financial measures only. First, it may encourage short-term actions that are not in the company's overall long-term interest. If there is pressure to meet current profit levels, it is likely that business unit managers will take short-term actions that may be wrong in the long run. Second, business unit managers may postpone useful long-term actions to obtain short-term profits. Managers may determine to defer investments that promise long-term benefits because they are bad for short-term financial results. Third, using short-

term profit as the sole objective can distort communication between lower level managers and top management. If business unit managers are evaluated based on their profit budget, they may try to set profit targets they can easily meet, leading to erroneous planning data for the whole company because the budgeted profit may be lower than the amount that really could be achieved. Finally, tight financial control may motivate managers to manipulate data.

Anthony et al. (2014) argue that a blend of financial and non-financial measures is needed at all levels in the organization. Generally, financial measures only measure past decisions and non-financial measures are leading indicators of future performance. Relying on financial measures alone is insufficient to ensure the overall goal of performance measurement, that the strategy will be executed successfully. Hence, it is better when measurement and evaluation are based on multiple measures. A properly designed performance measurement system attempts to address the needs of the different stakeholders of the organization by creating a blend of strategically important financial and non-financial measures.

8.1.5 The balanced scorecard

The balanced scorecard (BSC) is the best known example of a performance measurement system that exists of both financial and non-financial measures. The BSC is widely used in both private and public sector organizations. As Anthony et al. (2014) argue, should goals be assigned to different responsibility centres and these goals can be measured from four perspectives:

- Financial perspective: how do we look to shareholders?
- Customer perspective: how do customers see us?
- Internal business perspective: what must we excel at?
- Innovation and learning perspective: can we continue to improve and create value?

The BSC emphasizes the balance needed between financial, non-financial, internal and external performance measurements. As with other performance measurements, the organization's vision and strategy are the starting point for developing a BSC. Next, the strategic objectives per perspective needs to be determined. The critical success factors need to be determined and appropriate performance measures must be developed. The four previous mentioned perspectives can be used as template. Some organizations need other perspectives, which are better in accordance with their strategic objectives. The next section discusses the perspectives that are generally used in hospitals. The controllability principle, which is also mentioned according to financial measures, should also be taken into account when choosing non-financial measures. Therefore, managers should only be held responsible for non-financial results that are reasonably within their control.

As with other ways of performance measurement, there are some issues that need to be considered when implementing a BSC. These issues could limit the usefulness of the BSC if they not properly dealt with. First, successful implementation of the BSC depends on the participation and support of senior executives in combination with involvements of employees throughout the organization. The BSC must be developed for the overall company, separated business units and functional departments. It is important that employees are involved in the implementation process. People from different departments and different hierarchical levels need to be involved in the implementation phrase. Next, if the BSC is implemented and running, it must be consistently and

continually reviewed by top management. The scorecard should always comply with the actual strategy. Consequently, measures needs to be updated frequently. There must be a formal mechanisms for updating the measures to align with changes in strategy. Additionally, organizations have to make a decision about the amount of measures. If the number of measurements is too less, there is a risk that the managers ignore measures that are critical in monitoring strategy execution. If there are too many measures, the manager may risk losing focus in doing too many things at once. Finally, there needs to be a link between the BSC and the incentive system (Anthony et al., 2014).

8.2 Characteristics related to hospitals

Oliveira (2001) argues that healthcare organizations needs to measure and respond to intangible assets, as well as to financial and tangible assets. Such intangible assets are for example best-practice clinical processes, skilled staff and satisfied patients. Only measuring financial indicators, such as length of stay, volume and operating expenses, has limitations because it focuses on past performance and takes a short-term view of strategy. When managers focus strictly on improving financial indicators they miss the opportunity to evaluate and develop the intangible assets necessary to maximize the value of a customer. A BSC can be used as framework to measure both intangible and tangible assets. Oliveira mentioned the flowing perspectives to focus on: staff development, internal efficiency, customer satisfaction and long-term financial performance. Baker and Pink (1996) also mention these four perspective. They only give the perspective other names. They mention the following perspectives: customer perspective, internal business perspective, financial perspective and innovation and learning perspective. Baker and Pink (1996) argue that a BSC could provide answers to the following four basic questions:

- Customer perspective: how do customers see us?
- Internal business perspective: what must we excel at?
- Innovation and learning perspective: can we continue to improve?
- Financial perspective: how do we look to funders?

Next, the different perspectives will be discussed separately. First the customer perspective. The primary customers of hospitals are patients and their families. Meeting the needs and expectations of patients and their families is crucial in reaching hospital's long term mission. Therefore, a hospital needs to view its performance through the patient's eyes. Baker and Pink (1996) mention patient satisfaction surveys as the most frequently used tool for assessing the patient perspective. Another perspective is the internal business perspective. Performance of both clinical and business processes must be measured since excellent performance derives from processes, decisions and actions occurring throughout the whole hospital. The measures should include factors that affect quality of care, staff skills and productivity. Additional, it is important to select measures that are influenced by employee's actions. Therefore, a hospital's BSC have to include measures at department and nursing unit level since much of the actions take place at these units. Additionally, both measures of process (e.g. procedure time) and measures of clinical outcomes (e.g. patients health status 30 days after discharge) needs to be included in the BSC. Then, the innovation and learning perspective. These measures are important since they assess organizational capacity for improvement and change. As the healthcare sector becomes more competitive, hospitals must make continuous improvements to their existing services to expand their capabilities. But, measuring innovation and learning is not that straightforward. Other industries measure the extent to which companies derive profit from new

services or technologies. This could also be applied to hospitals. Additionally, also employee training and skills need to be implemented as measurement of the BSC since education of physicians and nurses is important in hospitals. Finally, the financial perspective which is already measured by most hospitals. The financial performance measures should indicate whether the hospital's strategy, implementation and execution are contributing to the bottom line. Hospitals can use, for example, a variance analysis to measure financial performance.

Quality is perceived as an important criteria in hospitals. Quality is already often measured by, for example, reviews by patients and insurers. Quality is, besides prices, also an element in negotiations with insurers. Insurers make judgements about the price-performance ratio and set requirements related to quality. It is assumed that when a hospital performs a certain amount of surgeries, they achieve a certain quality level. Overall, quality and amounts of treatments needs to be measured

8.3 Performance measurement within the ZGT

The ZGT wants to implement a new strategy. Measuring and monitoring performance is important for successful strategy implementation. Consequently, the ZGT needs a clear performance measurement system to increase the likelihood that the new strategy is implemented successful. Variance analysis can be part of the overall measurement system. Variance analysis compares actual performance against an appropriate standard. It provides insight in which division, for example the operating room or a support division such as laboratory, causes variances. Additionally, it provides important feedback for both the management team and the medical specialists. They can make decisions based on the information from variance analysis.

Figure 8.1 shows how variance analysis can be broken down into different parts. The total variance analysis can be divided into non-manufacturing costs, manufacturing costs and sales. These variances are related to different departments or units. For instance, the financial department is responsible for a part of the non-manufacturing costs. But a focus clinic, for example an eye clinic, is responsible for the ''manufacturing costs''. The term manufacturing is not applicable for a hospital. The term service costs is more applicable for a hospital. Sales variances can be controlled partially. Hospital's volume depends on certain circumstances, for instance, whether many people have the flu. The selling price is determined by the sales team and others cannot influence this price directly.

Focus clinic's and medical department´s variance analysis attention have to be on revenue and expense variances. Revenue variances attention needs to be on mix and volume variance. A hospital cannot influence amount of people that need hospital care, but it can influence the number of individuals who are admitted to its facilities. Volume variances result from selling more (or less) units than budgeted. Mix volume variances result from selling a different proportion of products than was assumed in the budget. It is important to make a separation between mix and volume variances, because hospitals services have different contributions per unit. Variances in variable costs are most important in the overall manufacturing cost variances. Focus clinics can just partially influence fixed costs. On the other hand, variable costs are totally controllable by the focus clinics themselves. Managers and employees are responsible for the material used and hours labour needed to complete their jobs. Finally, their needs to be an overall overview of all variances. This overview needs to show the actual amounts, the budgeted amounts, the variances and the variance as a percentage of the budgeted amounts.

A measurement system only measuring financial results is not complete. Financial performance reflects just what has happened in the past. It does not show the future effects of the actions that managers has taken. A balanced scorecard (BSC) is an frequently used method that includes both financial and non-financial measurements. The BSC exists of different perspectives and all perspectives have separated measurements. Both general and specific hospitals related literature uses the following perspectives: financial, customer, internal business, and innovation and learning. These perspectives are also applicable for the ZGT. To start, the strategic objectives and critical success factors per perspective needs to be determined. Focus clinic's biggest attention points are price and quality. Therefore, this can be the starting point in developing BSC measurements. Next, the separated focus clinics needs to determine what are their key performance indicators and how to measure these indicators.

8.4 Implications for the ZGT

The ZGT needs take the considerations and limitations of variance analysis and the balanced scorecard into account. Otherwise the variance analysis is not useful. The standard should be set valid. The advice for the ZGT is to use the budget and a benchmark as standard to compare actual results with. Management have to determine the amount of detail they prefer in both the variance analysis and BSC. Besides, participation and involvement of employees at all layers of the organization is important for a successful implementation of the BSC.

Additionally it is important to have access to the right data. Managers and employees need this information to develop the right budget. Besides, data about the actual results is needed. Therefore, it is necessary to establish and organizational data warehouse of clinical, operational and financial data that can be used in decision support. Also, adoption of a balanced scorecard increases the need for valid, comprehensive and timely information. The ZGT needs to record data regarding DBC. This data is sent to insurers. However, this is also information that can be used internal in the performance analysis process.

Finally, it is important to take into account the interdependence between departments. The assisting departments, such as the laboratory, depend on the requesting departments for the actual requested amounts. This needs to be incorporated in the way performance is measured. Additionally, there is a difference between the strategies of port specialism departments, business units and focus clinics. Therefore, there needs to be a difference in the KPIs. It is not possible to develop just one BSC and apply this to all different parts of the network organization.

8.5 Conclusion

Management wants to know how they are performing. They need information about different departments and units. Performance measurement system are used to evaluate performance of both the company and the responsibility centres. Managers can assess the performance of the company by comparing outcomes of chosen performance measures with appropriate performance standards. Overall, performance measurement have different purposes: it helps to implement the strategy, gives a possibility to assess performance of responsibility centres and it provide feedback which fosters motivation and learning.

Top management have to determine which measures they want to focus on. Effective performance measurement requires assignment and acceptance of responsibility for performance. Variance

analysis is a way to measure financial performance. With variance analysis, the differences or variances can be analysed at several levels of detail. Overall, variance analysis identifies the underlying causes of variances between budgeted amounts and a standard.

However, relying on financial measures only is inadequate and can be dysfunction. Therefore, also non-financial performance measures must be incorporated into the management control process. The balanced score card (BSC) is the best known example of a performance measurement system that exists of both financial and non-financial measures. The BSC emphasizes the balance needed between financial, non-financial, internal and external performance measurements. Critical success factors need to be translated into performance measurements. Generally, the BSC measurements are divided into four perspectives: financial, customer, internal and innovation and learning. As with all management control subjects, there are many issues that a company needs to consider when one wants to implement a scorecard. These considerations and the limitations of the use of a BSC needs to be taken into account.

According to the ZGT, it is advised to make use of both financial and non-financial measurements. The financial performance can be measured by a variance analysis. There needs to be determined which variances are controlled by which departments or units. In focus clinics and medical departments variance analysis attention should be on revenue and expense variances. Attention in expense variances needs to be on the variance expenses because fixed costs are controlled by top management. Besides, non-financial results can be measured by a BSC. Therefore, it is advised to the ZGT to make use of the BSC. Each department or unit needs its own BSC because they all have different strategies. As the strategic objectives are clear, then the critical success factors per perspective and how they want to measure these factors can be determined.

9 Compensation and incentives

Compensation and incentives are the final part of a MCS. All previous parts of the MCS are worthless without a good compensation and incentive system. This chapter starts with theoretical information, which discusses the meaning and purpose of compensation and incentives. Additionally, the effects that compensation and other forms of incentives have on motivation and performance are discussed. This is done by two very different theories, namely: the agency theory and the motivation crowding theory. Next, specific characteristics related to compensation and incentives in hospitals are discussed. A description of an incentive system in the ZGT and implications for the ZGT are given. Finally, a conclusion is given in which a summary and important points for the ZGT are described.

9.1 Theoretical information

9.1.1 Meaning and purpose of compensation and incentive

The compensation that is paid to managers and employees may have many different functions. Some of those functions will be explained. At first, compensation is simply a way to pay employees. It can be used to attract the best people possible. People judge organizations to be more attractive if an organization offers more money than their competitors. However, compensation and incentives are not only used to get the right people. It is also used to ensure that the right employees remain at the organization. But the most important function of compensation, as mentioned by Anthony et al. (2014), is that of motivating employees. A related aspect of motivation is to encourage people to work hard. Another aspect of motivation is about being inspired, creative and smart. If a manager is inspired, he will make better decisions, have better ideas, think in new ways and sometimes will inspire other employees in the organization. Finally, an incentive system can induce goal congruence by aligning the goals of different employees and departments towards the same goals.

Additionally, Merchant and Van der Stede (2012) relate the purposes of compensation and incentive to the overall management control purposes. They describe three types of management control benefits that can be achieved by the use of incentives. The first is informational. The incentives attract employee's attention and informs them of the relative importance of often-competing result areas, such as growth, costs, quality, or customer services. It signals the performance areas that are important for the organization. Additionally, it helps employees to decide how to direct their efforts. The second control benefit is motivational. There are some employees that need incentives to exerts the extra efforts that is needed to perform tasks well. Merchant and Van der Stede mention attraction and retention of personnel as the final management control purpose of incentives.

9.1.2 Different types of compensation and incentives

Generally, organizations starts offering employees a fixed pay. Employees are better motivated if they receive a good level of fixed pay. Additionally can employees receive either short-term or long-term incentives. Incentives always needs to be performance-based. This means that the organization provides rewards that are in accordance with employee's contribution to the organization. Short-term incentives include bonuses, commissions and piece-rate payments (Merchant and Van der Stede, 2012). The simplest way of short-term incentives is to make a bonus equal to a determined percentage of the profits. This means that employees always receive a bonus if the result is positive, even if profitability is low. Many organizations use formulas to pay bonuses only after a specified return on capital has been earned (Anthony et al., 2014). Merchant and Van der Stede (2012) describe the advantages of rewarding by incentives for both the employees as the employer. First,

employees, of the right type, appreciate the chance to be rewarded for their performance. On the other hand, their employers appreciates the risk-sharing features that make compensation expense variable more variable with performance. Additionally, incentives are just one-time payments, rather than annuities.

Long-term incentives are based on performance measured over periods longer than a year. For example, a deferred time frame can be added to encourage managers to think long term. Payments can be spread out over a period of years, for example five year. Then, managers receive one-fifth of their bonus in the year it was earned. The remaining four parts are paid out in the next years (Anthony et al., 2014). Long-term incentives are generally restricted to the higher levels of the organizations because these people make decisions that impacts the long-term success of the organization (Merchant & Van der Stede, 2012).

As with performance measurements, incentives should not be based on financial measures only. Non-financial criteria needs to be added to the incentive system. Anthony et al. (2014) give the following examples for non-financial measures: sales growth, market share, customer satisfaction, new product development and personnel development. All these factors will increase long-term profits. Besides an incentive system based on non-financial performance measures, also the incentives themselves can be non-financial. This are, for examples, aspects like work or employee satisfaction. If employees like the tasks, environment and colleagues, this will satisfy them, it will be rewarding and finally it will contribute to motivation (Anthony et al., 2014). Merchant (1991) lists different types of rewards. He distinguished positive and negative rewards. Positive rewards refer to things that employees value. Negative rewards generally manifest themselves through an absence of a positive rewards. For example, not being paid a bonus or being passed over for a promotion. Table 9.1. lists the different types of positive and negative rewards.

Positive rewards	**Negative rewards**
Autonomy	Inference in job from superiors
Power	Loss of job
Opportunities to participate in important decision-making processes	Zero salary increase
	Assignment to unimportant tasks
Salary increases	Chastisement (public or private)
Bonuses	No promotion
Stock options	Demotion
Praise	Public humiliation
Recognition	
Promotions	
Titles	
Job assignments	
Office assignments	
Reserved parking places	
Country club memberships	
Job security	
Merchandise prizes	
Vacation trips	
Participation in executive development systems	
Time off	

Table 9.1 – Examples of positive and negative rewards. Reprinted from *Modern management control systems: Text and Cases* (p. 303), by K.A. Merchant, 1998, Upper Saddle River, NJ: Prentice Hall.

9.1.3 Theories on incentives and motivation

Through the years, researchers developed many theories on what motivates people. Just a few theories will be discussed to understand motivation in general. McGregor's theory X and theory Y explains human beings motivation in two totally different ways. This theory is used as base for many other theories. According to theory X, human beings are lazy and have an instinctive aversion towards work. These employees must be forced, controlled and governed in order to work. Human beings prefer to be led by others and have an aversion for responsibility. On the other side, theory Y people like to work. These people like responsibility and they can lead and control their own work if it is done for important purposes. In this context, incentives and the ability to work autonomously are common (Anthony et al., 2014).

Anthony et al. (2014) describe two theories related to rewards and motivation. First, the agency theory which is in line with theory X. And afterwards, motivation crowding theory which is in line with theory Y. The agency theory describes the major factors that must be considered in designing incentive contacts. An agency relationship exists when one party (the principal) hires another party (the agent) to perform a service and the principal delegates decision-making authority to the agent. The CEO is, for example, the principal and the business unit managers are the agents. The agents must be motivated in a way that they are as productive as they would be if they are the owners. The theory assumes that all individuals act in their own self-interest. The agency theory assumes, additionally, that agents receive satisfaction not only from financial compensation but also from additional advantages of an agency relationship, such as attractive working conditions, leisure time and flexible working hours. On the other side, principals are assumed to be interested only in the financial returns that increase from the investment in the firm. Agents and principals also differ with regard to risk preferences. Generally, agents are risk-averse and principals are risk-neutral. Another aspect of the agency theory is the non-observability of agents' actions, also mentioned information asymmetry. This arises if the principal cannot easily monitor the agent's actions. The CEO cannot monitor daily the activities of business unit managers. Consequently, the principal can never be certain how the agent's effort contributed to actual company results (Anthony et al., 2014).

The agency theory states that there are two ways of dealing with the problems of divergent objectives and information asymmetry, namely: monitoring and incentives. These two are not mutually exclusive alternatives. In many organizations, the CEO has an incentive contract along with audited financial statements that are used as monitor device. Monitoring is most effective if the agent´s tasks are well defined and the information used in monitoring is accurate. Additionally, it is important that the compensation schema incorporate an incentive contract. Incentives can be used to align interests between the agent and the principal. Generally, the principal writes a contract permitting management to share in the wealth when firm value increases (Anthony et al., 2014).

The other theory is the motivation crowding theory (MCT). This theory is also referred to as self-determination theory. The theory is based on the difference between extrinsic rewards, intrinsic rewards and the crowding effect. Extrinsic rewards cover everything a person gains from carry out a certain task. Monetary rewards are an example of extrinsic rewards. One would not do the work without such rewards. Intrinsic rewards, on the other hand, concern satisfaction of reaching a goal or carrying out a task. Agency theory is about extrinsic rewards only. Whereas MCT is about self-determination theory and considers both intrinsic and extrinsic motivation. MCT focuses on how the different types of motivation relate to each other. This theory claims that extrinsic motivation may

also have an effect on intrinsic motivation. This means that a change in extrinsic reward not only cause a change in extrinsic motivation, but also intrinsic motivation may change. The effect of extrinsic incentives can be two-folded. It can crowd out intrinsic motivation, but it can also crowd in intrinsic motivation. Generally, it depends on how the person in question perceives the interventions whether it crowds out or in intrinsic motivation. If the intervention is perceived as controlling, the crowding out effect will occur, but if it is perceived as supportive the crowding in effect will occur.

There is no difference in control mechanisms between agency theory and MCT if there is a situation in which the likelihood of intrinsic motivation in low. This is generally the case with simple and repetitive work. Under these circumstances the same control mechanisms, as for the agency theory, are also relevant for the MCT perspective. These control systems are already discussed in the part about agency theory. For now, attention is on control mechanisms in circumstances where the likelihood of intrinsic rewards is high and when intrinsic rewards are important. This would be advanced and complicated tasks, rather than simple and repetitive work.

Financial compensation is not only important for extrinsic motivation, but it is also needed for intrinsic motivation. People may feel that they are not being fairly treated if financial compensation is low. The minimum requirement on the financial compensation from the MCT perspective is a good fixed pay. Additionally, a collective bonus will be useful for intrinsic motivation. A collective bonus strengthens the team spirit and the feeling of togetherness. Interest is an important factor that drives motivation. Employees that are interested in their work tasks are generally more motivated than those who are not. So managers and employees work have to be as interesting as possible, for example, by designing broader and more varied work tasks. Another factor that is very important for intrinsic motivation is communication. Personal relations tend to be favourable to intrinsic motivation. For example, management by walking around, taking notice of subordinates, informing and listening to them are all activities that increases intrinsic motivation. An related factor is involvement. Involving people in decision making may also increase their intrinsic motivation. Finally, affiliation is also important for intrinsic motivation. Working, reaching goals and being successful together with other can be rewarding for people.

Both theories are really different. The agency theory promotes the use of individual performance-related financial incentives. Whereas the MCT points at the risk with this type of incentive. Organizations needs to determine which aspects of the different theories they want to implement in their control system. Anthony et al. (2014) describe three questions that can be answered to determine which theory to apply. First question is: what type of work tasks are we talking about? Tasks can be simple, repetitive and boring, or complex, changing and challenging. The second question is: what kind of people are we talking about? In some jobs financial incentives are considered as natural as fixed pay and these people will not accept a job without such a performance-related incentive. There are also difference in national culture. Anglo-Saxon countries are focused on individual performance incentives, whereas in Holland and Scandinavia softer value are of greater importance. The final question that needs to be answered is: which theory do you support? Then, differences between believing economists and psychologists and a clear and simple theory or a more complicated theory are important. A related question that is important is which of the two sets of basic assumptions do you believe in. Agency theory is based on an ‘economic man’, which is perfectly rational and bases decisions only on what will benefit him the best. Whereas, MCT

is more related to the 'psychological man', which has bounded rationality, is driven by material, social and emotional needs. He wants to be accepted and liked by other people.

9.2 Characteristics related to hospitals

Medical specialists can be characterized as professionals. Anthony and Young (2003) argue that financial incentives are less effective with professional people. They argue that professional people usually consider their current compensation to be adequate and that their primary loyalty belongs to their profession. Additionally, professionals tend to give inadequate weight to the financial implication of their decisions. Physicians want to do the best job they can, regardless of its costs.

Anthony and Young (2003) argue that non-profit organizations, just as all other organizations, pay bonuses. These bonuses are related to both non-financial and financial performance. However, bonus arrangements in non-profit organizations generally relate to short term performance. The authors argue that non-profit organizations were unsuccessful in designing incentive compensation systems that motivate managers to consider the long-term consequences of their decisions. This is partly due to the fact that non-profit organizations cannot use stock options, which are frequently used by for-profit organizations to motivate employees in terms of long run.

Additionally, mention Anthony and Young (2003) another type of rewarding of which the use in non-profit organizations is growing. This are financial rewards for productivity improvement programs. This is also called gainsharing. This type of reward allows to share the savings generated by increases in productivity between the employee and the organization. The authors also give an example of the use in gainsharing in a hospital. This hospital paid bonuses to employees of departments where the productivity exceed the historical standard. The result of this program was an increase of productivity and producing $2 million in savings. The employees received bonuses of average 4 percent of their base salaries.

9.3 Use of compensation and incentives within the ZGT

Doctors within a hospital are most consistent with the 'physiological man' as described in the motivation crowding theory. Generally, these people like to do their job, like responsibility, and can lead and control their own work. Therefore, both extrinsic and intrinsic motivation are important for physicians and employees within the ZGT.

Next the questions as mentioned by Anthony et al. (2014) will be answered. First question is: what type of work tasks are we talking about. Doctors perform very complex and challenging tasks. They have studied really long to be allowed to do their job. Intrinsic motivation is important for them. They know they are performing an important job, otherwise people will die. They get appreciation for their job by patients and their families. The next question is: what kind of people are we talking about? As already said, doctors study relatively long. There are not many people that can do these kind of tasks. Consequently, they are used to earn a higher salary than average. Also the national culture is important. The Netherlands are not really financial incentive driven. The final question is which theory do you support? The MCT bests fits the situation of a hospital because managers, doctors and nurses gets satisfied by more than only money.

The reason why medical specialist wants to work in a focus clinics is the freedom. There are some positive rewards, as mentioned by Merchant, related to this type of freedom. The medical specialists get autonomy, power and opportunities to participate in important decision-making processes. This is a low cost reward which is appreciated by medical specialists. In the core hospital or business units are these aspects less present. If focus clinics perform bad, the autonomy and power can be taken away by top-management. This is a type of negative reward for which medical specialists are sensitive. Besides these non-financial incentives, also financial incentives are important. Medical specialists are used to get a high fixed pay. This will be the same, because the medical specialists remain part of the same hospital. Additionally, groups rewards can be implemented. This works in the same manner as gainsharing, as mentioned by Anthony and Young. The focus clinics are directed by a group of medical specialists. It is hard to determine individual performance, because they work in a team. Therefore, group rewards will be effective in focus clinics. Group rewards are paid out if focus clinics earn a certain percentage of profit. It is advised to do not pay out the bonus, but the money can be used to invest in their part of the organization. hen, rewards will stay in the focus clinics. Consequently, focus clinics have extra money to invest in their focus clinic. Medical specialists are free to decide what they want to do with the earned money.

9.4 Implications for the ZGT

Medical specialists can be employed by the hospital or be self-employed. Both types of medical specialists exists in the ZGT. A hospital is a non-profit organization. Generally, non-profit organization cannot distribute assets of income to its members, officers or directors. This prohibits the distributing profits. This needs to be taken into account when developing other incentives than recommended in the previous part.

9.5 Conclusion

Compensation and incentives are the final step of the management control process. Compensation and incentives may have different purposes. The first purpose is attraction and retention of personnel. Organizations wants to attract the best people possible and want to ensure that the right people remain at the organization. Another purpose is that of motivating employees. Some employees needs incentives to work harder. The final objective of the use of incentives is informational. It attracts employee's attention and informs them of the relative importance of often competing result areas. Compensation comes in different forms. In the form of fixed pay, short-term or long-term incentives. Examples of short-term incentives are bonuses and commissions. Long term incentives are, for example, stock options. Finally, incentives can also be non-financial.

Two theories are used to explain the relationship between incentives and motivation. First, the agency theory. This theory is based on the idea that owners (principals) and managers (agents) have diverging interest and that they act out of self-interest. The theory states that there are two ways of dealing with the problem of divergent objectives and information asymmetry, namely; monitoring and incentives. Because owners cannot totally monitor the managers, incentives can be used to accomplish goal-congruence. Incentives should be designed in a way that it forces the self-interest of managers to work hard to fulfil the interest of the owners. This are often achieved by the use of bonuses based on the performance of the company or unit.

The other theory is the motivation crowding theory (MCT). This theory focuses on how intrinsic rewards and motivation relates to extrinsic rewards and motivation. The theory claims that extrinsic rewards not only cause a change in extrinsic motivation, but also intrinsic motivation may change. The effect of extrinsic incentives can be two-folded. It can crowd out intrinsic motivation, but it can also crowd in intrinsic motivation. A control system that is in line with MCT focuses on the creation of intrinsic motivation when possible. Therefore, the following aspects are important: creating interesting assignments, communication and employee involvement.

The two theories are quite different. The agency theory offers a simple theory which is based on the 'economic man'. This man is perfectly rational and acts only out of self-interest. On the other hand MCT is much more complicated and is based on the 'physiological man'. This man is only partly rational. He is not only driven by self-interest and material needs, but also by social and physiological needs. He wants to be accepted and liked by other people.

Doctors within a hospital are most consistent with the physiological man. Therefore, both extrinsic and intrinsic motivation are important within the ZGT. Medical specialist working a focus clinic get more freedom than in the core hospital or business units. The medical specialists get autonomy, power and opportunities to participate in important decision-making processes. This is a kind of reward which work well for medical specialist. Additionally, they get a fixed pay as they were used to when they worked for the hospital. Finally, a kind of group reward will be implemented. If focus clinics earn a beforehand specified percentage of profit, the amount of profit becomes freely available for the focus clinics. Then, medical specialists can invest that amount in their focus clinics.

10 Conclusion and discussion

In the final section of this research, the conclusions that can be drawn after analysing literature and developing a management control system for the ZGT are given. Furthermore, the limitations of this study and suggestions for future research are given.

10.1 Conclusion

The healthcare sector is changing due to the high and rising pressure on healthcare costs. Governance implemented managed competition with the aim to decrease prices and improve quality. As a consequence, hospitals are judged on the relationship between output and input and, therefore, are forced to reach a balanced relationship between costs and revenues. Hospitals need to timely adjust their working process and organizational structure to stay in competition. Also the case company, the ZGT, wants to change their organizational structure. The ZGT wants to become a network organization with a core hospital, business units and focus clinics. The organization becomes more decentralized, because medical specialists and other employees get more responsibilities. Decentralization is a reason why organizations need to implement a management control system. Accordingly, the ZGT wants to (re)design the MCS to support the new organizational structure. The aim of this study is to develop a management control for the ZGT. In order to be able to develop a management control system for the ZGT the following research question is answered: *What is an appropriate management control system for the ZGT as they want to decentralise responsibility and control?* The answer is given by explaining how to implement the different elements of a management control system within the ZGT.

Before the developing phrase can start, it is important to know what a management control system is and wherefore it is used. Organizations use management control systems to direct employees behaviour in the desirable way. A good management control system influences employees behaviour in a goal-congruent manner, which means that the goals of an organization's induvial member are consistent with the goals of the organization itself. A combination of the management control framework of Malmi and Brown (2008) and Anthony et al. (2014) are used for this research. The framework which is used in to develop a management control system for the ZGT is presented in figure 10.1.

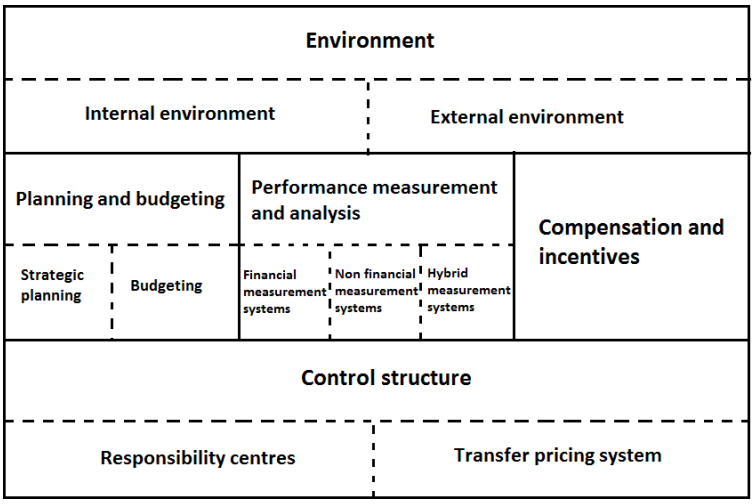

Figure 10.1 – The management control framework used in this research

The research starts with a literature review about the environment of the ZGT. Then, the management control structure is determined by developing responsibility centres and a transfer pricing system. Finally, the management control process is developed. The management control process exists of the following phrases: planning and budgeting, performance measurement and analysis and compensation and incentives. All together presents the whole management control system.

To start developing the management control system, first the management control environment have to be clear. The Dutch healthcare system is important for a hospital. The healthcare system changed in the 1990s from a supply-side regulation towards managed competition. Managed competition is characterized by a fee-for-service payment system. Hospitals are financed based on diagnosis and treatment combinations. Other changes are the implementation of bundled payments and macro control. Besides, hospitals have some specific characteristics. In the first place, it is a non-profit organization. This implies absence of a profit measure, different sources of support, many professionals and governance involvement. The other characteristics are related to the fact that a hospital is a healthcare organization. Generally, healthcare organizations are characterized by a difficult social system, a change of mix of providers, third-party payers, importance of quality control and the presence of physicians. Stakeholder that needs to be taken into account are healthcare insurers, patients, government, other hospital and private clinics. The overall environment can be characterized as stable, uncertain and complex. This makes the future of hospitals uncertain. Finally, the strategy and organizational structure needs to be taken into account.

Developing the management control system starts with developing responsibility centres. A responsibility centre is an organizational unit that is headed by a manager who is responsible for its activities. There are four standard types of responsibility centres, namely: revenue centres, expense centres, profit centres and investment centres. At this moment all units within the hospital are discretionary expense centres. This has to change towards responsibility centres with more responsibilities because top management want to decentralize responsibilities and control. Port specialism and focus clinics get more authority and can be held responsible for profit. They have some control over both expense and revenues. Therefore, they can be profit centres. The assisting or producing departments ca be (pseudo) profit centres because in these departments the inputs can be related to the outputs. The service and supporting units can be discretionary expense centre because management determines their budget and they only have to stay within the budget.

A criteria for successful implementing profit centres, is the existence of a transfer pricing system. Transfer pricing is used as accounting method in the case of transfers of goods or services from one profit centre to another within the same organization. There are three types of transfer pricing, namely: market based transfer prices, cost based transfer prices and transfer prices determined by negotiation. Market based transfer prices are preferred in all situations. But, if there is no option to set valid market based transfer prices, the other option is to develop cost-based transfer prices. Then, decisions about how to define costs and how to calculate a profit mark-up have to be answered. In case of the ZGT, the use of market based prices is limited, because departments are forced to work with one another. Therefore, it advised to use cost-based transfer prices within the ZGT. The standard costs and a profit mark-up needs to be incorporated in the transfer price.

Next, the different phrases of the management control process are designed. The first step in the management control process is (strategic) planning and budgeting. Strategic planning is the process of deciding which major programmes the organization will undertake to implement its strategy and the approximate amount of resources that will be devoted to each department. Strategic planning serves as framework for the more detailed planning phrase. Overall, the whole planning and budgeting process clarifies where the organization wishes to go, how it intends to get there and what results are expected. At this moment, the board of directors determines the strategic plan together with the head of the medical specialists. The overall budget is then broken down to more detailed level and sent to the budget holders. The amount that the departments receive is fixed. They can only determine how to divide this amount over the different line items. This is a top-down approach. To be in line with the decisions to give managers and employees more responsibilities and the decision to implement profit centres, should these people also have influence in determining the budgets. Therefore, it advised to implement a more bottom-up budgeting process. Top management have to prepare the guidelines. Next, responsibility centres managers, assisted by the business controllers develop a budget request. Then, there is a negotiation about the budget with the budgetee. The business controllers develop the overall budget which is send to top management. Finally, the determined budgets needs revision if the budget assumptions turn out to be unrealistic.

The next step in the management control process is performance measurement and analysis. Performance measurement provides feedback to managers and employees. They can monitor whether their work had been successful or not. This will foster motivation and learning within the organization. According to the controllability principle, should employees be evaluated based on financial measures that are within their control. Variance analysis can be used to analyse financial performance. However, simply relying on financial performance measurement is not complete. Therefore, also non-financial measures needs to be implemented in the performance measurement system. The balanced scorecard is often used as a measurement that exists of both financial and non-financial measures. It is advised to use both financial and non-financial measures in the ZGT. The attention in variance analysis have to be on revenue and expense variances. Additionally, the balanced scorecard can be used for measuring non-financial aspects. For focus clinics biggest attention points are price and quality. This have to be the starting point in developing balanced scorecard measurements.

The final step in the management control process is compensation and incentives. Compensation and incentives are used to attract people, motivate employees and it can induce goal congruence. There are different types of compensation and incentives. Generally, employees get a fixed pay. Additionally, short-term and long-term incentives can be added. And finally, non-financial incentives, such as autonomy, power and time off can be used as incentive. Generally, medical specialists wants to receive a high amount of fixed pay but they are not sensitive for other financial incentives. Medical specialists in focus clinics get motivation because they get a lot of autonomy, power and opportunities to participate in important decision-making processes. This type of reward is effective for professionals. Besides, it is advised to implement group rewards in focus clinics. If the focus clinic earns a specified amount of profit, this amount becomes freely available for the focus clinics. This money can be invested in the focus clinic again. Then medical specialists have freedom to decide how to invest the money.

10.2 Limitations and future research

The research has some limitations that have to be taken into account when interpreting the results and conclusions. A discussion of these limitations is presented below. Additionally, some suggestions for future research are described.

At first some limitations that are important for the ZGT will be discussed. The management control system is developed for the specific situation of the ZGT. However, this will not imply that the system as developed in this research is the ultimate management control system for the ZGT. The research discussed how a management control system can be developed, which decisions needs to be taken and recommendations about how to design the system are given. Now, financial experts of the ZGT have to determine which aspects they wants to implement in which way in their organization. Another limitation is related to the fact that the results are partly based on personal interpretations. It is possible that other persons would have made other decisions and, consequently, developed the management control system in another way. Besides, not all potential pitfalls are explicitly mentioned in the research. Pros and cons are considered by the researcher and discussed with the financial director. However, not all considerations are described in the research. An example of such a consideration is the increasing administrative work as a consequence of implementing transfer prices. Further research is needed to research all consequences of implementing different aspects of the management control system.

Other limitations of this research are related to the research design. The design science research approach is used because this approach is best suitable for developing theory in a specific situation. Accordingly, this causes one of the limitations of this study. The generalizability of the results are low because the system is developed for the specific situation of the ZGT. The results of the study are specific for a hospital that wants to decentralize responsibilities and control. Further research is needed to study how management control system in hospitals are designed and how these systems can be redesigned. Another limitation is related to activity four of the research methodology. This activity is about demonstrating the use of the management control system. The initial idea was to present the results to the Board of Directors. However, the design is not presented to the Board of Directors due to time limitations. Therefore, only the opinion of the researcher and the financial director are included in the research. The design satisfies his wishes and expectations. Now it is up to the financial director to convince the Board of Directors and to implement the management control system within the organization.

The final limitation is the lack of input from the medical specialists and financial experts. When the research was started, the ZGT was developing a focus clinic in which different specialities and disease would be centred. Attending meetings about the start-up of this focus clinic was part of the research. Then, medical specialist's opinions would be included in the research. However, the founding members decided to stop the initiative halfway the study. This had some consequences for this research. The initial idea was to present the management control system as developed in this research to the medical specialists included in developing this focus clinic. Then, their opinion related to the management control system could be included in the research. Now only theoretical information is used in this research, this could have an impact on the results. Future research can be performed to study the opinion of the medical specialist's regarding the management control system. Information can be gathered by arranging interviews or sending out questionnaires.

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