

Radboud University



Input for a structural redesign of a homecare organization: what about contextual factors?

*On diagnosing the current structure and forming input for an alternative structure of
nursing teams in order to facilitate the continuous provision of care in Nijmegen*

Master thesis Organizational Design and Development
Radboud University

Supervisor: dr. D.J. Vriens

Second examiner: dr. B.R. Pas

Student: Luuk van het Erve | s4217543

Date: 19th of June 2017

Title: -

First name: Luuk

Initials: L.G.J.

Prefix: van het

Surname: Erve

Male/female: Male

Student number: 4217543

Address for correspondence: Thomas van Aquinostraat 3

Organizational Design & Development

Institute for Management Research

Radboud University Nijmegen

P.O. Box 9108

6500 HK Nijmegen

The Netherlands

Assigned supervisor: dr. D.J. Vriens

Assigned 2nd examiner: dr. B.R. Pas

Contact person at researched organization: H. Vos

Abstract:

This design-oriented research is divided in two segments. First, a structural diagnosis is conducted establishing present problematical variables caused by elements of the organizations' structure. Second, based on theory, empirical data and the conducted structure diagnosis, an alternative structure design solving the perceived problems is proposed. The object of this research are the nursing teams of ZZG zorggroep in region Nijmegen. The reason for a critical diagnosis of the organizational structure of the nursing teams in Nijmegen is the sporadic inability of the current back-up team to guarantee the legal timely arrival of thirty minutes in case of a clients' personal alarm. In order to meet current and prospective performance indicators and ensure the organizations' viability, the organization's structure is ought to be able to comply to these requisites. Earlier, in region Wijchen, this problematical variable was solved by reorganizing along the lines of socio-technical theories. Based on this, it is researched if a similar theoretical approach is able to solve the experienced problems in region Nijmegen. Therefore, the goal of this research is to provide recommendations to ZZG zorggroep region Nijmegen with respect to the question what alternative exists for the structure of the nursing teams in order to meet the all the established requisites. Through semi-structured interviews, data is collected for the structural diagnosis of the current organizational structure. This way, it is researched which problematical structure related variables are present and which factors cause this undesired value. Furthermore, it is explored which structural parameter values can be improved in order attain the functional requirements of the organization, ensuring the organizations' viability. Additionally, based on theory and empirical data, the contextual factors influencing the level of the parameter values are explored and acknowledged with respect to the input for the alternative structure design that is expected to solve the perceived problems. The outcomes of this research show that an alternative integral structure, designed along the lines of sociotechnical principles, can lower the parameter value of functional concentration, positively influencing the compliance to functional requirements, solving the problematical variables.

Keywords: homecare organizations; structural diagnosis and design; functional requirements; structural parameters; contextual factors

Table of Contents

Chapter 1 - Introduction.....	6
1.1 – Homecare organizations under pressure.....	6
1.2 – Research objective and question	8
1.3 – Gaps, scientific and practical relevance	12
1.4 – Thesis outline	13
Chapter 2 – Theoretical Background	15
2.1 – Triple Aim and homecare.....	15
2.2 – Critical evaluation of design theories.....	17
2.3 – The IOR approach	20
2.4 – Towards practical redesign.....	26
2.5 – Contextual factors	29
2.6 – Buurtzorg: A best practice example.....	30
Chapter 3 – Research Methodology	32
3.1 – Research Design	32
3.2 – Description of researched organization.....	34
3.3 – Methods of data collection and analysis	35
3.4 – Topic List	37
3.5 – Research Ethics	38
Chapter 4 – Analysis of the current organizational structure	40
4.1 – Initial formation of continuous nursing care.....	40
4.2 – Assessment of current organizational structure	42
4.2.1 – Continuous responding to personal alarms within required timespan.....	42
4.2.2 – Fluctuation of demand.....	43
4.2.2.1 – Volume of demand	43
4.2.2.2 – Complexity of demand	44
4.2.3 – Responsibility for clients.....	44
4.2.3.1 – Consultation link between intramural and specialist.....	44
4.2.3.2 – Transferral of clients’ responsibility between teams	45
4.2.4 – Insufficient support to GVP.....	45
4.3 – Scoring on the Triple Aim.....	45
Chapter 5 – Analysis of the alternative organizational structure.....	47
5.1 – Contextual factors	47
5.1.1 – Demand.....	49

5.1.2 – Geography	50
5.1.3 – Scarcity of high level nurses.....	51
5.1.4 – Collaboration partners	51
5.1.5 – Safety	52
5.1.6 – Financial feasibility	53
5.2 – Forming the alternative structure	53
5.2.1 – Demarcation of boundaries and design principles.....	54
5.2.2 – Forming the production structure	55
5.3 – Assessment of alternative structure	57
5.3.1 – Advantages	57
5.3.2 – Limitations.....	59
5.3.3 – Essential variables, functional requirements and Triple Aim	59
Chapter 6 – Conclusion and Discussion	61
6.1 – Answering research (sub-)question	61
6.2 – Recommendations	65
6.2 – Discussion and reflection	66
References	68
Appendices (separate document)	
Appendix I – Interview Questions	1
Appendix II – Collected data included with codes.....	5
Appendix III – Documents	70

Chapter 1 – Introduction

1.1 – Homecare organizations under pressure

Since a few years, multiple reforms, with the goal of increasing quality and, simultaneously, the reduction of costs, are conducted in the Dutch healthcare sector (Ministry of Health, Welfare and Sports, 2013; 2016). This emphasizes the urge to make the healthcare sector more affordable and accessible (and therefore more sustainable) than its current form (Christensen et al., 2009). The Dutch government tries to pursue this goal through introducing new laws (e.g. Law of Quality, Complaints and Differences in Healthcare, in Dutch: WKKGZ) and delegating responsibility towards municipalities (e.g. Law of Social Support, in Dutch: WMO) (Ministry of Health, Welfare and Sports, 2015; 2016). Homecare organizations are obligated to comply to these newly formed, adjusted and shifted institutional laws and therefore might be confronted with the challenge to adjust organizational elements conform the new institutional regulations and the correlated performance indicators (Ministry of Health, Welfare and Sports, 2013 & 2016).

ZZG zorggroep is a healthcare organization that is confronted with such an organizational design problem due to not meeting to the performance indicators that resulted from the new and adjusted laws. ZZG zorggroep provides several services in care, such as homecare consisting of daily care at home, medical care and palliative care. In addition, ZZG zorggroep offers residential communities for clients diagnosed with dementia and general physical retention. Moreover, ZZG zorggroep is divided in three main regions consisting of Nijmegen, Rijk van Nijmegen (adjacent municipalities) and lastly, region Wijchen, Maas & Waal. A few years ago, ZZG zorggroep was encountered with qualitative performance indicators concerning continuous availability of homecare, formed by the Dutch government. At the moment, regions Nijmegen and Rijk van Nijmegen are not always able to comply to these new performance indicators, for instance, the requirement for nurses to provide care for clients within thirty minutes after a personal alarm (IGZ, 2013, ZZG zorggroep, 2016).

Region Nijmegen employs twenty-eight homecare autonomous teams divided over nine districts, providing domiciliary, personal and nursing care. These teams consist of between eight to sixteen professionals varying in age. With regard to assuring continuous homecare, a separate team operates in the evenings, nights and weekends. This ‘achterwacht’ (back-up team) is called upon for triage, knowledge transferal and medical support, even during day-time. This back-up team experiences difficulties in the realisation of continuous responding to signals in the required timespan. Regarding intramural care, back-up teams are inappropriately

called upon for extra capacity, reducing the workload. In addition, the usage of the back-up team is most often for low complex care, while high expertise is present in the back-up teams. With regard to extramural care, back-up teams are appealed in a limited way, mostly for filling a knowledge gap. In addition, region Nijmegen sporadically experiences other problems concerning the allocation of human resources. (ZZG zorggroep, 2016). For instance, the highly specialized nursing team (GVP) is called upon for nursing interventions with high predictability and low complexity. This leads to an inefficient use of expertise and neglecting competencies of the regular nursing teams. The assumption is made that these problematical factors occur due to a problem that is structure-related. Region Nijmegen is challenged by this problem and is searching for means to diagnose the optimal organizational structure that complies consistently to the new qualitative performance indicators. This implies that the current organizational structure is unable to meet the stated requisites and thus unable to fulfil the essential variables (goals of transformation processes supported by infrastructural conditions, ensuring the organizations' viability).

The earlier made assumption is based on an intervention in Region Wijchen, Maas & Waal (the smallest region) early 2012. The organizational structure at the time did not support the performance indicators with regard to responding on calamities in the required thirty minutes, in a similar way to the problem in region Nijmegen. In addition, the back-up teams did not carry the full responsibility towards a client group, causing a lack in the feeling of urgency, leading to a higher cycle time. Furthermore, communication problems between teams existed, due to working separated from each other. Lastly, highly educated professionals are sporadically allocated wrongly, treating clients with low complex demands which should be resolved by lower educated employees. Along the lines of the design theory of De Sitter (1998), this intervention led towards a new structure where back-up teams were resolved as a separate entity, resulting in the reallocation of back-up personnel and tasks towards the main nursing teams. That way, the nursing teams are responsible for their own clients around-the-clock. The new organizational structure supported the compliance towards the performance indicators and therefore resolved the perceived problems. It is of additional value to extract insights gained from the redesign in Wijchen and apply this knowledge in the redesign of region Nijmegen. Next, it should be noted that an exact copy of the redesign of region Wijchen will not be sufficient for the region Nijmegen, due to differences in structure and contextual factors of the organizational department and region, such as number of teams, demand of care and geographical characteristics. For instance, region Wijchen employs two nursing teams, where region Nijmegen employs twenty-eight nursing teams. Therefore, other contextual factors that

influence the values of the organizational structure parameters should be taken into account (factors that influence an organizational structure, a more explicit definition is given in the second chapter). This will lead to conceptually different redesigns of homecare teams per region. After the diagnosis phase of such an organizational intervention, it becomes clear which structural parameters are influenced by contextual and practical factors of the region. This potentially forms a restriction for designing the structure in a more integral, and thus, in a more efficient way.

1.2 – Research objective and question

At the moment, it is clear that the current organizational structure of region Nijmegen is not always able to comply to the performance indicators and therefore does not meet some of the established requisites preventing the fulfilment of essential variables, it is necessary to establish a goal that results into a solution of the perceived problems. The contribution of this research for the organization is grounded in diagnosing the current organizational structure in order to recommend input for an alternative structure that resolves the perceived problems. More specifically, the goal of this research is to provide recommendations to ZZG zorggroep region Nijmegen with respect to the question what alternative exists for the structure of the nursing teams in order to meet the all the established requisites. Moreover, this research provides knowledge on how practical contextual factors influence the value of structural parameters of region Nijmegen. The results of this study contributes to organizational design studies through the provision of specific insights with regard to organizational interventions and redesign in homecare organizations in The Netherlands. Furthermore, this research provides insights for organizations to organize more effective, flexible and efficient, supporting the facilitation of continuous homecare and thus health as a societal value. In order to achieve the goal of this research, the following research question should be answered:

“In order to comply to the established requirements to provide continuous homecare, what is an alternative for redesigning the structure of the nursing teams of ZZG zorggroep in region Nijmegen?”

In order to make this question more comprehensible, ensuring an adequate answer, it is divided in sub-questions:

- What are the established requisites for the structure of nursing teams of ZZG zorggroep?
- What are the parameter values of the current and desired organizational structure?

- In which way does the current and alternative structure of a nursing team comply to all established requisites?
- In which way do contextual factors influence the desired values of structural parameters in region Nijmegen?

The described sub-questions support a systematic approach for answering the research question and thus achieving the goal of this research. In a more abstract way, this design-oriented scientific research should provide answers on both “what?” and “how?” questions with regard to the desired alternative organizational structure.

A specific design approach, termed Integrated Organizational Renewal (IOR), provides theoretical means for the question what elements of the organizational structure should be changed in order to comply to the established requisites. Additionally, IOR prescribes design rules and principles with respect to the way this could be achieved. IOR emerged from practical experience in the Netherlands and could be viewed as the Dutch Sociotechnical System Design (D-STSD) (De Sitter et al., 1997). This design theory is continually developed through iterations of science and practice with the aim to improve the quality of work and the quality of the organization through enabling complex and self-regulated tasks, by means of simplifying a complex organizational structure, fulfilling the essential variables of the organization. (De Sitter et al., 1997). These essential variables entail the quality of the organisation, work and working relationships and are achievable through complying to internal and external functional requirements. Low values on the seven structural design parameters ensure the achievement of these functional requirements (De Sitter et al., 1997). In addition to IOR, this research utilizes Modern Socio-technical Theories (MST) from Kuipers, van Amelsvoort and Kramer (2010) which, in alignment with IOR, emphasizes developing design rules and precedencies in relation to redesigning the organizational structure. Moreover, these theories focus more on the production structure on a micro-level, concerning the redistribution of tasks through teams, which is relevant for redesigning homecare teams.

The usage of this theoretical lens in this research is supported by several arguments. Firstly, this lens provides a full conceptual understanding of redesigning an organizational system. IOR and MST theories provide specific means (design principles) in order to carry out this organizational design perspective in organizations. Additionally, with regard to organizational redesign, external as well as internal factors are taken into account by means of including a clear specification of the system’s boundaries, implying an open system design approach. Secondly, in order to determine if combining IOR and MST with other design

theories such as organizational configuration approach (Mintzberg, 1980), lean production (Womack & Jones, 2003) and disruptive innovation (Christensen, 2009) will contribute to simplifying complex designed organizations, they are critically evaluated in the next chapter. More specifically, a combination of studies such as lean production and organizational configurations show higher variety in approaching problems regarding organizational design in comparison to the selected theoretical lens. A more extended argumentation is provided in the next chapter. Lastly, the researched organization is familiar with IOR and certain parts of the organization (such as region Wijchen) are redesigned according to the design principles of IOR. Therefore, it is sensible to continue redesigning with this theoretical lens in order to achieve an integral structure of the organization.

In addition, practical and contextual factors that are present in region Nijmegen, such as geographical factors, demand of care and safety conditions, influence the desired values of the structural parameters. This research unveils what these contextual factors are and how they influence the desired organizational structure. For instance, the contextual factors could limit, or in contrary, enhance the most desired value achievable for certain structural parameters. A further elaboration on these contextual factors and what the level of such a desired parameter values is and the benefits, limitations and origins of the used theoretical lens is present in chapter 2.

The methodology of this research is design-oriented. Scientific design-oriented research provides general knowledge for designing specific solutions for specific problems perceived by professionals in the field (Van Aken & Andriessen, 2011). Moreover, in order to design the structure of this research and enforce a systematic approach in answering the research question, this research utilizes one dimension of the three-dimensional model as guidance with respect to organizational interventions (Achterbergh & Vriens, unpublished). The first dimension is the social dimension based on Lewin's (1947) unfreeze, change and refreeze phases. The second dimension is the infrastructural dimension, entailing the infrastructural conditions of the organization and the intervention project: 1) Structure, 2) Human Resources and 3) Technology. The last dimension, which is utilized in this research, is the functional dimension, consisting of four steps: 1) Diagnose, 2) Design, 3) Intervention and 4) Evaluation (D-D-I-E-cycle). An overview of the first two steps of this cycle is provided in textbox 1.1. This research is conducted along the lines of these steps. First, a problem gap is defined, in order to establish the exact problematical values. Next, through the determination of the gap between the current and desired parameters, the way these problematical values are established is analysed. This offers a solution space, entailing a change in the (infra)structure of the organization resulting in

an alteration of a parameter value. In this research, the first step of the intervention cycle is conducted in order to provide input for the second step. In this design step an alternative structure is determined, lowering the parameter level and thus solving the problematical values. It should be noted that the new alternative structure should not cause new problematical values. It must be noted that the steps of implementation and evaluation are beyond the scope of this research and are therefore excluded. In the last paragraph of this chapter, an overview is provided elaborating on the link between each particular chapter and the two phases of the intervention cycle.

Diagnosis:

1. Gap analysis
 - Determine diagnostic variables (going to describe to problem/out of norm value)
 - Find out the norm (desired) value (NV) (fulfilling the functional requirements)
 - Determine the actual values (AV)
 - Determine the gap: difference between NV and AV (problematical value)
2. Cause analysis
 - Determine parameters that are possible causes
 - Determine the norm values of the different parameters
 - Determine the actual values of the different parameters
 - Determine the gap: differences between NV and AV
3. Solution Space
 - Select those parameters that can be affected by a change in the infrastructure

Input for Design:

Goal: Thinking of changes of the infrastructure in such a way that the parameters from the solution space regain their norm value:

1. Realizations per parameters
2. Find a feasible combination of realizations (with account to specific contextual factors)
3. Select one feasible combination

Textbox 1.1 – First two steps of the D-D-I-E cycle

(Achterbergh & Vriens, unpublished)

Data is collected through two methods. First, confidential documents are derived from the organization, which entail business cases, evaluation reports on earlier interventions and quantitative and qualitative diagnosis regarding the demand of care and quality requirements of the care delivered. These documents cover the regions of Nijmegen, Rijk van Nijmegen and Wijchen. Second, interviews are conducted with multiple actors working at different levels and locations throughout the organization. Here, problems of the current structural design, the desired structure and alternatives of the structure are discussed, as well as contextual factors that play a prominent role in the region. In chapter 3 a more detailed description of the methodology of this research is given. Furthermore, an overview is provided displaying the elements of this scientific design-oriented research (table 1.1).

Subject	Nursing teams in region Nijmegen
Motive	Nursing back-up teams not always able to guarantee the required thirty minute timespan of arrival
Goal	Exploring a structural alternative of the nursing (back-up) teams in region Nijmegen and providing insights in which way this could be achieved
Theoretical Approach	Dutch Sociotechnical Systems Design / Modern Sociotechnical Theories
Methodology	Scientific design-oriented research
Commissioned by	ZZG zorggroep / Radboud University

Table 1.1 – Overview of research elements

1.3 – Scientific and practical relevance

It must be noted that the scientific relevance of this design-oriented research is not that extensive. A practical problem is solved through adequate usage of the scientific organizational intervention cycle in a specific situation, namely one region of an organization in the homecare sector. This research confirms the scientific value that this cycle provides. Socio-technical theories are already proven in literature through successfully redesigning several profit production organizations, for instance Philips and Volvo (De Sitter et al., 1997; van Amelsvoort, Kuipers & Kramer, 2010). In these production organizations, different actors, interests and values (e.g. profitmaking) are prioritized in comparison to public (health) organizations (Rainey, 2009). Therefore, this research is not conducted with the scientific aim to prove sociotechnical theories, but to test what influence specific contextual factors have on the value of the parameters of the desired organizational structure. Thus, the limited scientific contribution this research provides is an answer to the question what these contextual factors are and what the level of influence is on these structural parameters in a particular situation. This way, this research is an addition to the empirical value that socio-technical theories provides and not aimed at expanding the theory.

With regard to the practical relevance, this design-oriented research contributes to the redesign of the nursing teams of ZZG zorggroep in order to support the organization in complying consistently to reformed qualitative performance indicators based on new and adjusted laws. This results in providing ZZG zorggroep with recommendations for forming a solution to the perceived problems. Moreover, the mission of ZZG zorggroep is to “sustainably

contribute to the health of people resulting in clients experiencing a meaningful and qualitative good life. Through working together ZZG zorggroep tries to help clients (re)gain trust in their own ability to give direction to their own lives” (ZZG zorggroep, 2015, p. 4). By proposing an alternative structure that solves the perceived problems, this research contributes to the facilitation of carrying out their mission statement. In addition, this research supports ZZG zorggroep through offering insights for redesigning the organizational structure in order to comply to the new and reformed laws concerning homecare and thus to the functional requirements authorized by healthcare insurance organizations. On a more macro-level, this should contribute to the perceived transition in the healthcare sector in The Netherlands, which contributes to the ultimate societal goal entailing qualitative improved care for Dutch citizens. Conclusively, the results of this research might hold utility for other organizations, confronted with similar structural problems, thereby building awareness of the added utility socio-technical theories offer among healthcare organizations.

1.4 – Thesis outline

The remainder of this research is structured in the following way. First of all, a theoretical foundation is needed in order to follow through the steps of the diagnosis and design, and thus determining what the functional requirements, structural parameters and contextual factors are (figure 1.1). Chapter two is devoted to establishing a fundamental argumentation for the perspective that the theoretical lens provides. First, the service of homecare is described and defined, sketching the elements that characterize the homecare sector. This is followed up by a critical evaluation of multiple organizational design theories. Next, De Sitter’s (1998) IOR approach will be elaborated on, as well as potential shortcomings. Lastly, practical design principles for redesigning on a micro-level are provided by the theory of Kuipers, van Amelsvoort and Kramer (2010). In order to connect these theories to homecare, they are assessed on the level of utility it provides in achieving the goals of the Triple Aim in healthcare (Berwick et al., 2008). Moreover, theories on generic contextual factors are elaborated on, providing an initial impression on what these factors are. Subsequently, in the third chapter, concerning the methodology that is chosen for collecting empirical data for the diagnosis and input for design, an explanation is given on the scientific design-oriented research approach with a description of the organization and adequate forms of data collection and analysis. In this research, confidential documents are derived from the organization, which entail business cases, evaluation reports on earlier interventions and quantitative and qualitative diagnosis regarding the demand of care and quality requirements of the care delivered. Moreover, the

current structure is diagnosed through conducting interviews with multiple employees of ZZG zorggroep. Additionally, the (theoretical) desired values of the alternative structure are discussed through interviews with healthcare professionals in the field and operating and strategic managers of ZZG zorggroep. This chapter is concluded by the discussion on the ethics and integrity of the collection of data.

Next, theory and empirical data is needed to conduct the diagnosis of the current organizational structure and form recommendations with regard to the alternative structure. First, chapter 4 is devoted to analysing and diagnosing the current organizational structure of the nursing teams in Nijmegen. Here, a diagnosis is established about 1) the relevant problematical functional requirements, by determining the actual and desired values and 2) the current values of the current and desired structural parameters influencing the structure in fulfilling the functional requirements. Second, chapter 5 is devoted to analyse the desired redesign of the alternative organizational structure of the nursing teams in Nijmegen. Here, based on empirical and theoretical material, it is analysed in which way the structural parameters should change, given the presence and influence of contextual factors. This way, an argumentation is established on why this new structure will comply to the performance indicators and thus the functional requirements, solving the perceived problems. Conclusively, the conclusion and discussion marks the last chapter of the research. Here, the main findings and the answering of the research question are elaborated on, as well as the provision of recommendations based on the outcomes of this research. In addition, a reflective part is present, elaborating on the role of the researcher and recommendations for eventual further studies, as well as the potential shortcomings and limitations of this research.

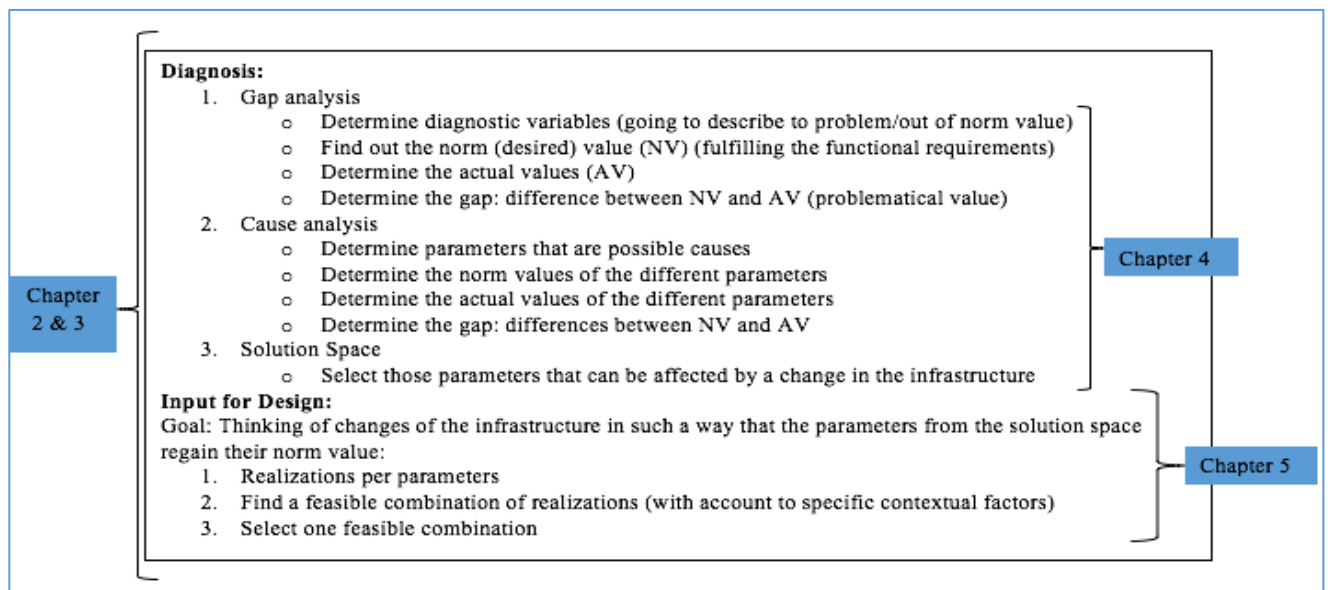


Figure 1.1 – Thesis outline (adjusted from textbox 1.1)

Chapter 2 – Theoretical Background

In this chapter a theoretical lens with regard to the diagnosis of the current structure and the input for design of the alternative structure is established (see figure 1.1). Relevant academic knowledge is needed in order to determine problematical values and parameters with the current structure and establishing the solution by means of forming a recommended alternative structure. In order to obtain sufficient scientific background knowledge forming an answer to the research question, a literature study is conducted. This chapter develops the theoretical lens, reflecting on the literature study and providing an outline of the most relevant theoretical concepts, supported by other, pertinent, literary works in that particular scientific field. Additionally, this chapter establishes the theoretical scope of the structure that is susceptible for change and provides theoretical means for the way this change could be achieved.

Firstly, based on the theory of Berwick et al. (2008), a description is provided on which healthcare goals should be attained by the alternative organizational structure. More specific, homecare is defined and an elaboration is given on the service and the goal of providing it. Second, three design theories are critically evaluated and assessed on usability in this research. These theories are Mintzberg's (1980) configurational approach, lean production approach of Womack and Jones (2003) and the disruptive innovation theory of Christensen et al. (2009). Third, the essence of De Sitter's (1998) IOR is elaborated on, as well as the level of practical utilization for this research. Furthermore, potential limitations of the concept are addressed. Lastly, in order to provide theoretical means to redesign on a more micro-level of the organization, the modern socio-technical theory of Kuipers, van Amelsvoort and Kramer (2010) is examined, building further upon the line of thought that IOR offers. Throughout the chapter, links are made to the subject of this research, providing a deeper understanding of what the theoretical lens offers in relation with practice. Moreover, the relationship between contextual factors and the organizational structure is determined. Conclusively, a best practice example of integrally designed homecare teams is given by addressing the perspective of Buurtzorg, an organization providing homecare throughout The Netherlands, designed along the lines of IOR and MST.

2.1 – Triple Aim and homecare

In order to know what is of interest in a homecare redesign, it is of importance to gain insights on the service and the goal of providing it. Firstly, it is of importance to define homecare and generally describe the clients and the demand for care. Elissen (2013) writes that,

in The Netherlands, around two-thirds of persons aged 65 years and older suffer from one or more chronic diseases (multi-morbidity). Of all homecare delivered, around 60% is for clients with a chronic disease. The other part consists of short-term homecare for clients who have been hospitalized and are rehabilitating (Peeters, 2015). Genet et al. (2012, p. 9) define homecare as: *'any care provided behind someone's front door or, more generally, referring to services enabling people to stay living in their own environment'*. A distinction is made between two types of homecare. Informal homecare entails care delivered by direct relatives or neighbours, while formal homecare is provided by professional caregivers (Peeters, 2015). Furthermore, different types of services are provided by functionally different organizations. First, domiciliary care entails low-complex activities such as housekeeping, doing groceries and transportation. Second, the provision of personal care, implying assistance with daily activities such as dressing and washing. Lastly, nursing care, which includes medical assistance with dispensing medicine and changing stomas and urinal bags (Genet et al., 2012; Peeters, 2015). With regard to improving the experience of individual care, the number of different professionals treating the client on a daily basis is a variable indicating the experience perceived (Nandram, 2014). Clients prefer only one or two professionals daily, implying the need for integrated teams, covering all sorts of homecare activities. These activities are provided by team members that have a different background in education (Genet et al., 2012). Genet et al. (2012) distinguishes seven groups of professionals in the provision of homecare:

Domiciliary Care

- Domestic workers with no specific training; domestic work
- Auxiliary helps (level 1): No training, but one-year vocational training available; household work plus a signalling function.

Personal Care

- Home help (level 2): Two years vocational training; involved in personal caring tasks, may be involved with household tasks.

Nursing Care

- Certified nursing assistants (level 3): Three years vocational training; involved in caring, some household tasks and drawing up and evaluating care plans. Helps with basic nursing such as catheters.
- Nurses (level 4): Three years vocational training; involved in nursing, planning and coordination of care.
- Nurses (level 5): Four years (higher) vocational training, involved in technical nursing and supervision of other homecare professionals.

- Nurse specialists (master level): Academic education at a master's level; involved in independent treatment and follow-up of specific (chronic) conditions.

Moreover, the Dutch healthcare sector is shifting from a provider-oriented organization of care towards a system that places the clients with their needs more central (Goodwin et al., 2011). This is in alignment with the Triple Aim of Berwick et al. (2008), providing goals in the healthcare resulting in high-value care. These goals entail: 1) Improving the individual experience of the care received, 2) improving the quality of care received and 3) reduce the per capita costs of care for populations. Berwick et al. (2008) argue that a redesign of primary care services and structure is needed in order to achieve the goals of Triple Aim. Moreover, according to Berwick et al. (2008), embedding evidence-based, care system (re)designs that achieve all aims at once will solve the perceived problems.

2.2 – Critical evaluation of design theories

The configurational approach of Mintzberg (1980) offers five configurations for organizations consisting of several elements. First, an elaboration is given on the parts of each configuration, such as the strategic apex, operating core and the middle line. Second, the fitting coordination mechanisms of these configurations, for instance mutual adjustment and standardization of work processes. Third, the design parameters, as in unit size, unit grouping and job specialization. Lastly, Mintzberg (1980) includes the contingency (contextual) factors such as the age and size of the organization and the environment. The elements differ with each organizational configuration. Mintzberg (1980) states that effectiveness is the essential variable of organizations and no further definition is given. This value should be high and is attained through internal and external fit, based on empirical research as well as logical reasoning (Khandwalla, 1977). However, the configurational approach lacks a clear prescription on precedence rules with regard to the organizational design. Ansoff (1991) underlines this by stating that Mintzberg (1980) fails in differentiating between prescriptive and descriptive statements, as well as defining the context for his prescription. Mintzberg (1991), in turn, argues that the development of strategy and design is a creative process for which there are not formal techniques, due to environmental complexity. Moreover, the configurations developed by Mintzberg (1980) are descriptive in nature. With regard to the theoretical foundation of this research, a theory with a prescriptive nature concerning the design of organizational aspects is required, making the configurational approach ineligible to use for the perceived design problems.

Another design theory is the lean production approach, developed by Womack and Jones (2003). This approach states that low waste (caused by overproduction, inventory, waiting times, etc.) and high customer value (designing the organization's processes from a customer perspective) are the essential variables that should be attained. It shows similarities with sociotechnical system design, implying separate units of preparation, execution and control, self-regulation of teams and the organization around parallel product flows (Dankbaar, 1997). Through specifying value streams, the design of flows, making production cells, reflection and assigning decision-making power, these essential variables are attained (Womack & Jones, 2003). However, two critical remarks are present with regard to the theory's appropriateness for this research. First, lean production stems, as the term suggests, from classic production organizations and more specifically the automobile industries (Womack & Jones, 2003). This way, the approach is based on a completely different sector with alternative stakeholders and contingencies in comparison to the healthcare sector, resulting in a required reinterpretation and reconceptualization of useful elements if included in this theoretical lens. Although the workload implied by this argument can be overseen, but, next to this, lean production profoundly focuses on efficiency resulting in making trade-offs with respect to the quality of work. Lean production is sensitive to over-efficiency, through eliminating waste and pursuing maximum customer value, at the expense of fatigue and stress among organizational members. This undermines sociotechnical principles and therefore is the decisive argument for not including the theory in this research.

Christensen's et al. (2009) theory of disruptive innovation supports the line of thought of the Triple Aim and offers such a perspective on redesign. In their book, Christensen et al. (2009) argue about the level of complexity and cost of products and services in the healthcare sector, indicating that a higher level of affordability and accessibility is needed in order to fulfil the societal value of health. Through this disruptive innovation, as Christensen et al. (2009) termed it, three elements of regulations and standards exist that facilitate such a disruptive change. Firstly, newer technologies enable simplifying by solving problems that were unstructured and intuitive prior. Secondly, in order to profitably bring these simplified solutions to customers, low-cost and innovative business models are needed, leading to more affordability and accessibility. Lastly, by means of continuously reinforcing these models, an economically coherent value network is necessary. Focusing more on the organizational designing segment of the theory, three business models are distinguished: 1) Value Adding Processes (VAP), 2) Solution Shops and 3) Facilitated Networks. VAP offer a straightforward solution to known problems, adding value in the process between input and output. Solution

Shops, on the other hand, diagnoses and solves unstructured problems, based on expert's knowledge. Facilitated Networks are enterprises in which people exchange experiences or knowledge with each other (Christensen et al., 2009). Furthermore, Christensen et al. (2009) elaborate that each business model consists of four elements:

1. The value proposition – a product or service that can help targeted customers do more effectively, conveniently and affordably a job they've been trying to do.
2. The resources – means that are required to deliver the value proposition to the targeted customers.
3. Processes – ways of working together to address recurrent tasks in a consistent way (e.g. planning).
4. Profit formula – financial performance needed to profitably cover the costs of the resources and processes that are required to deliver the value proposition

Each business model differs regarding the elements described above. As Christensen et al. (2009) describe, mixing these business models is not desired, because this results in more organizational complexity, restricting products and services from being accessible and affordable. In addition, mixing will also lead to lower productivity and quality and higher overhead costs, due to inefficient regulation of the primary process (Christensen et al., 2009).

Although, providing a sound perspective on achieving goals on the Triple Aim, the disruptive innovation approach lacks specificity with respect to the provision of theoretical means for the actual redesign of healthcare organizations. Moreover, the definition of disruptive innovation is broad, not stating boundaries of the concept (Tellis, 2006). This leads to the possibility to interpret this approach in multiple ways, undermining a universal approach in redesigning healthcare organizations. Additionally, the approach of Christensen et al. (2009) are based on the healthcare system of the United States, which is fundamentally different from the Dutch healthcare system (Goodwin et al., 2011). This way, this theory provides usability for a macro perspective, underlining the desired transition in the healthcare sector and the goals of Triple Aim, but lacks specific means and principles for redesigning healthcare organizations.

A prescriptive organizational design approach that offers principles for redesign and is suitable for a theoretical foundation of this research is De Sitter's (1998) IOR approach. This sociotechnical approach includes designing in an effective and efficient way, while taking the organizational members into account. Additionally, this approach describes and prescribes clear definitions, optimal rules and precedencies for (re)designing organizations and thus achieving the essential variables. Moreover, the inclusion of internal as well as external variability makes this an open system design approach, taking multiple factors in account. In line with the IOR

approach, the Dutch MST approach brought by Kuipers et al. (2010) focuses on the primary process and specifies what rules, principles and criteria are sufficient for redesigning. These theories combined form a coherent base for solving complex organizational design problems and will be evaluated and elaborated.

2.3 – The IOR approach

De Sitter's (1998) IOR approach provides more specific means for redesigning an organization and is based on sociotechnical design thinking. In sociotechnical system design thinking a distinction is made between the 'socio' (soft) dimension of the system, consisting of human resources and culture and the 'technical' (hard) dimension of the system, including structure and systems (Kuipers et al., 2010; De Sitter et al., 1997). It should be noted that these dimensions are always intertwined and that they do not exist on their own (Kuipers et al., 2010; De Sitter et al., 1997). De Sitter's (1998) theory provides means for (re)designing organizational infrastructures acknowledging environmental requirements (Kuipers et al., 2010). From a system's perspective, an organization is a system with a set of elements (goal-setting activities, designing infrastructural conditions) with the objective to realize transformation processes. Additionally, the organizational infrastructure is a condition for regulating and realizing these transformations as shown in figure 2.1 (Achterbergh & Vriens, 2010).

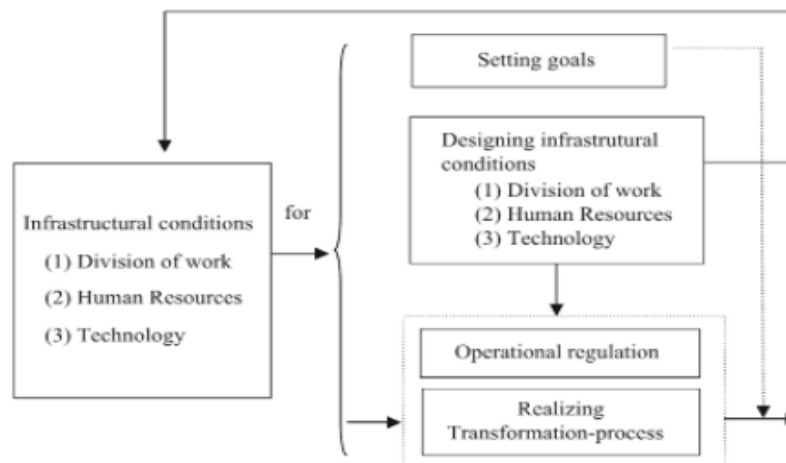


Figure 2.1 – Infrastructure as a condition for regulating and realizing transformations (Achterbergh & Vriens, 2010, p. 15)

In IOR, based on Ashby's (1958) cybernetics, De Sitter (1998) forms rules and principles for designing appropriate distribution for tasks, in order to achieve organizational essential variables. Between tasks (dependent) relationships exist, which are required to

perform their activities in such a way that these organizational essential variables are achieved. In terms of De Sitter (1998), an organizational structure is defined as: “the grouping and coupling of transformations into tasks and the resulting relations between these tasks relative to order” (De Sitter, 1998, pp. 93, 100 and 101). In his approach, De Sitter et al. (1997) argues that more relationships in this network of tasks (the organizational structure), lead to a higher chance of disturbances, restricting the purpose of the task due to more interdependency. Additionally, a higher variability of these relationships also causes an increase in the probability of disturbances, because one has to deal with multiple and different contents in one task (De Sitter et al., 1997).

Furthermore, it is possible to decompose a transformation task in parts resulting in dividing it in two sub-transformations, where each sub-transformation is the half of the full transformation (Achterbergh & Vriens, 2010). Dividing tasks in parts is also termed vertical decomposition (segmentation). In addition, a task is also horizontally decomposable (parallelization), resulting in decomposition in aspects, as shown in figure 2.2, as taken from De Sitter et al. (1997, p. 511). This entails a whole transformation decomposed in sub-transformations, where each individual sub-transformation covers the begin to end state (which leads to two or more parallel sub-transformations). When dividing tasks into parts, more relationships between sub-transformations occur, leading to a higher probability of disturbances. It should be noted that transformations are often divided in parts and aspects, simultaneously (De Sitter, 1998).

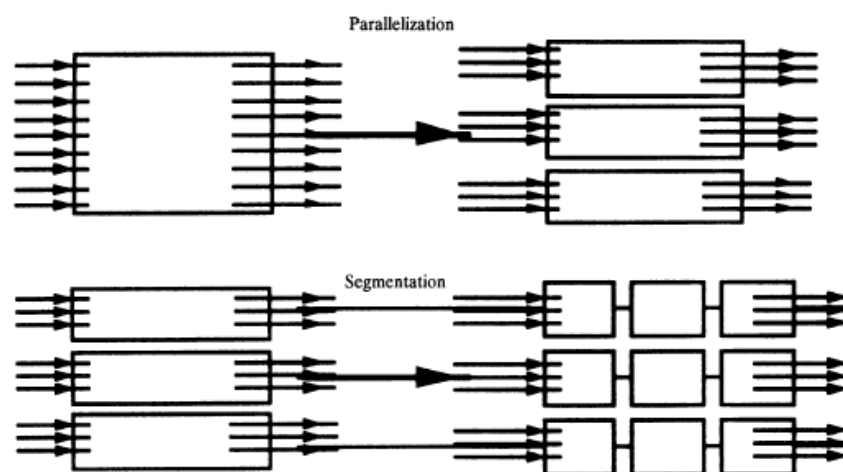


Figure 2.2 – Division of tasks in aspects and parts (De Sitter et al., 1997, p. 511)

Furthermore, with regard to aspects, a division in transformations is possible in regulatory and operational aspects (Achterbergh & Vriens, 2010). Operational aspects of transformations are concerned with actual execution of the transformation process (e.g. fabricating a chair), while

regulatory aspects concerns managing the disturbances that the operational aspect is confronted with (figure 2.3).

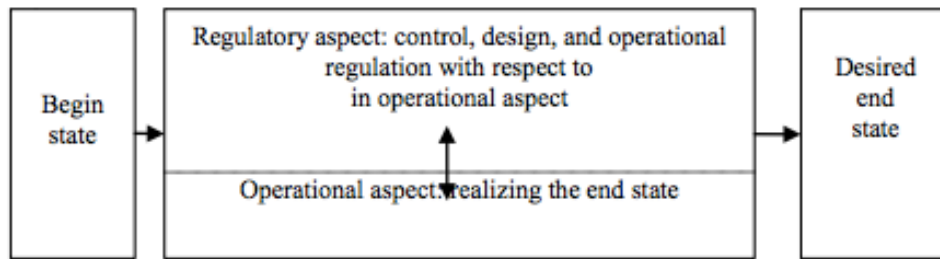


Figure 2.3 – The operational and regulatory aspect of a transformation (Achterbergh & Vriens, 2010, p. 235)

As well as dividing in parts, dividing transformations in operational and regulatory aspects creates more relationships increasing the probability of disturbances. From logical reasoning, these disturbances could be prevented by adding sufficient regulatory potential in the operational tasks, such as autonomous teams have. Furthermore, in order to decrease the probability of these disturbances, De Sitter et al. (1997) emphasizes that two options exist with regard to optimizing organizational structures. First, by attenuating the probability of disturbances and secondly, by amplifying the regulatory potential. De Sitter et al. (1997) term this controllability and relates to both effectiveness and efficiency of an organization.

Only if the controllability of the organization is ensured, the essential variables are achievable. De Sitter (1997) distinguishes three essential variables for an organization, specified in external and internal functional requirements. Quality of the organization, quality of work and quality of working relations are the essential variables which indicate if an organization is capable for survival (De Sitter et al. 1997; De Sitter, 1998; Achterbergh & Vriens, 2010; Kuipers et al., 2010). In order to fulfil the essential variables, the external functional requirements should be met, which in turn, are met by fulfilling the internal functional requirements.

The first essential variable is the quality of the organization, which consists of three external functional requirements: 1) order flexibility, 2) control over order realization and 3) potential for innovation. The second essential variable is the quality of work entailing meaningfulness of jobs and the possibility to deal with work-related stress. Lastly, the quality of working relations entails the effectiveness of communication throughout the organization. For instance, an internal requirement that fulfils the external requirement ‘control over order realization’ is the organizations ability to establish reliable production and production time.

Table 2.1, as taken from Achterbergh and Vriens (2010), reflects all the external and internal functional requirements in order to fulfil essential variables.

Quality	External functional requirements	Internal functional requirements
Quality of organisation	Order flexibility	Short production cycle time Sufficient product variations Variable mix of products
	Control over order realisation	Reliable production and production time
	Potential for innovation	Effective control of quality Strategic product development Short innovation time
Quality of work	Low level of absenteeism	Controllable stress conditions
	Low level of personnel turnover	Opportunities to (1) be involved, (2) learn, and (3) develop
Quality of working relations	Effective communication	Shared responsibility
		Participation in communication

Table 2.1 – Essential variables, external and internal functional requirements defined by De Sitter (1998), taken from Achterbergh and Vriens (2010, p. 242)

De Sitter (1998) states that a designer's objective is to design an organizational structure that supports in meeting all requirements at the same time. Thus, potential (re)designs should be evaluated by validating that it fulfils internal, hence external functional requirements (Achterbergh & Vriens, 2010). In his IOR approach, De Sitter (1998) provides seven structural parameters for (re)designing the design of an organizational structure in order to meet the internal functional requirements and ultimately the organizational essential variables. A parameter is defined as "a variable having influence on the behaviour of a system" (Achterbergh & Vriens, 2010, p. 247). In addition, structural design parameters allow expressing the influence of disturbances and regulatory actions on essential variables. These design parameters are divided in two groups of three parameters, where one group covers the production structure (the grouping and coupling of operational transformations and their relation to orders) and the second group describes the control structure (the grouping of regulatory transformations into tasks). Between these groups, the fourth structural parameter describes the level of separating the operational and regulatory transformations. De Sitter's (1998) seven structural design parameters are as follows:

1. The level of functional concentration – referring to the grouping of operational tasks with respect to others.
2. The level of differentiation of operational transformations – referring to the level of division between making, preparing and supporting activities.

3. The level of specialization of operational transformations – referring to the level of division of tasks into short sub-tasks.
4. The level of separation between operational and regulatory transformations – referring to the level of division between operational and regulatory activities.
5. The level of differentiation of regulatory transformations into aspects – referring to the level of division between strategic regulation, regulation and operational regulation.
6. The level of differentiation of regulatory transformation into parts – referring to the level of division between monitoring, assessing and acting parts.
7. The level of specialization of regulatory transformations – referring to the level of splitting up regulatory transformations into small sub-transformations.

With regard to these design parameters, De Sitter (1998) introduces design principles, which indicate the value the parameters should attain (and thus what an organizational structure should look like) in order to achieve the internal and external functional requirements, realizing the essential variables resulting in a viable organization (Achterbergh & Vriens, 2010). De Sitter (1998) formulates one heuristic with regard to the value of the parameters, implying that the values of the seven parameters should be as low as possible, leading to maximum controllability and thus an adequate structure complying to the functional requirements and fulfilling the essential variables. High parameter values lead to more relationships and variability in relations between tasks. This is undesired, because this results in a higher probability of disturbances and lower potential to regulate these disturbances, which restricts the fulfilling of internal and external functional requirements. A full overview (as taken from Achterbergh & Vriens, 2010) of the effects of low parameter values is displayed in table 2.2.

Parameter	effect	Attenuation/ Amplification
Functional concentration	Decreased variability	Attenuation
Differentiation of operational transformation	Decreased number of relations	Attenuation
Specialization of operation transformation	Decreased number of relations	Attenuation
Separation	Decreased number of relation; increased regulatory potential	attenuation Amplification
Differentiation of regulatory transformation (strategic / design / operational)	Decreased number of relation; increased regulatory potential	attenuation Amplification
Differentiation of regulatory transformation (monitoring / assessment / intervention)	Decreased number of relation; increased regulatory potential	attenuation Amplification
Specialization of regulatory transformation	Decreased number of relation; increased regulatory potential	attenuation Amplification

Table 2.2 – Effects of low parameter values (Achterbergh & Vriens, 2010, p. 258)

De Sitter (1998) acknowledges that limitations exist in achieving lower parameter values. Organizations are confronted with multiple interests from stakeholders and

uncontrollable contextual factors influencing the values. Practical arguments such as obligated shared resources may threaten the autonomy of flows, making it impossible for parallelizing order flows. Additionally, budget and time are also practical arguments for not reaching the lowest parameter value. Lastly, integrated tasks may become too complex through achieving low parameter values making it nearly impossible to find adequate and qualified employees. De Sitter (1998) emphasizes that given the circumstances of the system and its environment, lowest values possible should be attained.

In addition, De Sitter (1998) acknowledges that a limitation of this approach is the choice of scope for a redesign. The boundaries of the system that is eligible for redesign could be endless. For instance, if at first a regional department of a healthcare organization (e.g. homecare in Wijchen) is redesigned, then the next holistic step would be redesigning all regions of homecare provided by the healthcare organization (for instance Nijmegen, Rijk van Nijmegen and Wijchen). Furthermore, holistically, all departments of the healthcare organization could be redesigned conform an IOR approach. Redesigning on a macro-level continues endlessly, according to De Sitter (1998). Carayon (2012) supports this argument, making it more specific stating that the healthcare systems are “fuzzy and ill-defined” (Carayon, 2012, p. 3), implicating an overlap with other systems and thus increasing the complexity.

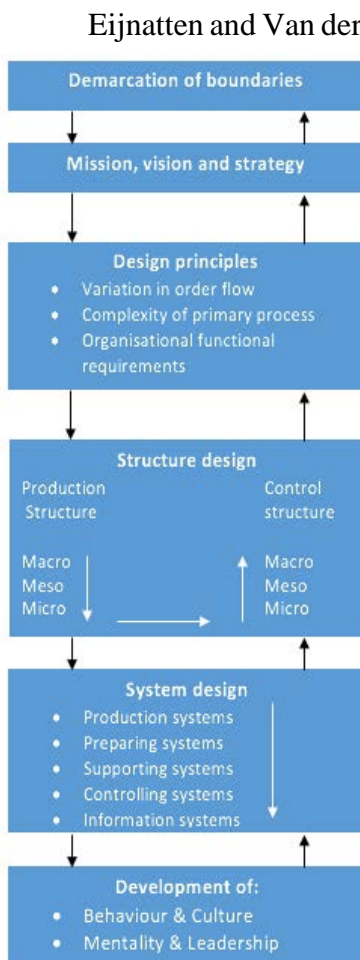
De Sitter et al. (1997) state that IOR is “concentrated on action to improve the flexibility of organizations faced by an increasingly complex environment” (De Sitter et al., 1997, p. 529). The healthcare sector is such an environment (Peeters, 2015). If essential organizational variables are attained by a healthcare organization, this implies that the internal functional requirements are met. With regard to the quality of the organization, this entails a lower cycle time of clients enabling professionals and nurses to treat more clients with more care. In a homecare organization, a variable mix of products (services) enables the organization to offer a variety of services, for instance homecare and supervised living for the elderly combined. Furthermore, the control over order realization entails the capability of a healthcare organization to prevent delays with regard to treating clients. Moreover, with low values on the structural parameters, healthcare organizations enable, through their structure, potential for innovation.

Concerning the quality of work, low parameter values result in lower stress conditions and higher involvement of professionals. In addition, it enables professionals to learn and develop more skills. With the current shortage in homecare professionals and students expecting a high workload concerning this job (Van Iersel et al., 2016), it is of utmost important that the stress conditions are controllable in order to attract more students. Lastly, the quality

of working relations improves the participation in communication and the responsibility of employees. This way, transformations (such as replacing a stoma bag) are clearly demarcated and leaves no room for misunderstanding who is responsible for completing the transformation.

De Sitter's (1998) essential variables enables organizations to pursue the Triple Aim and thus the governments' objectives. Due to more room for medical professionals to perform their tasks, they perceive less pressure resulting in more time and attention for the clients, which contributes to the clients' experience for receiving care. Quality of the organization as an essential variable directly supports the quality of care, due to lower cycle times and more latitude to evaluate the quality of transformations. Lastly, all essential variables combined contribute to reducing the per capita cost of care due to performing operational transformations in a more efficient and effective way. That way, less (monetary) resources are lost, which results in a decrease of costs.

2.4 – Towards practical redesign



Eijnatten and Van der Zwaan (1998) state that the weakest point of IOR is the low degree of elaboration of the implementation process. Although De Sitter (1998) provides more specific design principles in comparison to Christensen et al. (2009), it profoundly provides more theoretical means instead of practical implications for organizational designers. Kuipers et al. (2010) incorporate the IOR approach in their book and extend it with more focus on the production structure and specifies what rules, principles and criteria are sufficient for redesigning. This Modern Sociotechnical Theory (MST) thus claims an essential position, stating that the production system should be redesigned first, followed by the human conditions with regard to tasks definition, formations of teams and the required human capabilities (Van Eijnatten & Van der Zwaan, 1998). Kuipers et al. (2010) provide a model of an integral chain of organizational (re)design that is in line with the statement of Van Eijnatten and Van der Zwaan (1998).

Figure 2.4 - Integral Design Sequence (Kuipers et al., 2010, p. 282)

In order to define external tendencies which the organization should and should not take into account, Kuipers et al. (2010) start with the determination of boundaries (figure 2.4). The second phase is stating the mission, goals and strategy of the organization, thereby incorporating it in the redesign. The third phase, in line with second phase, is specifying which requirements the design should comply to with regard to the desired state of the primary processes. It should be noted that these design specifications should be formulated with structural independency. This way, the (re)design is based on an open view towards alternatives (other design scenario's) and prevents an implicit and biased decision towards structural solutions. In addition, the specification of order flows (transformations) is of importance, which can be designed on a variety of characteristics such as 1) product (service) technical, 2) customers or market segments, 3) geographical and 4) supplier based (Kuipers et al., 2010). It is easy to define a client as a consumer of healthcare products, but Kuipers et al. (2010) state that it might be better to define clients as the order flow. This is of importance, because it ensures that the transformation process is built around the client. Furthermore, in the design specification phase, it is of importance to describe activities as preparing, performing and supporting processes that are required for the desired redesign. Lastly, within the design specifications, the essential variables of De Sitter (1998) are taken into account as well.

The next phase is the actual building of an organizational structure, starting with a top-down design of the production structure, followed up with a bottom-up design of the control structure. This ensures insight in the level of sufficient regulatory potential needed in order to cope with disturbances. More specifically, it shifts regulatory potential from the macro and meso level towards the micro level, resulting in teams with autonomous regulatory potential (Kuipers et al., 2010). The macro level entails designing whole systems based on variety of order flows which are smaller than 200 persons. At a meso level, within the order flow, teams are designed between twenty and 200 persons. Just like the macro level, it is of importance to parallelize and segment these teams based on order flows. Furthermore, at the micro level a closer look is taken to personally assign tasks to team members with regard to their competencies. It is argued that the most optimal teams should consist between four and twenty persons and between eight to twelve persons most ideally (Kuipers et al., 2010). If larger than twenty persons, a high chance exists that teams naturally are less effective and efficient and split-up due to the lack of overview and the formation of sub-groups. If lower than four persons, 33% of the team capacity is absent when one person is not present due to, for instance, illness. Regarding the design of the content of tasks in teams a designer should take the following into account (Kuipers et al., 2010):

- Sufficient variety in the task
- Demanding on an employees' competencies with learning possibilities
- Should have sufficient and meaningful contribution towards the total result
- Sufficient cycle time for executing regulatory activities
- Sufficient possibilities to communicate with other team members

Kuipers et al. (2010) acknowledge that differences between competencies of employees exist and therefore these specifications should be considered in alignment with the capabilities of the selected employees. The micro level of the control structure concerns the regulatory potential of teams regarding the functional requirements. At the meso level, the question rises what regulatory potential team leaders need and how to coordinate adjustment between teams. The macro level is concerned with the level of regulatory potential that is needed in relation to strategy and adjustment between the macro order flows.

The fifth phase is the implementation of supporting systems based on the organizational structure. Kuipers et al. (2010) distinguish five categories of organizational systems: 1) production systems, 2) preparing systems, 3) supporting systems, 4) control systems and 5) information systems. These systems support routines in a technical way (for instance ERP) or in a social way (behavioural procedures). The last phase is the continuous improvement and development of behaviour, mentality, culture and leadership. This organizational renewal ensures the viability of a sustainable design. The Integral Design Sequence by Kuipers et al. (2010) also has a reflective and evaluative aspect, illustrated by the loop back (figure 2.4). Every phase is evaluated with regard to the whole sequence, implying that all phases are in line and thus integral. Though, it should be noted that the knowledge with regard to the fifth and sixth phase are not utilized in this research. These phases do not provide relevant knowledge for answering the main question of this research. Whereas the other phases provide relevant knowledge on the content of redesigning a structure. For instance, the principles about the autonomy of teams through, for example, self-regulating activities explained in the fourth phase is relevant knowledge for answering the sub-questions and thus the research question. As written before, this research does not execute a full structural redesign, but only provides recommendations as input for a structural redesign. Therefore, it is permitted to use only elements of the design sequence as a base of knowledge for answering the research question.

The MST design sequence supports the line of thought of Triple Aim, similar to IOR. When designing the organizational structure along the lines and principles of MST, it facilitates the healthcare organization to achieve the objectives of Triple Aim. As written earlier, the client becomes the order flow of the organization, therefore building the organizational structure

around them. In addition, through designing homecare teams conform the principles of MST, meaningful jobs are created with sufficient room for regulatory potential, implying autonomous teams. The probability of disturbances decreases, resulting in achievement of the organizational essential variables and thus higher quality and better experience of care received. Homecare teams are multidisciplinary with different functions, making the design of these teams more complex (Bitter et al., 2013). The IOR approach and MST are able to provide an adequate answer for such a design complexity.

2.5 – Contextual factors

With a structural redesign, it is of importance to acknowledge factors that are outside the organizations' system and sphere of influence. These contextual (i.e. environmental) factors may affect the design criteria in a negative way, threatening both the ability to comply to functional requirements, as well as the ability to fulfil the essential variables, and thus negatively affects the structure's performance (Child, 1972). Walker, Armenakis and Berneth (2007, p. 763) define contextual factors as: "the pre-existing forces in an organization's external and internal environment". External contextual factors include competitive pressure (e.g. from other organizations), governmental deregulation (new governmental policies) or legislative (e.g. new or adjusted laws) and technological (e.g. innovative developments) changes (Walker, Armenakis & Berneth, 2007). Internal contextual factors include the level of professionalism, managerial attitudes toward change, managerial tension, technical knowledge resources and slack resources. It must be noted that an organization's prior change history influences internal contextual issues. Miles, Snow and Pfeffer (1974) argue that structure, next to strategies, processes and technologies, must be adjusted in order to meet changing environmental demands. Organizations are open social systems susceptible for change, resulting in coherent fluctuating boundaries (Miles, Snow & Pfeffer, 1974). Through reforming and monitoring, the systems boundaries should be consistent with the problem under investigation. Aldrich and Herker (1977, p. 228) underline this by stating that boundary spanning activities are "the critical link between environmental characteristics and organizational structure, with the further stipulation that organizations face multiple environments and thus can have a variety of boundary roles of units with different structural characteristics". Moreover, Tung (1979) describes that, based on the environments complexity, contingencies differ, which has a significant impact on the organization structure. Next to environmental complexity, Child (1972) argues that environmental variability also has a significant role on the organization structure. This environmental variability pattern of change implies the frequency of changes in

relevant environmental activities combined with the degree of difference involved at each change (Child, 1972). Therefore, the formation of the organizations' structural boundaries is susceptible to the complexity, as well as, the variability of a specific environment and should be accounted for.

2.6 – Buurtzorg: a best practice example

Buurtzorg is a network organization that has proven that these modern socio-technical design principles, forming autonomous healthcare teams, work in practice (De Blok & Pool, 2010). In three years, Buurtzorg built 215 autonomous teams consisting of 2100 healthcare professionals (De Blok & Pool, 2010). Four years later, in 2013, this number has grown to 6,500 professionals in 630 teams (Nandram, 2014). An average team of professionals consists of twelve members. If the number of clients grows and therefore the team expands too much (exceeding 12-20 members, underlining the principles of Kuipers et al. (2010)), it is divided in two separated teams with their own responsibility for the clients and the collaboration with general practitioners, other professionals and informal care by relatives (De Blok & Pool, 2010). This way, the perceived workload stays equal, resulting in constant attention and focus towards clients, improving the experience of the care received. Furthermore, the teams are responsible for their own preparing and supporting transformations, such as planning and administration. Some administrative and financial tasks are outsourced to the umbrella-organization of Buurtzorg, relieving this burden and enabling teams to focus solely on the client (De Blok & Pool, 2010). Due to fulfilling the Triple Aim, Buurtzorg provides a best practice example for other healthcare organizations to follow.

With this theoretical lens, regarding Triple Aim, the design principles that the IOR approach offers, the design rules based on MST, an overview of relevant contextual factors influencing the parameters and a best case example from Buurtzorg, sufficient theoretical background is acquired to diagnose the current structure of region Nijmegen in chapter four (figure 1.1). According to this theoretical lens, the parameter values of the nursing teams should attain the lowest value, given the present contextual factors. Moreover, it is clear which functional requirements might be present in organizations and in which way they could be attained by lowering the current parameter values. Additionally, with the MST design sequence, enough theoretical background is acquired to form input for an alternative structure of region Nijmegen. However, in order to fully answer the research question, adequate empiric knowledge is needed, with regard to the current organizational structure and the desired

alternative structure, which is analysed in chapter four and five. Moreover, the empirical knowledge gained from the collected data is also needed in order to analyse the influence of particular contextual factors on the structural parameters, affecting the desired alternative organizational structure. Before the analysis, the research design, data collection and research ethics will be elaborated on in the next chapter.

Chapter 3 – Research Methodology

A research methodology section is necessary for guaranteeing the collection of relevant data with respect to the empirical functional requirements, structural parameters and contextual factors. In order to determine which empirical knowledge is requisite for the analysis of the current organizational structure and for the input of the formation of the alternative structure, this chapter elaborates on the methodology section of this research and consists of four parts. First, the design of the study is elaborated on, which explains the approach taken in relation to answering the research question. Here, a further explanation is given on the scientific design-oriented approach. Second, a more detailed overview of relevant characteristics and thus a thick description of the researched organization is given. Third, the chosen methods of data collection and analysis are specified. Conclusively, a critical examination is given on the way the data is handled by addressing the research ethics.

3.1 – Research design

This scientific research provides general knowledge for designing specific solutions for specific problems perceived by professionals in the field. An instrument to realize this objective is the D-D-I-E-cycle. As written in chapter one, the D-D-I-E-cycle consists of diagnosis, design, implementation and evaluation. In chapter four of this research, steps of the diagnostic part of the cycle are performed, based on the theory and empiric data. Here, the current organizational structure is diagnosed and analysed, exploring which problematical values exist. Subsequently, in chapter five of this research, input is given for the design step of this cycle. This implies a recommendation for redesign that solves the problematical values, based on the theory and empirical data of this research. The steps of implementation and evaluation are beyond the scope of this research and are therefore excluded.

Van Aken and Andriessen (2011, p. 16) term this sort of research ‘design-oriented scientific research’. This approach is divided in two flows, entailing 1) knowledge flows and 2) practice flows. Activities with regard to mobilizing existing knowledge and developing new knowledge characterizes the knowledge flows. The practice flows focuses on activities with regard to solving a practical problem through testing a design within a case (Van Aken & Andriessen, 2011). Both flows characterize design-oriented scientific research (an overview of both flows is provided in table 3.1). In design-oriented scientific research, the first step is mobilizing knowledge in order to solve a perceived problem in a specific situation. This practical solution results in the development of new knowledge. In addition, a continuous

balance between pragmatic relevance and scientific rigor is pursued in design-oriented scientific research (Van Aken & Andriessen, 2011).

Flow	Knowledge flow	Practical flow
Function	Mobilizing & developing knowledge	Solving problems & learning
Characteristics	Pursuing general knowledge	Connect with the specific problem
Activities	Research & analysing	Advising and intervening
Stance	Objective & independent	Convincing & dependent
Aim	Expand theories	Support practice

Table 3.1 – Design-oriented scientific research, divided in two flows (Van Aken & Andriessen, 2011, p. 2)

The aim of the knowledge flow in this research is to collect and develop knowledge with regard to the level of influence contextual factors have on structural parameters of a homecare organization. As written earlier, the scientific aim is to explain this influence in this particular situation and is achieved through the utilization of multiple methods of data collection such as interviews and documents. Yin (2009) argues that the use of multiple data collection methods leads to triangulation of the results, producing more accurate accounts enabling a more in-depth understanding. Further, it should be noted that in this research not all flows are pursued. This research does not aim to provide general knowledge for other organizations. Due to contextual factors, it is difficult to create general knowledge and statements on the outcomes of this research. This is also the case for expanding theories. As written in chapter one, this research does try to add to the empirical value that socio-technical theories offer, and not to expand the theory.

The practical flow of this research is to provide ZZG zorggroep with input for an alternative for the current organizational structure of homecare teams, in order to resolve the existing problems. Still, it should be noted that this research is not equal to the intervention aiming for the desired situation, but it mainly aims to assess why the alternative structure in this specific context, will lead to the desired results. Therefore, this research explores what an alternative design possibility might be that solves the problematical values for the nursing teams in Nijmegen, which differs from intervening.

3.2 – Description of researched organization

The researched organization is ZZG zorggroep. ZZG zorggroep provides homecare in Nijmegen and surrounding municipalities. As written earlier, ZZG zorggroep is divided in three regions: 1) Nijmegen, 2) Rijk van Nijmegen (adjacent municipalities) and 3) Wijchen, Maas & Waal. In 2015, the total clients treated extramurally was 3.023. Furthermore, ZZG employs 2.801 professionals across the field. These employee numbers include the homecare professionals. According to the annual reports, the total revenues of ZZG zorggroep in 2015 are €129.5 million. ZZG zorggroep is strategically positioned in a specific segment in the healthcare sector. The chosen strategic position is to provide high complex care for clients in the regions. In this sense, high complex care not only entails the provision of care activities with variety in level of technical difficulty, (e.g. simple tasks such as changing stoma bags, but also more specialized and complex activities such as palliative care) but in contextually dynamic client cases (e.g. dementia), explaining the high complexity of the delivered care. This strategic positioning also affects the desired organizational infrastructure for continuous homecare and has implications for, example given, the desired expertise of personnel or potential collaborations with other organizations.

In the annual report of 2015, ZZG zorggroep states that homecare professionals autonomously decide which sort of care a client is eligible for. This entails that close interaction with and knowledge about the client is needed, resulting in a more tailored approach towards the clients' demand. This research focuses profoundly on region Nijmegen and region Wijchen, Maas & Waal. Just like region Nijmegen, Rijk van Nijmegen employs a separate back-up team. At the start of 2017, region Rijk van Nijmegen conducted a qualitative and quantitative diagnosis and is about to test the infrastructural redesign that resulted from their diagnosis. After processing feedback, a pilot will be started and the new structure will be implemented accordingly. The way of organizing described in the intervention report of region Wijchen is a starting point for this research. Till 2011, region Wijchen also employed a back-up team. Here, multiple problematical variables were diagnosed. First, due to the current structure, the level 4 back-up nurses were not able to respond in the required timespan in thirty minutes. Working in a geographically expanded area is disadvantageous for the productivity and results in stress for the nurses. Second, an active back-up service was absent, implying that the current back-up nurses were called upon when needed. With respect to the required timespan, this forced back-up nurses to live near Wijchen. Third, the back-up team does not carry the responsibility of their own client group, implying a transferal of this responsibility between teams. From a socio-technical perspective, this indicates more interactions are needed which is susceptible for

disturbances. This led towards a redesign based on socio-technical principles where nursing teams are reformed and fully responsible for their clients around-the-clock. The back-up team was dissolved as a separate entity and their personnel and tasks were accommodated to the reformed nursing teams. Through this restructuring of the teams, the problematical issues were solved and the clients' experience of the care received increased, due to the nurses' continuous responsibility.

3.3 – Methods of data collection and analysis

This research utilizes multiple information sources, leading to triangulation and thus a deeper understanding of the researched subject and reinforcing rigor of the research (Yin, 2009; Bleijenbergh; 2013). First, in order to develop the current organizational context, confidential documents from regions Wijchen and Nijmegen are derived from the organization, providing quantitative and qualitative information with regard to the current organizational structure. The documents derived from region Nijmegen mostly concern the amount of delivered care by the back-up teams, divided in low and high complex care, district, planned and unplanned. Furthermore, regarding the reports derived from region Wijchen, an analysis is conducted providing insights on the following aspects. First, it grants an overview on the change processes in Wijchen. Second, it specifies the design approach used by ZZG zorggroep and the underlying line of thought when selecting relevant design requisites and can therefore be used as input for defining the essential variables in region Nijmegen. Lastly, this intervention was completed in January 2012, therefore it is possible to comprehend the effects of the intervention and use valuable insights with regard to the intervention process in Nijmegen.

In this research, semi-structured interviews are conducted because of the insights it offers with regard to the participant's behaviour, resulting in a deep understanding of their beliefs (Bleijenbergh, 2013). Semi-structured interviews are characterized by open questions which are formulated beforehand. Though, it is possible to add or leave out questions in order to emphasize on certain parts of the interview. Additionally, this enables the researcher to alter questions based on previously conducted interviews. Furthermore, the research questions are based on concepts derived from the theoretical background and the analysed documents. In this research, nine interviews are conducted with a duration of 30 to 60 minutes. The number of participants differs between one and two participants per interview. It should be noted that the attending participants are in a similar hierarchical position within the organization, which prevents limitation of speech during the interview. Next, each participant experiences the current utilization and the desired structure of the back-up teams differently, implying

reasonable grounds for relevant in-depth discussions. Moreover, different interview questions are formed, suitable for each unique interview. With the approval of the participants, the interview is recorded on tape and transcribed. Furthermore, in order to collect multiple perspectives on the current and an alternative structure, the participants are purposely selected and embody different functions in ZZG zorggroep region Wijchen and Nijmegen. Directive managers of both regions, homecare managers and several homecare professionals from the nursing team as well as the back-up teams are the units of analysis. Next, it should be noted that the participants are provided the freedom to withdraw from the research at any time. A detailed table is provided further on in this section (Table 3.2).

Interview	Attending person(s)	Region	Code
1	- Region Manager	Nijmegen	I01
2	- Manager Centre for Signals - Nurse from the back-up team	Nijmegen	I02
3	- Manager district care - Team coach district care	Nijmegen	I03
4	- Region support - Nurse homecare (team Nijmegen North)	Nijmegen	I04
5	- Specialist Elderly care	Nijmegen	I05
6	- Region Manager	Nijmegen	I06
7	- Nurse homecare (team Weezenhof)	Nijmegen	I07
8	- Manager supervised living	Nijmegen	I08
9	- Region Manager	Wijchen	I09

Table 3.2 – Unit of analysis

The used method of analysis in this research is a content analysis. Content analysis is characterized by the processing of large amounts of textual information by systematically categorizing it. This is achievable through open coding, followed by selective coding. Open coding is the process of breaking down, examining, comparing conceptualizing and categorizing data (Boeije, 2012). After a general categorization of all codes, a deduction to selective codes is the next step. This way, relevant information conducted from the interviews is measurable through comparison with theoretical and practical concepts, which enables the formation of an answer on the research question.

3.4 – Topic List

In order to guide the transition between theory and the formation of interview questions, a topic list is used (Table 3.3). These topics are the basis for the interview questions, guaranteeing a link with the IOR and MST theories and thus preventing a gap between theory and the practice of research. The topics used in this research are based on the theoretical framework that is provided in chapter 2. Moreover, each topic in an interview is related to the diagnosis of the current organizational structure and the input for an alternative structural redesign in a different way. First, topics are based on the essential variables of De Sitter (1998) which are outlined in internal and external functional requirements, attained by the low values of the structural parameters. These topics cover the object of the current structure and the alternative structural redesign, offering insights on the question “what to redesign?”. Second, a topic is established based on four of the six steps of the integral design sequence provided by Kramer et al. (2010), additional to the elements of task content and self-regulating tasks. This topic provides insights on the process of forming input for the alternative structure redesign, answering the question “how to redesign?”. Third, a topic is based on the contextual factors per region closely related to practice. The inclusion of this element in the interview questions is of importance in order to diagnose which contextual factors influences the structural parameters and in which way. Lastly, the Triple Aim of Berwick et al. (2008) is used as a background of the topics, ensuring that interview questions are covered by the desired objectives of the healthcare sector. This guarantees that the questions are related to the long-term goals in the healthcare sector. Moreover, it ensures that the effect of the proposed alternative structure contributes to the long-term goals as stated by the Triple Aim. It is connected to every topic, except the contextual factors per region due to the independency of these factors, making them ineligible for change.

An overview of the topics and their relationships with theory and practice is provided below in table 3.3. It should be noted that questions are only formed on relevant essential variables, functional requirements, contextual factors and structural parameters. During the interviews it is diagnosed which parts of these concepts are relevant. Therefore, the topics are used as a guideline for the interviews, leaving enough room to discuss problematical values. After the interviews are conducted, it becomes clear which topics are relevant and used for analysis. This results in a broad spectrum of interview questions, implicitly linked to the topics (see appendix I). For instance, questions are asked on the timeliness of back-up teams, referring to the topic of the internal functional requirement “a short cycle time”. An exception is made on questions about contextual factors, which are direct and explicitly asked. The interview

questions derived from these topics can be found in appendix I. Subsequently, the collected data is available in appendix II and III.

Author(s)	Topics	In what way related to diagnosis and alternative redesign?
<i>De Sitter (1998)</i>	Essential Variables	Diagnosis: What to redesign?
	External Functional Requirements	
	Internal Functional Requirements	
	Structural Design Parameters (achieving low value)	Diagnosis & Design: What and how to redesign?
<i>Kuipers, van Amelsvoort & Kramer (2010)</i>	Four steps of integral design sequence	
-	Influence of practical contextual factors	Affect proposed structure
<i>Berwick et al. (2008)</i>	Triple Aim	Diagnosis and Design: Effect of structure

Table 3.3 – List of topics for interviews

3.5 – Research ethics

When researching an organization, it is of utmost importance to support integrity with regard to organizational members and documents. Various actions are performed to guarantee the anonymity of participants and confidentiality of the used documents. First, no real names are used in this research, which supports anonymity (Bell & Bryman, 2007). In addition, interview transcripts are offered to the participants in such a way that they are able to mark segments of the transcripts they wish not to be reported in this research. This way, confidentiality is guaranteed (Bell & Bryman, 2007). Moreover, offering to send back the transcripts adds additional value in terms of validation, due to the participants' evaluation on the correct understanding of the researcher. This also provides the opportunity for participants to elaborate on certain segments of the interview, increasing the value of the collected data. Furthermore, the interview transcripts are only accessible by the researcher and stored safely. Lastly, this research is, throughout the whole process, sent out to the organization in order to establish continuous feedback on the integrity of the research.

During the interviews, the participant's permission was asked to record the interviews on tape, in order to transcribe adequately. Moreover, it was pointed out that, if desired,

participants were able to leave the interview at any time during the process. Besides, the process of the way data was handled, as described above, was explained to the participants. As a double check, the procedure is written down ahead of the interview questions (see appendix I).

In this research, confidential documents concerning organizational design and strategy are used for analysis. The contents of these documents are exclusively permitted for organizational members and the researcher. Hence, distribution is not allowed and discretion with regard to these texts is desired. In this research, the organizational documents used are described in a cryptic way, which prevents the distribution of specific and confidential organizational information supporting confidentiality and integrity (Bell & Bryman, 2007). The findings of this research may be applied as a diagnosis on the way the structure is currently organized. Moreover, the outcomes of this research applies for managers in broadening their spectrum with respect to the alternatives that exist for the structure of the nursing teams in region Nijmegen. Lastly, the outcomes provide an academic argumentation, explaining in which way the alternative structure will resolve the problematical variables.

This chapter was devoted to form a methodological framework in order to systematically and ethically collect and analyse empirical data for the diagnosis of the current organizational structure and input for an alternative redesign (see figure 1.1). The next chapter is devoted to the actual analysis of the data collected. Here, the diagnostic analysis is conducted with regard to the problematical values of the current organizational structure.

Chapter 4 – Analysis of the current organizational structure

Before determining what an adequate alternative structure could be, the current organizational structure of ZZG zorggroep region Nijmegen is, based on empirical material, first diagnosed in this chapter (see figure 1.1). At first, the current problematical gap between the actual and desired diagnostic variables is established (gap analysis). Moreover, the cause of this gap is provided by examining in which way the actual parameter values differ from the desired norm values (cause analysis). It must be noted that parameter 5, 6 and 7 (see chapter 2) are excluded from this analysis, because the object of analysis is the production structure of ZZG zorggroep opposed to the control structure. Furthermore, the solution space is elaborated on. In order to find out these problematical values, the chapter is divided in the following sections. First, a brief overview is given on the trajectory of continuous nursing care, elaborating on the preliminary process that resulted in the current organizational structure. Second, with the use of empirical and theoretical knowledge, the current organizational structure is analysed and assessed on the level of sustainability in terms of performance indicators and functional requirements. Conclusively, the current organizational structure is assessed on the level of fit in relation to the Triple Aim.

4.1 – Initial formation of continuous nursing care

In the early years of 2000, ZZG zorggroep perceived a demand of clients for the availability of continuous nursing care, even at night time. Due to the introduction of homecare, an increasing number of clients was able to live almost autonomously, besides sporadic planned moments of care provided by the nurses. In addition, it also resulted in occasions where a client was in need of immediate assistance, due to a collapse for instance. At day time, within office hours, nursing teams were already available to assist the client with (un)planned care, but at night no nurses were present to resolve this issue. However, in intramural facilities, nurses were available around the clock, therefore it was argued that they should resolve this sporadic demand of care in the night. However, demand was rising for planned care in the nights. Next to a perceived increase in demand over a few years, the nurses working intramural were not able to answer all demand of care. In 2009, this resulted in a formation of a separate back-up team in order to provide an answer to the demand of care, extramurally. This back-up was set up for the following four tasks: 1) The provision of planned care in the nights, 2) The provision of unplanned care in the evening, nights and weekends, 3) Supporting nurses in the nursing homes in expertise and as intermediary towards the specialist for curing the elderly and, 4)

Answer personal alarms by caring for clients in need of immediate help, extramural as well as intramural (D02C01). The decision was made that this team operates around-the-clock, from Monday till Sunday. At first, the weekend shifts were not active shifts, but availability shifts entailing that a nurse could receive a call-up from home. However, after a few months, it turned out that the level of demand in the weekends was high enough to turn the availability shift into an active shift (I03C02).

The back-up team consists of twelve level 4 nurses carrying out the full responsibility and autonomy to cover the shifts around the clock, seven days a week. It must be noted that among these twelve nurses only one nurse was working contemporary. In accordance with the nursing teams, fundamental agreements in terms of the usage of the back-up team were made. For instance, the back-up team is only allowed to provide brief moments of care, in such a way that they always have the ability to respond to unplanned care requests and personal alarms. Moreover, the back-up team is managed, coordinated and directed by 'De Zorgcentrale' (communication hub). In 2015, due to a further increase in demand and the unpredictable nature of this demand, one nurse in the field at night time was not sufficient to answer all the incoming requests (I02C03 & D02C02). When taking a look at the question behind the demand of the back-up nurse, it becomes clear that four problems exist with this organizational structure:

1. Intramural, the communication towards the specialist for curing the elderly, must go through the back-up team. This is because the lower level 3IG (nursing assistant) nurses do not always have the right level of expertise and judgement to decide if the specialist is needed. Therefore, the back-up team assesses the situation at first. This prevents inadequate usage of the specialist, but when needed, it requires an extra link, costing valuable time (D02C03).
2. Insufficient support towards the specialized nursing team (GVP). The nursing teams should support the GVP in palliative care, but due to the current formation of teams (mixed level of expertise) in the structure they are unable to realize this (D02C04).
3. Insufficient room for unplanned care in the weekends and the afternoon (between 12:30 and 16:30) (D02C05).
4. False expectations among the nursing teams towards the back-up teams with regard to taking over tasks in case of pressure due to illness, for instance. This is not always possible (D02C06).

In order to resolve these problems, an intervention was conducted in 2015. During the nights, one extra person is added in the operating back-up team. This level 3IG nurse should provide the extra capacity that is needed with low complex demand of care, relieving the level

4 nurse of pressure. This addition should enable the level 4 nurse to fulfil the expectations from the nursing teams, answering unplanned demand of care and supporting the specialized nursing team (D02C07 & I01C01). As of today, this structure is still in use and the addition of an extra nurse in the night is according to the employees' satisfaction. The specialist for curing the elderly argued that the extra nurse led towards more room for the back-up team to assess the intramural demand of care and decide if the specialist is needed. Otherwise, due to the high demand, the specialist was asked to go ahead, based on the assessment of the already present level 3IG nurse. If the specialist care was not needed, this leads to inefficient use of expertise (I05C01). Still, at the end of the nightshift at 07:30 and the start of the specialists' shift of 09:00, no assessment is possible (D03C01). Time to time, the specialist is called upon by the level 3IG nurse before the start of her shift (I05C02). This implies that the flexibility of the specialist is invoked, where a structural solution is needed. Logically, the members of the back-up teams are pleased with the addition of an extra member operating in the night. The extra capacity results in more controllable stress conditions and in a shorter cycle time (I02C05). Additionally, due to the extra capacity, the back-up team is able to answer all the demand resulting in a reliable of production. The homecare nurses approve this by stating that the back-up teams were occupied in the past, but that the extra team member in the night resolved this problem (I07C03).

4.2 – Assessment of the current organizational structure

The intervention in 2015 solved some of the problems written earlier and in practice the structure complies to the functional requirements most of the time. Moreover, the current organizational structure does comply to the legal conditions. Still, in a changing environment (the healthcare sector), it is of importance that the structure is resistant to future alterations that might affect the durability of such a structure. Moreover, at the moment, the organizational structure does not comply to performance indicators in a structural way, implying sporadic problems, caused by disturbances. Therefore, the current organizational structure does not account for several contingencies, preventing consistent continuous care in the future.

4.2.1 – Continuous responding to personal alarms within required timespan

The geography of Nijmegen is compact, which should make the required timespan of arrival feasible (I06C02). Still, the current organizational structure is not always able to arrive in time, due to heavy traffic, especially in rush hours (I08C20 & I08C01). The bridge crossing the river Waal, separating the north of Nijmegen with the rest of the city, does contribute to this

inability (I03C20 & I04C17). Without heavy traffic on the road, it is possible to drive from north to south in exact thirty minutes. Dependent on the location of the back-up team, it is possible that a disturbance can affect the feasibility and bring a timely arrival in jeopardy. Moreover, healthcare insurance companies are planning on obliging homecare organizations to arrive in twenty minutes (I08C07). If the required timespan is shortened, the current cycle time of the back-up team is not sufficient enough. Moreover, the reliability of production is also at stake, if the thirty minutes cannot be guaranteed. The inability to comply to these functional requirements results in long waiting time for the clients and, therefore, in a loss of order flexibility and thus the quality of the organization. Another implication that a shortened required timespan might have is the level of stress nurses experience if they are not able to comply. This affects the work and life balance, negatively influencing the quality of work.

4.2.2 – Fluctuation of demand

Designing an adequate and reliable structure that performs in a constant way is troubled by the high variety in the volume and complexity of the demand by clients. Next to this, the clients' demand can be planned or unplanned. This implies that the nature of the demand is not straightforward, hence, in order to form an answer on this demand the organizational structure requires to be flexible.

4.2.2.1 – Volume of demand

The addition of a level 3IG nurse supported the nurses in answering the demand in volume (I02C03 & I02C04). Still, if the volume of demand of care is low (due to fluctuation), it might be possible that overcapacity exists negatively affecting the challenging factor of the content of a job, influencing the quality of work negatively (I02C13a). Furthermore, the upcoming project of 'WLZ-thuis' will lead to more clients and thus more demand in volume and not complexity (I08C21, I01C13, I06C12 & I09C18). Therefore, an additional member in the back-up team might be necessary in the future. However, the earlier described fluctuation of demand will still exist and might even, coherent to the rise in demand, grow in volume. Thus, the variation between overcapacity and under capacity in the back-up nursing team will grow if a member is added to the team. This way of structuring will not cover the core of the problem, namely answering clients' demand in a flexible and efficient way.

4.2.2.2 – Complexity of demand

If an increase of complexity is perceived, a level 4 nurse might not be sufficient to efficiently deal with the clients' demand (I01C07). Some technical nursing activities which are needed with, for instance, palliative care, cannot be performed by a level 4 nurse. Therefore, it is legitimately questionable if a level 5 nurse is needed in the immediate future. At the moment, the nursing teams in region Nijmegen are combined with level 3IG, 4 and 5 nurses (I03C16). This way, the realisation of two order flows, namely technically low complex care and high complex care, are executed by one team. This implies a high parameter value on the level of functional concentration, resulting in the requirement for mutual adjustment in order to decide what expertise level is required for a particular demand and which team member is needed to answer the perceived demand. This mutual adjustment leads towards more communication and relationships that is susceptible to disturbances, leading to higher cycle times and lower reliability of production, negatively influencing the quality of the organization.

4.2.3 – Responsibility for clients

With the current organizational structure multiple teams carry responsibility for the clients. First, intramural, in case of calamity, the back-up team has an assessment function namely determining if a specialist nurse is needed for technical high complex treatment. Secondly, between shifts in extramural care, the responsibility for the clients is transferred between the main nursing teams and the back-up team.

4.2.3.1 – Consultation link between intramural questions and specialist

The assessment function of the back-up team shows a duality in terms of implications for the quality of the organization. On the one hand, it prevents inefficiency if the specialist elderly nurse is called upon when it is not needed (I08C12). Level 3IG nurses have a lower level of expertise and knowledge in comparison to level 4 nurses, which may cause inadequate assessment of the situation (I05C09). This leads to unjustified mobilization of the specialist nurse and thus inefficiency. The presence of expertise that the level 4 nurses bring, results in a justified mobilization of the specialist nurse. But, on the other hand, the back-up team might be an unnecessary link between the supervised living nurse and the nursing specialist. For instance, after a signal of calamity, the back-up team responds towards the situation. After arriving, it becomes clear that the specialist is needed for a difficult technical nursing activity beyond the expertise of the back-up nurse. The specialist is called after half an hour since the signal and is immediately on the way, which costs valuable time and could be prevented by directly calling

the specialist by the level 3IG nurse (I05C07). This devious way of communicating results in a higher cycle time, negatively influencing the order flexibility and thus the quality of the organization.

4.2.3.2 – Transferal of clients' responsibility between teams

Between day and night, shifts are changed between the main nursing teams and the back-up teams. Automatically, the responsibility for the clients is transferred. The mutual adjustment between the main teams and the back-up team is coordinated by 'de Zorgcentrale' (communication hub), simultaneously determining efficient routes for executing the planned care by the back-up team. Daily, the mutual communication between nursing teams and 'de Zorgcentrale' and between 'de Zorgcentrale' and the back-up teams is susceptible to disturbances. With twenty-eight nursing teams in Nijmegen, a lot of relationships with 'de Zorgcentrale' exists, implicating a high probability that the communication is disturbed and flawed. This might lead to ambiguity in responsibility (I07C03) and therefore ineffective communication, causing a negative effect on the quality of working relationships.

4.2.4 – Insufficient support to GVP

The specialized nursing team operates as a separate team for answering medically complex demand. The addition of an extra back-up team member in the nights did not lead towards more support towards the specialized nursing team. With regard to palliative care (high complex care), the main nursing teams are dependent on the specialized nursing teams in terms of expertise (I09C10). Level 4 and 5 nurses are able to support the specialized nursing team in contrary to level 3IG nurses, which do not have the right expertise to be able to support the specialized nursing team. It is expected that in the future, nursing teams should take full responsibility for clients in need of palliative care (I09C10). Thus, the current organizational structure is not future resistant for the changing environment.

4.3 – Scoring on the Triple Aim

It is clear that the current organizational structure complies to the performance indicators and meet the functional requirements. However, as the problems described display, full consistency cannot be guaranteed by the structure above. If performance indicators do get more severe, the structure is not able to comply which does have implications for realizing the goals of the Triple Aim as formulated by Berwick et al. (2008). As written in the second chapter, these goals entail: 1) Improving the individual experience of the care received, 2) improving

the quality of care received and 3) reducing the per capita costs of care for populations. The perceived problems with the current organizational structure do prevent the first and last goal of the Triple Aim. The second aim, on improving the quality of care received, is fulfilled by the current organizational structure. The quality of care provided by the nurses is at a high level, utilizing new knowledge and innovative techniques. It must be noted though, that the quality of care is at stake if a nurse is not able to manage, resulting in rushed activities. Although most of the inefficiency problems do not affect the client directly, it increases the costs of the care delivered. For instance, an increase of demand (and thus an increase in fluctuation) leads towards an extra team member solving the low capacity, but simultaneously creates overcapacity which negatively affects monetary resources. A problem that affects the client directly is the inability to guarantee the timespan of thirty minutes. When in need of caring or medical assistance, every minute counts for the client. Therefore, surpassing this time limit, negatively affects the individual experience of the care received.

All in all, the current organizational structure performs sufficient according to current standards, with low parameter values, except for the functional concentration. A redesign of the structure is needed in order to achieve a lower parameter value and thus increasing the organizations' ability to meet the functional requirements and solving the perceived problems. In the next chapter, an analysis is conducted explaining in which way lower parameter values can be achieved in such a way that the earlier described problems are resolved (figure 1.1). Moreover, the presence of contextual factors is analysed as well as the influence they have on the parameter values and diagnostic variables, potentially restricting or enabling a structure that meets the performance indicators. This way, based on theory and empirical data, input is provided for an alternative structure for the nursing teams in region Nijmegen

Chapter 5 – Analysis of the alternative organizational structure

This chapter focuses on the analysis of an alternative organizational structure. As written in chapter four, the current organizational structure performs in a sufficient manner, with sporadic problematic diagnostic variables. In this chapter, it is analysed if an alternative organizational structure is able to resolve these problematic variables through the achievement of lower parameter values (see figure 1.1).

This alternative structure has to hold account for contextual factors, which might influence the lowest parameter value achievable. Therefore, at first, the content of these contextual factors and their influence on the parameter values is elaborated on. Secondly, with the outset point that the socio-technical design of region Wijchen brings and with the empirical knowledge of these contextual factors and their influence, input for the alternative organizational structure in Nijmegen is formed. Conclusively, this alternative structure is assessed on solving the problematical variables by complying to the performance indicators and meeting the functional requirements. It must be noted that the alternative structure should not affect the compliance of other functional requirements. Moreover, the alternative structure is analysed on sustainability in terms of complying to the goals of the Triple Aim and the ability of being future-proof.

5.1 – Contextual Factors

Outside boundaries of the organizations' internal system, contextual factors are present in region Nijmegen and should be considered when redesigning the organizational structure of the nursing teams. Most contextual factors are characterized by the insusceptibility to be changed, if that is desired by an organization, implying contingency. Organizations have none to limited influence with respect to changing these factors. Yet, the ability is present to (re)design their organization in such a way, that the unpredictability effects of the contextual factors are minimized. Or, on the other hand, organizations are even able to (re)design their infrastructural conditions in such a way, that the contextual factors support the transformation process and the fulfilment of the essential variables. Based on empiric material, for region Nijmegen six contextual factors should be accounted for. These factors are:

1. Demand of care (I03C01, I02C02 & D03C03)
2. Geography (I05C17 & I03C20)
3. Scarcity of educated professionals (I06C23 & I09C20)
4. Collaboration partners (I06C14 & I06C21)

5. Safety (I01C15 & I01C23)
6. Financial feasibility (I06C05)

The contextual factors influence the level of parameter values in a beneficial way (lower values) or in a restrictive way of organizing integrally (higher values). This way, contextual factors influence the organizations' ability to comply to performance indicators and meeting the functional requirements. For instance, the scarcity of educated personnel potentially limits the value of the second parameter "The level of separation between operational and regulatory transformations". Due to the lack of personnel with high expertise, teams with the current organizational members (with lower expertise) are not fully able to master regulatory activities, implying a high level on this parameter (I09C07, I09C17 & I09C20). Therefore, a low value of this parameter is restricted, preventing an integral organizational structure influencing the organizations' ability to guarantee a short production cycle or a reliable production time, for example.

Contextual Factors	
Demand	High (volume & complexity), Low (volume & complexity), (Un)planned Type of Care
Geography	Municipalities
Collaboration Partners	General Practitioners
	Hospitals
	Homecare Organizations
Supply of educated personnel	Level 3IG
	Level 4
	Level 5
Safety	For the client
	For the employee
Financial feasibility	

Table 5.1 – Overview of contextual factors

On the other hand, contextual factors are enablers for structuring the organization in a more integral way. For instance, a collaboration with another homecare organization can

resolve the problem of the scarcity of educated professionals, by mobilizing (level 3IG) nurses for low complex care, which results in more availability among the higher level nurses, enabling the organization to achieve a lower value on the parameter described above (I09C16). The relevant contextual factors for Region Nijmegen are summarized in an overview in table 5.1. This subchapter continues by analysing each contextual factor.

5.1.1 – Demand

Multiple organizational factors are dependent on the clients' demand. The number of teams, number of persons per team and the planning of shifts are susceptible to the level of demand (I03C01 & I02C02). As written earlier in chapter 4, this demand fluctuates in sort, volume and complexity, summarized in table 5.2. With respect to planned care moments it is possible to make a continuous planning per week, but even this seemingly static demand of care is subjective to fluctuation (D03C03). The nature of unplanned care is per definition unforeseen and are directly assigned to nursing teams. Lastly, nurses receive personal alarms, entailing that a client is in need of immediate support. Planned and unplanned are distinguished in complexity and volume (I03C05). The variability of this demand complicates designing a structure that effectively responds in an efficient manner (i.e. not wasting resources) (I01C18).

	Complexity	(Un)planned	Volume	Type of Care
Demand of Care	High	Planned	High	- Nursing Care - Psycho Geriatrics - Palliative Care
			Low	
		Unplanned	High	
			Low	
	Low	Planned	High	
			Low	
		Unplanned	High	
			Low	

Table 5.2 – Overview of the contextual factor: demand of care

The raw data collected by the organization confirms this. Back-up team activity is traced in both July and October of 2016. In total, the back-up team delivered 747 moments of care in October and 867 moments of care in July (D03C03). Table 5.3 shows that the percentage of (un)planned care and personal alarms differ significantly in volume, underlining that demand is one of the main contextual factors influencing the organizations' structure. The alternative

structure should be flexible in order to respond on this various demand, making a clear distinction between order flows. Teams should be autonomous and self-regulated in order to achieve this flexibility, implying low level of differentiation and separation between performing, preparing, supporting and regulatory activities (parameter 2, 3 and 4). Moreover, in order to adequately respond the complexity of demand, a low level of functional concentration is required, generating a clear distinction in order flows (parameter 1).

Sort care	July'16	October'16
Planned	419 (48,3%)	408 (54,6%)
Unplanned	213 (24,6%)	136 (18,2%)
Personal alarm	83 (9,6%)	66 (8,8%)
Total	867 (100%)	747 (100%)

Table 5.3 – Overview of moments of care by back-up team (D03C03)

5.1.2 – Geography

Closely related to demand is the geography, explaining where the demand comes from. In order to determine on what scale a team should be formed, it is of importance to examine the environment of region Nijmegen. Geographically and environmental, region Nijmegen has to consider one factor that physically limits a structure, namely the river Waal (I05C17 & I03C20). Two bridges cross this river and in case of traffic jams, no other routes are available to cross the river. Therefore, the new structure should provide means to arrive in the required timespan even in a traffic jam. This could be attained through two options. First, provide all nurses with an emergency card to cross the river via an emergency lane. This doesn't seem a viable option, due to the fact that there is only one emergency lane with the direction towards Nijmegen and not Nijmegen-North. Secondly, by shifting the responsibility of continuous home care around the clock towards the teams in Nijmegen-North. This way, a nurse is already present on that side of the river (I06C17).

At the moment, ZZG zorggroep is divided in three regions based on municipalities. This is in line with administrative and legislative reasons, due to agreements with municipalities who are responsible for the provision of care in their own municipality (WMO) (I06C15). A downside of this scale, is that it does not account for the optimal balance between demand and geography, missing an efficiency opportunity. For instance, Berg & Dal and Groesbeek (small villages near Nijmegen, but part of Rijk van Nijmegen) are geographically closer to the centre

of Nijmegen than the centre of Rijk van Nijmegen. If included in Nijmegen, enough demand is attained to legitimize a more efficient usage of personnel (I06C08). This indicates on the cause of a high level of functional concentration between regions, implying an undesired grouping of activities with respect to other activities. In the alternative structure a compromise should be formed between geographical efficiency accommodating the demand and administrative and legislative factors, in order to reduce the functional concentration.

5.1.3 – Scarcity of high level professionals

ZZG zorggroep experiences a scarcity of educated professionals with an expertise level of 4 and 5. Around 70% percent of the nursing teams of ZZG zorggroep exists of level 3IG nurses. The other 30% exists of level 4 and 5 nurses (I09C11). With this ratio, it is almost impossible to provide around-the-clock availability of care, especially if human resources are allocated in a way where low complex order flows are executed by highly educated personnel (I09C16). With the knowledge of this scarcity, it is sensible to reallocate the current personnel per order flow, entailing that low complex care is answered by level 3IG nurses, whereas high complex care, such as palliative care is executed by level 4 and 5 nurses. It is not expected that the scarcity in the nursing labour market will resolve in the forthcoming years (I06C23 & I09C20). In order to take the scarcity into account and lower the functional concentration, a reformation of teams with one order flow for low complex care and one order flow for high complex care is desired. This reformation of teams per order flow should be accounted for in the alternative structure. In order to enable the level 3IG nurses to perform regulatory activities, and thus attain a low value on the fourth parameter, extra training and education offered by the organization is desired.

5.1.4 – Collaboration partners

ZZG zorggroep works together with several partners. First, a close relationship exists between ZZG zorggroep and the hospitals and general practitioners. This way, a stable transition between hospital and homecare is guaranteed for the client (I06C19). Moreover, also due to institutional regulations, caring activities and processes are shifted between hospital and ZZG zorggroep (I06C14). Moreover, an important working relationship is with the general practitioner. In region Nijmegen, ZZG zorggroep cooperates with many general practitioners with specific knowledge about clients and the district. This relationship is valuable and a sufficient mutual collaboration should be maintained at all times.

Second, the strategic positioning of ZZG zorggroep is to deliver high complex care (I09C09). This entails complex client cases and not technically complex nursing activities. With regard to this strategy, ZZG zorggroep should organize efficiently with the present scarcity of educated professionals. It is possible that other (smaller) homecare organizations (such as Verian and TVN) are able to take over low complex cases, in return for guaranteeing 24/7 availability of care by ZZG zorggroep and monetary resources. Although more (dependable) relationships are not desirable in the perspective of sociotechnical theories, it does argue for an open system design. Therefore, collaborations are beneficial if it leads to fulfilling the objective of organizing in a more integral way. In the case of ZZG zorggroep, lower educated personnel of other homecare organization can adopt low complex cases, entailing a higher level of availability among higher educated personnel capable of answering the demand of higher complex cases, which is in line with the strategic positioning of ZZG zorggroep. Due to differences in expertise and quality of work in the low complex cases, it is sensible that ZZG zorggroep determines the required minimal level of expertise. Therefore, retraining of external professionals is needed in order to achieve that minimum level (I03C06).

Third, ZZG zorggroep should seek means to organize with other organizations treating clients with a different disease profile (I06C21). For instance, Pluryn in Nijmegen provides care for physically disabled clients and are, as well as ZZG, confronted with same the question on how to provide continuous care. In collaboration with other organizational parties (e.g. in the domain for psychogeriatric clients) a ‘white-label’ network for continuous homecare could be established, ensuring structural and financial durability and efficiency.

Lastly, innovative collaboration projects are developed, supporting this white-label network. Such a project is Thuis & Veilig (in English: Home & Safe) which is a national hotline for elderly people in case of emergencies (I06C05 & I06C14). Signals are picked up in a central hub and corresponding activities are distributed towards professionals present in the neighbourhood of the incoming signal. This is in line with the white-label network and guaranteeing the performance indicator of the arrival of caring support within thirty minutes, implying a more reliable production time and thus control over order realisation. With respect to the parameters, collaboration partners influence the level of functional concentration. Due strategic collaborations, the functional concentration can attain a lower value.

5.1.5 – Safety

Working around the clock means working at night times. In comparison to other regions, safety is in region Nijmegen an important condition, because of the multiple neighbourhoods

with a higher rate of criminality or intimidation (I01C15 & I01C23). The structure of ZZG zorggroep should enhance safety in the nights, by deploying at least two nurses. This way, the nurses are able to help each other in undesirable situations. As written before, in terms of safety, a collaboration with other homecare organizations should enable the capacity to support each other at night. Moreover, it should be noted that the police department can be called upon in case of severe danger (I09C22). Safety is a contextual factor that influences the level of controllable stress conditions and thus the level of absenteeism, and therefore, the quality of work. In terms of parameters, safety might also influence the level of functional concentration by potentially forcing a structure where some activities are grouped in a particular way with respect to other activities so that safety can be guaranteed.

5.1.6 – Financial feasibility

ZZG zorggroep is searching for means for structural financial resources for the back-up teams. At the moment, ZZG zorggroep receives a lump sum for this service, but this sum is susceptible to mutual agreements on a yearly basis (I06C05). With this lump sum, region Nijmegen is able to finance the current two nurses in the night. Without structural funds it is not possible to, for instance, add another nurse in the night or raise the level of expertise towards level 5 instead of level 4 (I01C11 & I06C11). Therefore, without exceeding the budget, not all elements of a proposed structural redesigns are feasible. The level of budget could be raised through answering more demand or search for active inter-organizational collaborations in order to attain a higher level of efficiency in terms of costs. Conclusively, because the level of financial resources is able to influence the feasibility of an alterations of an organizational infrastructure's elements, it is arguable that it affects all parameter values and therefore the functional requirements and essential variables as stated by De Sitter (1998).

5.2 – Forming the alternative structure

Now it is clear which contextual factors need to be considered and in which way they influence the parameter values, it is possible to form the alternative structure. By doing so, the first four steps of the integral design sequence formed by Kuipers, Van Amelsvoort and Kramer (2010) are followed. First, the boundaries of the subjective system are demarcated. Next, the strategy, mission and vision is determined to ensure a redesign from the organizations' standpoint. Moreover, the design principles are formulated, specifying which requirements the design should comply to with regard to the desired state of the primary processes. Additionally,

the different order flows are specified. At last, the production structure of the nursing teams is formed.

5.2.1 – Demarcation and design principles

In this redesign, the system's boundaries are demarcated around performing, supporting, preparing and regulatory tasks, carried out by nurses employed by ZZG zorggroep in region Nijmegen and adjacent regions (Wijchen, Maas & Waal and Rijk van Nijmegen). Still, this is an open system redesign, acknowledging other parties interacting with, or within, the system. ZZG zorggroep's mission is to "sustainably contribute to the health of people resulting in clients experiencing a meaningful and qualitative good life. Through working together ZZG zorggroep tries to help clients (re)gain trust in their own ability to give direction to their own lives" (ZZG zorggroep, 2015, p. 4). In order to carry out this mission in a viable way, ZZG zorggroep is strategically positioned in the healthcare market. The chosen strategic position is to provide high complex care for clients in the regions. In this sense, high complex care not only entails the provision of care activities with variety in level of difficulty (e.g. simple tasks such as changing stoma bags and also more specialized and complex activities in palliative care) but also in contextually dynamic client cases (e.g. dementia), explaining the high complexity of the delivered care. Next to this strategic position, ZZG zorggroep has mutual agreements with clients and insurance companies to provide continuous homecare.

With regard to the design principles, Kuipers, Van Amelsvoort and Kramer (2010) distinguish three steps. First, the definition of the variation in order flow. The demand ZZG zorggroep receives from the clients is low complex and high complex. Therefore, this demand is divided in two order flows, implicating low complex demand and high complex demand. To hold account for the structural independency of this design, the order flows are not yet differentiated in intra- and extramural care. The next step, determining the level of complexity of both order flows, is implicitly conducted in the first step, namely high and low complexity per order flow. Moreover, the nursing teams should be able to be autonomous with respect to performing, supporting, preparing and regulatory activities. This is in line with the principles on self-regulation from the MST-theory. No extra training is needed, because self-regulation of professionals are already the standard principles within the current structure of ZZG zorggroep. Conclusively, a list is conducted with organizational functional requirements and performance indicators to which the alternative structure should comply to. Based on theory and empirical data the alternative structure should:

- Realize the three essential variables as stated by De Sitter (1998) through the compliance of external and internal functional requirements, ensuring the organizations; viability. (An overview is provided in chapter 2).
- Fulfil and enhance the three objectives on the Triple Aim.
- Solve experienced problems due to the current organizational design:
 - o Intramural, the consultation function of the back-up team
 - o Insufficient support towards GVP
 - o Congruency in responding to personal alarms in the required timespan
 - o Provide a future-proof answer on the volume and complexity of demand
 - o Support continuous responsibility for clients
- Take the contextual factors into account
- Not generate new problematical variables.
- Be feasible in terms of monetary resources.

In the next paragraph a new way of organizing is proposed. This way of integral organizing is aiming to solve all the perceived problematical variables at once. At the end of this chapter, the alternative structure is assessed based on these design principles.

5.2.2 – Forming the production structure

In the previous paragraph two order flows were determined. On the one hand low complex care and on the other hand high complex care. Arguably but sensible, is the division of the demand in every district in two order flows, namely low complex and high complex care. In order to process both order flows adequately, the current teams should be split-up based on level of expertise in such a way that each team is responsible for one order flow around-the-clock. More specifically, the low complex order flow is performed by level 3IG nurses, who are non-stop responsible for the low complex care cases in their district. In contrary, high complex care order flows are performed by level 4 and 5 nurses, who are responsible for the high complex care cases in their district. This way, the professionals are around-the-clock responsible for the clients in their district, which is desired from a modern sociotechnical viewpoint. However, this design leads to some initial practical ambiguities, which are solvable. For instance, after the division of teams, certain teams are below the desired minimal number of eight team members. Additionally, after this division, some of the demand in certain districts is not sufficient enough to legitimize the formation of one team. In that case, it is sensible to combine teams and districts and form one order flow. This could be achieved by calculating when the scale (and thus demand) is large enough to legitimize a team of eight to twelve

members, handling a feasible amount of work per week. This way, the organization's structure is designed on demand and not based solely on the geography of districts within Region Nijmegen. These members are autonomous in terms of self-regulation, implying the ability to plan in and treat their clients continuously and respond on personal alarms. When a team perceives a significant increase in demand and the team size exceeds eighteen professionals, it splits up in two teams (between eight and ten members) and divides the clients' demand among them, similar to the way Buurtzorg organizes. This way, self-regulatory potential is enhanced and the manageability of the team is on a sufficient level, enabling quick and effective communication. Moreover, workload stays equal, resulting in constant attention and focus towards the clients, improving the individual experience of the care received.

With regard to intramural facilities, high complex demand, which cannot be answered by the present level 3IG nurses due the lack of expertise, should be answered by a level 4 or 5 nurse from the extramural team within the operating district. In case of intramural low complex demand, where only temporary extra capacity is needed, this should be answered by level 3IG nurses from the low complex order flow within the operating district. Moreover, this is only required in the evening, nights and weekends. Because, within intramural facilities, level 5 case managers are present (I03C20). The case managers guide and support clients with the unique trajectory of care they require and are able to support in answering high and low complex demand during office hours. In addition, case managers could fill in the function as consult between the present level 3IG nurse and the specialist for the curing the elderly. If not all the daytime demand can be answered by the case manager, the nursing teams operating in the facility's district could be appealed. It should be monitored if an extra team member in the extramural nursing team is required. This also accounts during evenings, nights and weekends, if the nursing teams cannot manage the intramural demand. The differences are made clear in the schematic overview of the current organizational structure and the alternative structure, provided in figure 5.1.

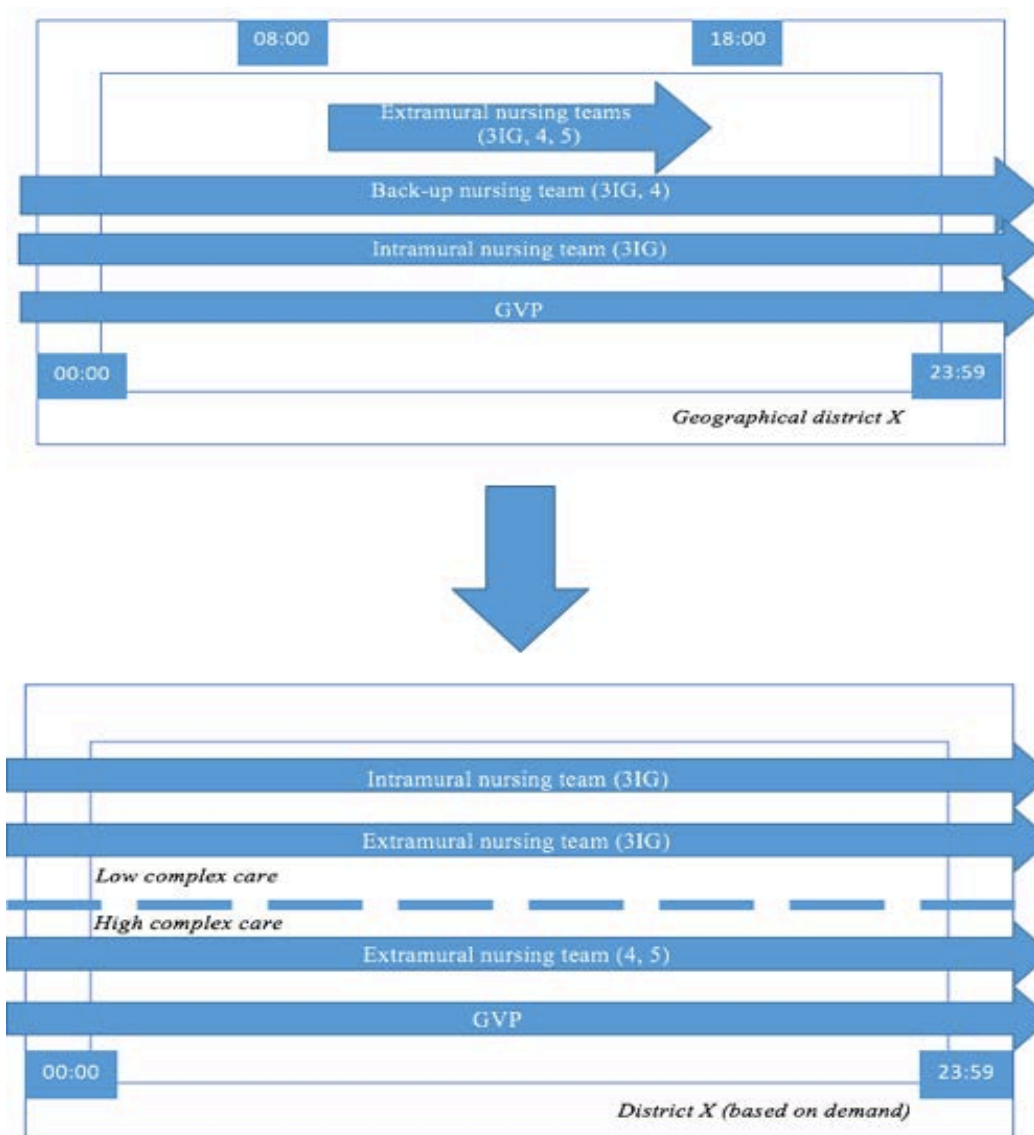


Figure 5.1 – Schematic overview of the current and alternative organizational structure

5.3 – Assessment alternative structure

In order to determine the additional value of the alternative structure, it is assessed on multiple aspects. First, the advantages of the alternative structure are analysed, elaborating on the solution of the perceived problems. Secondly the limitations of the alternative structure are analysed, explaining the downsides of this structure. Lastly, the alternative structure is assessed on the functional requirements, essential variables and Triple Aim in combination with the handling of contextual factors.

5.3.1 – Advantages

This alternative structure should resolve the perceived problems. First, the consultation function between the level 3IG nurse and the specialist is transferred to case managers (who is

present in the facility). This way direct consultation is possible leading to a lower cycle time, treating the client faster, which increases the individual experience of the care received. In the evening, nights and weekends level 4 and 5 nurses take this consultation role, ensuring a low cycle time and enhancing the quality of the organization.

Due to the clear distinction in order flows, GVP can be supported in a more adequate way by appealing nurses from the high complex order flow. Through this cooperation, learning is enabled between GVP and the high level nurses. This way, after a few years, they should be able to treat palliative clients autonomously. This increases the variation of sufficient product and the order flexibility, enhancing the quality of the organization.

The thirty-minute timespan in case of personal alarms can be guaranteed with this alternative structure. Nurses are present in their operating district around-the-clock, therefore quick response can be realized in case of a personal alarm in the neighbourhood. This leads towards a higher reliability of production time. Moreover, if the project of Thuis & Veilig is fully developed, it holds a significant role in contacting nursing teams in case of personal alarms. This way, the central hub 'De Zorgcentrale' no longer receive incoming signals from teams, but only coordinates teams based on the signals.

This alternative structure is able to continuously respond to the fluctuation of the volume and the complexity of demand. Through occasionally evaluating the team composition and potentially splitting up nursing teams and redistributing the clients among the two new teams, the demand always stays manageable. In case of low demand, it should be examined if combining teams and their clientele results in an adequate solution. Otherwise, a team can be resolved and the members and clients are distributed over (geographically) adjacent teams with low capacity. This enhances order flexibility and therefore the quality of the organization.

Furthermore, this structure supports continuous responsibility for clients in such a way that only one team is responsible for their clients implying the absence of a transfer. This improves the quality of working relationships, due less dependability and probability of disturbances between teams. Due to the division between order flows, nursing teams are able to support each other within the operating district. When the high level nurses need extra capacity, for instance, they could appeal nurses from the low complex order flow. This also accounts for the other way around when low complex nurses are in need of expertise. In that case, they can appeal high level nurses from the high complex order flow. This way, the ability to learn is reinforced.

5.3.2 – Limitations

There are some limitations with regard to this alternative structure. In order to succeed this alternative structure, alterations among other infrastructural conditions are required, which will lead to a full reorganization of region Nijmegen. With regard to human resources, this design forces nurses to work in nightshifts. This could lead to resistance among personnel that is not willing to work at nights. Nursing teams are autonomous with regard to planning, so by mutual agreement within the team it is possible to determine who is willing to work certain nights. ZZG zorggroep is able to perform a supporting role in this matter by organizing workshops and emphasize on the fact that nursing care is an around-the-clock job. In addition, from the perspective of full responsibility for the clients, a concept which the nurses are familiar with, it is sensible to provide care for the clients, even in the night. It is a matter of changing the mind-set of the nurses and convincing them that this is in line with the organization's vision and mission.

The technology of the organization should also be altered in order to be in line with the alternative structure. For instance, at the moment, the electronic client dossier is bound to the nurses operating in a specific district. Technological systems should be accessible in a simple way for all nurses in order to guarantee a flexible answer to the demand of care. For example, the distribution of tablets or smart phones with adequate applications might be supportive for this alternative structure.

From a financial point of view, the hourly wage in the night is more expensive than between office hours, due to surcharges that are legally required. Therefore, a financial analysis should be performed in order to determine the feasibility of this structure. It is recommended to search for collaboration partners in the region in order to gain enough funds.

5.3.3 – Functional requirements, essential variables and Triple Aim

The alternative structure enhances, through leaving the full responsibility for clients with the nursing teams, self-regulation and, through organizing on order flows, decreases the functional concentration. That way, a low level is achieved in terms of parameter values enabling the nurses to meet the functional requirements. Because, nurses are now able to exploit controllability on their level of production, as well as the flexibility within their order flow. Next to this, nurses are able to learn through cooperation between order flows (low complex, high complex and GVP) and the stress conditions of work are controllable through sufficient capacity in opposition to the demand of care. Moreover, through active participation in communication and the shared responsibility for the clients around-the-clock, effective

communication is guaranteed. Through the compliance to these functional requirements, the essential variables of the organization are fulfilled, entailing that this structure is viable and future-proof. Conclusively, this alternative structure enhances the individual experience of care received in terms of the client, due to lower cycle times enabling the nurses to have more time and attention for the client. The quality of care is already at a par level and this alternative structure does not enhance nor reduces this level. Lastly, without a financial analysis it is hard to determine if the per capita costs of care for populations is reduced, through this alternative structure. However, the human resources present in the organization are allocated in a more efficient way, granting more productivity with the same amount of costs.

At the moment, the current organizational structure is analysed on problematical diagnostic variables in chapter four. Moreover, in chapter five, it is determined which alterations in the structure influence the parameter value in a positive way, solving the perceived problems (figure 1.1). This implies that conclusions can be drawn. The next chapter is devoted to answering the research (sub-)questions and provide recommendations. Additionally, a reflective segment on this research is included.

Chapter 6 – Conclusion and Discussion

The conclusive segment of this chapter consists of two parts. In the first part, the sub-questions are answered based on the analysis. This enables the formation of an answer to the main research question. The second part of this chapter provides practical recommendations for ZZG zorggroep based on the outcomes of this research. At the end of this chapter, a segment is devoted to discuss this research on multiple aspects. Here, recommendations for further studies are given, as well as, an evaluation of the used theory, methodology and data collection. It is concluded by an evaluation of the research process and the role of the researcher in this research.

6.1 – Answer on research (sub-)question

The sub-questions are repeated below:

- What are the established requisites for the structure of nursing teams of ZZG zorggroep?
- What are the parameter values of the current and desired organizational structure?
- In which way does the current and alternative structure of a nursing team comply to all established requisites?
- In which way do contextual factors influence the desired values of structural parameters in region Nijmegen?

“What are the established requisites for the structure of nursing teams of ZZG zorggroep?”

The analysis made explicit which theoretical and practical functional requirements are needed in order to provide continuous homecare. Order flexibility is of importance to fulfil the clients' demand. For that purpose, a low cycle time, next to sufficient product variation is desired. As perceived in the analysis, not much difference of product variation is present between the current and the alternative structure. Moreover, the control over order realisation is a relevant theoretical functional requirement. This functional requirement implies that the nurses are able to respond in the required timespan, resulting in a reliable production and production time. The practical functional requirement of the arrival within thirty minutes is automatically guaranteed this way. Next, a low level of absenteeism and personnel turnover are functional requirements that should be met in order to pursue the quality of work. A timely arrival in case of personal alarms influences the controllability of stress conditions in a positive way. For the nurses, a fairly distributed workload is also desired, as well as the ability to learn

and develop. This also entails that the structure should facilitate the possibility to work with other colleagues and collaboration partners. The functional requirement of effective communication is also of importance. Nurses should have an active participation in communication. In addition, the responsibility for clients must be clear in order to meet the requirement of effective communication.

An effective answer to the demand is also a requisite of the structure of nursing teams. The structure should support flexibility in terms of answering low complex and high complex demand. Another requirement is guaranteeing safety among personnel. Nurses should have a sense of safety when working at night time and the structure should support that. Lastly, the structure of the nursing teams should contribute to achieving the goals of the Triple Aim, implying an increase of the quality of care, experience of the received and the reduction of costs.

“What are the parameter values of the current and desired organizational structure?”

As analysed in chapter four, the parameter values of the current organizational structure are already at a low point. Due to following the modern socio-technical principles of self-regulating teams, nurses are able to perform supporting, preparing and regulatory tasks, while performing their main task of providing care. Therefore, as analysed in the previous chapters, parameter 2 and 3 (the level of differentiation and specialization of operational transformations) are at the lowest point within the organizations' sphere of influence. The current organizational structure facilitates enough regulatory potential resulting in an autonomous nursing team, implicating a low value of parameter 4 (the level of separation between operational and regulatory transformations). As argued earlier, parameters 5, 6 and 7 are excluded from this research, because the production structure and not the control structure of ZZG zorggroep is subject of this research. The only parameter that could attain a lower value is the parameter of functional concentration. Multiple order flows are answered by one team, implying an inefficient grouping of operational tasks with respect to others. The alternative structure splits these order flows and assign nurses with an adequate level of expertise to these order flows, lowering the functional concentration. Additionally, with a broader scope, it could be argued that due to the geographical boundaries of the regions, a lower parameter value is prevented. These geographical boundaries between regions limit an effective and flexible answer on the demand, especially in border areas. In these areas, activities are grouped in an ineffective way with respect to other activities in another region, implying a high level of functional

concentration. If other regions also organize in a similar way as proposed with the alternative structure (on demand and not geography), it might result in an integral design on the level of the whole organization.

“In which way does the current and alternative structure of a nursing team comply to all established requisites?”

In chapter five, it is analysed that the alternative structure enables the nurses to achieve a lower cycle time through the increased structural flexibility in opposition to the clients' demand. Moreover, the alternative structure increases the reliability of production time through enabling nursing teams to respond to personal alarms in the required timespan. In addition, the workload among the nursing teams is equally divided by organizing teams in a flexible and integral way, positively influencing the controllable stress conditions. Furthermore, teams are able to learn from each other when supporting other order flows in a district, positively influencing the level of how challenging the work is, resulting in a lower level of personnel turnover. However, working at night times might not be ideal for every nurse, which might negatively influence the level of turnover of personnel. With this alternative structure, the nursing teams are, round-the-clock, responsible for their own clients, entailing less dependable relationships, and thus, communication between teams that increase the probability of disturbances on the primary process. Next to legal functional requirements, the alternative structure should comply to other practical functional requirements. For instance, the alternative structure guarantees safety at night time among the employees, because multiple teams are working through the nights. Therefore, in case of unsafety, a colleague can be appealed. All in all, based on theoretical and empirical data, the alternative structure seems to be able to meet functional requirements in a more adequate way than the current structure.

“In which way do contextual factors influence the desired values of structural parameters in region Nijmegen?”

As analysed in chapter five, six contextual factors are present in region Nijmegen each with a different influence on the structural parameters. The volume and complexity of demand influences the parameter of functional concentration. The different order flows created by the unpredictable demand, require the functional concentration to be low in order to form an effective answer on this demand. In addition, the geography of the region also influences the

level of functional concentration. The scarcity of educated professionals affects the parameters 2, 3 and 4. Lower educated professionals are less capable to perform planning, supporting and regulatory tasks. Nevertheless, by offering extra training and education, making them familiar with the self-regulating principles, they might learn the competencies required for these activities. Through strategic and beneficial collaborations, partners influence the functional concentration in a positive way, implicating a lower value of the parameter. Although it increases the amount of relationships, it also increases the regulatory potential if variety in demand is high, resulting in higher controllability in the end. The contextual factor safety also influences the first parameter. It might influence the level of functional concentration by potentially forcing a structure where some activities are grouped in a particular way with respect to other activities so that safety can be guaranteed. Conclusively, the financial feasibility of a structure influences all parameters. If a certain structure cannot be realized due to limited monetary resources, concessions could be made in terms of structure, possibly preventing a low value on one of the parameters.

“In order to comply to the established requirements to provide continuous homecare, what is an alternative for redesigning the structure of the nursing teams of ZZG zorggroep in region Nijmegen?”

It is clear that the value of functional concentration is the only parameter value that can be lowered within the organizations' sphere of influence. Designing the structure based on the clients' demand contrary to geographical factors results in a division of order flows, lowering the functional concentration. This way, some of the demand in certain districts is not sufficient enough to legitimize the formation of one team. In that case, it is sensible to combine teams and districts and form one order flow. This could be achieved by calculating when the demand is large enough to legitimize a team of eight to twelve members handling a feasible amount of work per week. This supports principles with respect to self-regulation, enabling nurses to distribute work equally among team members in an autonomous way. Through this way of organizing, a lower value on the parameter of functional concentration could be attained, enabling the compliance of functional requirements, resolving the problematical variables. Due to the alternative structure, no transferal of clients is required and nurses are, around-the-clock, fully responsible for the clients in their district. Additionally, nurses are able to arrive in the required timespan, because of the support of Thuis & Veilig and their continuous presence within the district. Moreover, due to the division of order flows in this alternative structure, the

high complex order flow with highly educated nurses is able to adequately support the GVP in their tasks. Mutual exchange of capacity and expertise between order flows and teams is enhanced through the structure. With the support of case managers, a more efficient consultation link is formed between the level 3IG nurses and the specialists. Conclusively, this structure is future-proof due to the flexibility it offers in relation to the unpredictable demand of clients. If the volume or complexity of demand alters, this structure is able to respond on that alteration in an adequate way. All in all, this alternative structure is able to comply to the stated requirements, without detracting other functional requirements, and facilitate the provision of continuous homecare in region Nijmegen.

6.2 – Practical recommendations

Several recommendations are present in order to make this alternative structure useful and feasible. First, ZZG zorggroep should conduct a quantitative analysis with regard to the demand of care. This quantitative analysis provides an outline in all districts in region Nijmegen with respect to the volume and complexity of demand. This results in an overview of the current demand which can be used as a starting point of the formation of teams and coherent geographical areas. Second, it is recommended to perform a financial analysis in order to calculate the costs of this alternative structure. This provides insights in terms of financial feasibility of the alternative structure. Third, an analysis should be conducted to explore which relevant collaboration partners are present in region Nijmegen. The analysis should provide insights about the additional value that collaboration partners offer. For instance, it should be examined if other organizations could support in guaranteeing safety or capacity of personnel. Additionally, the presence of potential partners that are able to support in terms of financial means should be investigated. For example, for a structural amount of monetary resources compensated by smaller healthcare organizations, ZZG zorggroep can provide care at night times for their clients. At that moment, ZZG zorggroep already does have the infrastructure for providing care at night time, resulting in more demand and structural funding. Conclusively, a structural redesign is not sufficient to conduct a full reorganization. It must be noted that other infrastructural conditions should be altered in line with the structural redesign. In this case, this entails a change in the HR-policy as well as aligning the technological systems with the redesign of the organizational structure. If the above proposed analyses are conducted, it is recommended to form practical scenarios based on the researched alternative structure, because it is understandable that different options occur, each with major or minor differences. These scenarios should be scored on the specific design criteria that is included in this research. If

particular scenarios score well and receive positive feedback it should be pilot tested for at least a year. Minor alterations are still possible at that moment.

6.3 – Discussion and reflection

The analyses described in the practical recommendations above could be included in further studies. Moreover, the diagnosis of the other infrastructural conditions (human resources and technology) that are susceptible to change due to this alternative structure could also be included in further studies. Next, it must be noted that there might be other (more) sufficient alternative structures. Based on other design theories and prevalent contingencies, it is likely that other adequate perspectives and corresponding organizational designs exist. These perspectives lead towards another approach for solving the problematical values of the current organizational structure. Therefore, it is possible that other redesigns are also applicable in opposition to the researched alternative structure. In retrospect, it is also likely that a different theoretical foundation might have resulted in another answer. Therefore, multiple answers exist for this specific design problem and it is sensible to acknowledge the added value of these other redesigns. A careful stance on the superiority of this alternative organizational structure is most appropriate. However, the alternative structure proposed in this research enables managers of organizations to think critically with regard to their current structure and their way of organizing.

In hindsight, the limitations of the Integrated Organizational Renewal approach described in chapter two also accounts for this case. The alternative structure leads towards lower functional concentration, implying that nurses are fully capable to perform complex tasks. However, as written earlier, a scarcity of highly educated professionals is present in the market. Therefore, it might be difficult to find adequate personnel for these integrated tasks. With the use of other design theories, such as lean and the configurational approach, this problem might not even be relevant. But again, these theories lack specific design principles (configurational approach) or make a trade-off with the quality of work (lean approach), potentially resulting in other fundamental problems in this case.

The chosen methodology also contributes to the formation of the proposed alternative structure. The addition of a more quantitative approach, including financial analysis would provide a more all-round answer on the problematical values and more practical usability for the organization. However, a quantitative and financial analysis are time consuming and do not fit with the set requirements for this academic research. With design-oriented research it is a search in balance between contributing to the academic literature and solving the perceived

problems of the organization. In hindsight, the added value of interviewing nurses on an organizational design problem is questionable. It became clear that they could elaborate on the performance of the current structure, but that they had a difficult time brainstorming on an alternative structure. Nevertheless, the interviews held additional value for analysing the current structure and exploring the sense of urge for change in region Nijmegen. Nevertheless, it might be more valuable to interview operational and strategic managers in terms of the design of the alternative structure. With respect to the results of this research, the analysis of the current organizational structure is certainly of value for the organization. Moreover, this research has proven the empirical value that socio-technical theories offer. Due to earlier described reasons, supplementary analysis is needed to enhance the practical usability of the outcomes of this research for the organization. Yet, this research hopefully inspires managers to follow through on the path of designing the organization in a socio-technical way.

A rewarding collaboration was established, when looking back on the relationship between researcher and organization. The trajectory of conducting this research could be fulfilled without any disturbances or delays, which is beneficial. Moreover, the collaboration was informative as well as educational in terms of practical factors limiting a theoretical sound organizational structure. Furthermore, the role as independent researcher promotes the ability to analyse elements of the organization with a clear mind, not affected by everyday practices and the primary process. In addition, the influence of the researcher on the collected data was minimal, due to fact that the object of this research is not that sensitive or loaded with emotions. Still, a redesign of an organizational structure is directly linked to the availability of jobs of organizational members, which affect their personal lives. Nevertheless, the outcomes of this research provides input for a redesign, resulting in theoretical and practical recommendations with respect to the current and alternative organizational structure.

References

- Achterbergh, J., & Vriens, D. (2010). *Organizations: social systems conducting experiments* (2nd ed.). Berlin, Germany: Springer-Verlag.
- Achterbergh, J., & Vriens, D. (no date). Three-dimensional model of organizational interventions. Unpublished.
- Aken, J. van, & Andriessen, D. (2011). *Handboek ontwerpgericht wetenschappelijk onderzoek: Wetenschap met effect*. The Hague, The Netherlands: Boom Lemma.
- Aldrich, H., & Herker, D. (1977). Boundary spanning roles and organization structure. *Academy of management review*, 2(2), 217-230.
- Amelsvoort, P. van, Kuipers, H., Kramer, EH. (2010) *Het nieuwe organiseren. Alternatieven voor de bureaucratie*. Leuven, Belgium: Acco.
- Ansoff, H. I. (1991). Critique of Henry Mintzberg's 'The design school: reconsidering the basic premises of strategic management'. *Strategic management journal*, 12(6), 449-461.
- Ashby, W. R. (1956). An introduction to cybernetics. *An introduction to cybernetics*. London, United Kingdom: Chapman & Hall LTD.
- Bell, E., & Bryman, A. (2007). The ethics of management research: an exploratory content analysis. *British Journal of Management*, 18(1), 63-77.
- Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: care, health, and cost. *Health affairs*, 27(3), 759-769.
- Bitter, J., van Veen-Berkx, E., Gooszen, H. G., & van Amelsvoort, P. (2013). Multidisciplinary teamwork is an important issue to healthcare professionals. *Team Performance Management: An International Journal*, 19(5/6), 263-278.
- Bleijenbergh, I. L. (2013). *Kwalitatief onderzoek in organisaties*. The Hague, The Netherlands: Boom Lemma.
- Blok, J. de, & Pool, A. (2010). *Buurtzorg: Menselijkheid boven bureaucratie*. The Hague, The Netherlands: Boom Lemma Uitgevers.
- Boeije, H. R. (2012). *Analyseren in kwalitatief onderzoek: denken en doen*. Amsterdam, The Netherlands: Boom onderwijs.
- Carayon, P. (2012). Sociotechnical systems approach to healthcare quality and patient safety. *Work (Reading, Mass.)*, 41(1), 3850.
- Child, J. (1972). Organizational structure, environment and performance: The role of strategic choice. *sociology*, 6(1), 1-22.

- Christensen, C. M., Grossman, J. H., & Hwang, J. (2009). The innovator's prescription: *A disruptive solution for health care*. New York: McGraw-Hill.
- Dankbaar, B. (1997). Lean production: denial, confirmation or extension of sociotechnical systems design? *Human relations*, 50(5), 567-583.
- Eijnatten, F. M. van, & Van Der Zwaan, A. H. (1998). The Dutch IOR approach to organizational design: an alternative to business process re-engineering? *Human Relations*, 51(3), 289-318.
- Elissen, A. M. J. (2013). Going beyond the 'grand mean': *advancing disease management science and evidence*.
- Genet, N., Boerma, W., Kroneman, M., Hutchinson, A., & Saltman, R.B. (2013). Home Care across Europe: Case studies. Denmark: World Health Organization.
- Goodwin, N., Erler, A., Bodenheimer, T., Baker, R., Spreeuwenberg, C., Vrijhoef, H. J., & Gerlach, F. M. (2011). Preparing primary care for the future—perspectives from the Netherlands, England, and USA. *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen*, 105(8), 571-580.
- Iersel, M. van, Latour, C. H., de Vos, R., Kirschner, P. A., & op Reimer, W. J. S. (2016). Nursing students' perceptions of community care and other areas of nursing practice—A review of the literature. *International journal of nursing studies*, 61, 1-19.
- Khandwalla, P. N. (1977). *The design of organizations* (Vol. 260). New York: harcourt brace Jovanovich.
- Lewin, K. (1947). Frontiers in group dynamics: Concept, method and reality in social science; social equilibria and social change. *Human relations*, 1(1), 5-41.
- Miles, R. E., Snow, C. C., & Pfeffer, J. (1974). Organization-environment: concepts and issues. *Industrial Relations: A Journal of Economy and Society*, 13(3), 244-264.
- Ministry of Health, Welfare and Sports & Healthcare for Healthcare. (2013). Kwaliteitsdocument 2013. Verpleging, verzorging & zorg thuis.
- Ministry of Health, Welfare and Sports. (2015). *Law of social support* (Wmo). Retrieved from <https://www.rijksoverheid.nl/onderwerpen/zorg-en-ondersteuning-thuis/inhoud/wmo-2015>
- Ministry of Health, Welfare and Sports. (2016). *Overview of obligations in the law of quality, complaints and differences in the healthcare* (wkkgz). Retrieved from <https://www.rijksoverheid.nl/onderwerpen/kwaliteit-van-de-zorg/documenten/publicaties/2015/12/11/overzicht-verplichtingen-wkkgz>

- Ministry of Health, Welfare and Sports. (2016). *Pressure of regulations in the healthcare sector*. Retrieved from <https://www.rijksoverheid.nl/onderwerpen/regeldruk-in-de-zorg>
- Mintzberg, H. (1980). Structure in 5's: A Synthesis of the Research on Organization Design. *Management Science*, 26(3), 322-341.
- Mintzberg, H. (1991). Learning 1, planning 0 reply to Igor Ansoff. *Strategic management journal*, 12(6), 463-466.
- Nandram, S., & Koster, N. (2014). Organizational innovation and integrated care: lessons from Buurtzorg. *Journal of Integrated Care*, 22(4), 174-184.
- Peeters, T. (2015). Redesigning home care. *From a bureaucratic to a socio-technical type of provider organization*. (Doctoral dissertation, Maastricht University).
- Rainey, H. G. (2009). Understanding and managing public organizations (5th ed.). Hoboken, New Jersey: John Wiley & Sons.
- De Sitter, L. U., Den Hertog, J. F., & Dankbaar, B. (1997). From complex organizations with simple jobs to simple organizations with complex jobs. *Human relations*, 50(5), 497-534.
- De Sitter, L. U. (1998). Synergetisch produceren. Assen, The Netherlands: Van Gorcum.
- Tellis, G. J. (2006). Disruptive technology or visionary leadership? *Journal of Product Innovation Management*, 23(1), 34-38.
- Tung, R. L. (1979). Dimensions of organizational environments: An exploratory study of their impact on organization structure. *Academy of Management Journal*, 22(4), 672-693.
- Walker, H., Armenakis, A. A., & Bernerth, J. B. (2007). Factors influencing organizational change efforts: An integrative investigation of change content, context, process and individual differences. *Journal of Organizational Change Management*, 20(6), 761-773.
- Womack, J.P., & Jones, D.T. (2003). Part I: Lean Principles, In: *Lean Thinking. Banish Waste and Create Wealth in your Corporation*. New York: Simon & Schuster.
- Yin, R. K. (2009). Case study research: *Design and methods*. Sage publications.
- ZZG Zorggroep. (2015). Annual report 2015. *Connection*.
- ZZG Zorggroep. (2016). Organizing 24/7 nursing care. *Region Rijk van Nijmegen*.