CHAPTER 4

A process analysis of a modular design process: An institutional perspective

4.1 Introduction

Despite the increasing popularity of modular service offerings, little attention has been paid to the design process, or how to implement modularity into the design of service offerings with multiple variants (Salvador, Forza & Rungtusanatham, 2002). Modularity in its most abstract sense refers to the degree to which it is possible to separate and recombine a system’s parts (Schilling, 2000). More recently, Rajahonka (2013) provides a general definition for the term module within a service system: “a module can be defined as a relatively independent part of a system with a specific function and standardized interface”. This definition reflects three core modular design principles: modules should 1.) have a specific function; 2.) be relatively independent; and 3.) have standardized interfaces. A modular design is of particular interest in professional service settings due to its expected contribution to balancing variety and costs (see e.g., Bohmer, 2005; De Blok et al., 2010a; 2010b). The provision of variety at relatively low costs should be the result of the pre-specifying and optimizing service parts that could be reused in numerous professional services, while still addressing a large variety of customer demands due to the combination of these service parts. Although modular designs in professional services are associated with low cost provision of variety (see e.g., Bohmer, 2005, De Blok et al., 2010a; 2010b), the current literature provides limited insights into how modularity can be designed within professional service offerings to create variety at reduced costs.

Most studies on modularity within a professional service setting analysed whether modules can be recognized in existing service systems, and consequently it was the researchers who delineated service elements as modules (De Blok et al., 2010a; 2010b; De Blok et al., 2012, Voss & Hsuan, 2009; Meyer, Jekowsky & Crane 2007; Bask, Tinnilä & Rajahonka, 2010; Meyer & DeTore 2001; Rahikka, Ulkuniemi & Pekkarinen, 2011). In the few studies that do pay attention to the modular design process within a professional service setting, limited attention is paid to design choices and the reasons why certain choices were made (Chorpita et al., 2005; Meyer & DeTore, 2001; Meyer, Jekowsky & Crane 2007). The focus in these studies was on the result of the design

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process, not the design process itself. Less attention is paid to the reasoning behind why practitioners craft the modular design principles during a design process in a specific way. At the same time, the resulting designs described in the literature often do not meet all three modular design principles (Chapter 2). This calls for an examination of the modular service design process in which professionals themselves develop the modular design.

Professionals often are interdependent on other professionals, including professionals from other disciplines, in delivering their service. Within this web of relations, each profession commonly has its own specific culture, rules and identity influenced by institutions as the education system, professional codes and professional associations (Taylor, Hawley & Ebrary, 2010). New managerial concepts, such as modularity, might interfere with the professional values and codes of a specific discipline, and therefore play a significant role in acceptance and legitimation of new practices (Greenwood, Suddaby & Hinings, 2002). Previous research has shown how managerial concepts aiming at standardizing professional work (Timmermans & Berg, 2003), such as through performance management and professional guidelines, are framed and reframed in a professional service setting. For example, the study of Curie et al. (2012) shows that ‘elite’ professionals within a healthcare setting, i.e., doctors, saw the implementation of new nursing roles as an opportunity to delegate more routine tasks to these nursing roles and to maintain their professional autonomy.

The studies on institutional work in professional service settings are mainly focussed on the influence of the institutional context on ‘organizational structures’, referring to those performing certain tasks. Limited attention, however, is paid to the influence of the institutional context on the overall design of the service offering, by considering both the service outcome and process dimensions (Grönroos, 2000). Less is known about how professionals (non-)legitimate an abstract management concept like modularity in the design of the service offerings they deliver. On the one hand, professional codes and identities often reflect professional autonomy, which seems to contradict pre-specifying reusable modules. As such, professionals might refuse to implement modularity in the design of their service offering. On the other hand, professionals are confronted with the challenge of developing their organisational capacities and to focus more on performance indicators, such as transparency and efficiency (Evetts, 2011; Gleeson & Knights, 2006; Faulconbridge & Muzio, 2008). In theory, modularity seems to provide answers to this challenge, as it involves the identification of transparent choice options in terms of pre-specified modules and efforts towards providing variety at lower costs by means of standardization. However, it remains unclear how professionals in practice apply the concept of modularity in designing their service offerings.
This chapter aims to analyse how the institutional context influences the modular design process of a new set of service offerings within a professional service setting. The contribution of this chapter is twofold. First, it adds to existing modularity theory by providing insights about how professionals themselves ‘craft’ a managerial concept that involves the redesign of the service outcome and service process dimension of a service offering. Second, this chapter reveals how a modular service design process involves a dynamic process in which old and new professional norms and values interact and influence the (modular) design choices made by the professionals and how this dynamic process explains the limited or partial implementation of the modular design principles. More specifically, we focus on the reasoning by which professionals themselves (non-)legitimate the application of modularity in the design of their service offering. We work towards a rich process description of a modular design process within a professional service setting, including the arguments used by professionals during particular phases in the design process. To this end, we conducted an in-depth single case study of a modular design process within an elderly care setting.

Below, we first elaborate on the modular design principles: specific function, relative independence, and standardized interface, and subsequently we discuss the literature on modular design processes within professional service contexts. Next, we will describe the institutional lens used in this study. Also, we introduce the movement from ‘old professionalism’ towards ‘new professionalism’ within the institutional context, as this movement also emerged from our data analysis. In the methods section, we describe the specific setting of this research, the data collection, and the data analysis. The findings are presented afterwards. In the discussion, we reflect on our results by providing different explanations for our findings. In the conclusion, we bring forward the theoretical and practical implications of this research.

4.2 Theory

This theory section is structured as follows. First, we will discuss previous research on modular design processes within (professional) service settings. Thereafter, the three modular design principles will be discussed in terms of the design choices that have to be made. Finally, we will elaborate on the institutional lens used in this study, paying specific attention to the institutional influences of ‘old professionalism’ and ‘new professionalism’ on the modular design process as the diverging influences from these institutions emerged from our data analysis.
4.2.1 The modular design process within (professional) services

In the literature on modularity within professional services, three attempts have been made to describe the modular design process. Modular design processes were described for the design of service offerings delivered by a reinsurance company (Meyer & DeTore, 2001), case management in healthcare (Meyer, Jekowsky & Crane, 2007) and psychotherapy treatment (Chorpita et al., 2005). In these three studies, it was the researchers who developed the modular designs and the practitioners had limited involvement. For example, Meyer, Jekowsky and Crane (2007) compared different treatment plans and identified communalities as ‘sub-systems’. A similar approach was taken by Chorpita et al. (2005) different evidence-based interventions were compared by a team of professionals, but it was the researchers who identified the common practices as the basis for a modular service design. Moreover, the main focus of the three studies is the result of the modular design process, rather the modular design and not the design process itself. The engineering literature also focusses on modular design processes by describing and analysing the technical aspects of a product, like the physical architecture of a product and how two modules could physically connect and/or exchange energy. Due to this limited knowledge, we use the three modular design principles as a starting point in describing the design activities and design choices during a modular design process.

4.2.2 Modular design principles applied to professional service settings

Below, we will discuss the three modular design principles: specific function, relative independence, and standardized interfaces (Schilling, 2000; Ulrich, 1995; Duray et al., 2000; Baldwin & Clark, 2000). Per modular design principles, we elaborate on what design activities and design choices can be considered when implementing modularity in the design of a professional service offering.

First, the modular design principle ‘specific function’ refers to the idea that each module is expected to contribute to the overall service offering by fulfilling a specific function. Functions are commonly expressed in linguistic terms such as ‘providing’, ‘helping’, and ‘facilitating’ (Ulrich, 1995). Modules’ functions can be defined at different decomposition levels (Ulrich, 1995). For example, functions can be defined at a ‘high’ decomposition level (e.g., helping people to overcome a depression) or at ‘lower’ decomposition levels, functions refer to the most detailed level of activities (e.g., teaching a relaxation exercise). This is in line with Simon’s (1962) idea of hierarchy being a complex system that can be decomposed into sub-systems that in turn have their own subsystems, and so on (Simon, 1962). In designing a modular service, design choices have to be made concerning the decomposition level(s) on which functional parts are identified (see e.g. (Fixson, 2005).
Second, the modular design principle ‘relative independence’ refers to the idea that the components that make up the module are interdependent on one another, whereas the interdependencies between modules are minimized (Simon, 1962; Campagnolo & Camuffo, 2010; Baldwin & Clark, 2000). As a result, specific details of the modules’ processes can be kept within the module (Chorpita, Daleiden & Weisz, 2005) and the need for information exchange between modules is minimized. This modularity dimension reflects Simon’s idea of ‘nearly decomposable systems’, the systems in which interactions among subsystems are weak but not negligible (Simon, 1962). In designing a modular service offering, a critical design activity is to analyse the interdependence patterns between service parts (Baldwin & Clark, 2000).

Finally, in order to explain the modular design principle of standardized interface, a distinction between functional interfaces and organizational interfaces has to be made. Functional interfaces focus on linking modules, as in with decomposed service offerings some of the functional modules may need to be coupled to provide an integrated service offering to a customer. Standardization of functional interfaces refers to the degree to which mix and match rules allow modules to be combined with each other (Fixson, 2005). Organizational interfaces focus on coordinating work between providers and making interactions among various groups of service providers predictable (De Blok et al., 2014). Standardization of organizational interfaces involves applying coordination between tasks. The most important benefit of standardizing organizational interfaces, for example by using rules, is that all communication related to the interdependence can be either eliminated or standardized. As a result, each case does not have to be considered as new (Galbraith, 1995), which will ultimately reduce costs of delivering these service offerings. Specifying functional interfaces will influence variety as they describe the ease in which modules can be mixed and matched. During the modular design process, choices have to be made about the mixing and matching of service modules, as well as about the type of coordination mechanisms used.

The way in which professionals (non)legitimize these three modular design principles in the design of a professional service offering is expected to be influenced by the institutional context (Greenwood, Suddaby & Hinings, 2002). Below, we will elaborate on what we mean by the institutional context.

4.2.3 An institutional perspective on the modular design process

Institutional theory argues that the development of new practices in organizations, such as modular service designs, are highly influenced by institutions and the environment (Evetts, 2009; Evetts, 2003; Scott, 2001). Institutions are “social structures which are composed of cultural-cognitive, normative, and regulative elements that, together with associated activities and resources, provide stability and
meaning to social life” (Scott, 1995, p.33). Institutions refer to (more or less) enduring elements of social life (Hughes, 1936) that affect the behaviour and beliefs of individuals and collective actors by providing templates for action, cognition, and emotion (Scott, 2001; Powell, 1991; Meyer & Rowan, 1977). Examples of institutions include laws, regulations, customs, norms, culture, and ethics. Currently, a major change within the institutional context of many professional services is occurring (Evetts, 2011; Noordegraaf, 2011, Evetts, 2003; Greenwood, Suddaby & Hinings, 2002). This movement is labelled in literature as the movement from “old professionalism” towards “new professionalism” or “organized professionalism” (Evetts, 2011; Taylor, Hawley & Ebrary, 2010; Noordegraaf, 2011). From our data analysis, it appeared that the professionals heavily relied on both old and new professionalisms in (non-)legitimating the modular design principles. Therefore, we will elaborate on this movement in more detail below.

4.2.4 Movement from old professionalism to new professionalism

The traditional values associated with professionalism are based upon the notion that professionals are people who have mastery over a complex body of knowledge and special skills that grants them professional autonomy, discretionary judgment and assessment, particularly in complex cases (Taylor, Hawley & Ebrary, 2010; Evetts, 2003). Abbott (1988) relies on this traditional notion of professionalism with introducing the concept of inference, the process that takes place “when the connection between diagnosis and treatment is obscure” (Abbott, 1988). This traditional notion of professionalism places a heavy emphasis on specialized training and expertise in a particular area as well as the professional status of professionals, for example, status derived from possessing such specialist knowledge (Taylor, Hawley & Ebrary, 2010). Moreover, professionalism as a special means of organizing work and controlling workers is often propagated in the Anglo-Saxon literature (Evetts, 2003; Gleeson & Knights, 2006; Lawrence, Suddaby & Leca, 2011; Freidson, 2001).

The traditional notion of professionalism assumes that anybody without a specialization cannot be regarded as a professional (Taylor, Hawley & Ebrary, 2010). Rather than emphasizing the possession of specialist, scientific knowledge, new professionalism place considerably more value on creating partnerships with customers and on multidisciplinary work (Taylor, Hawley & Ebrary, 2010). Due to this changing focus in value, professionals have to organize their work and invest in more organizational activities, such as planning, scheduling, communication, and cooperation with clients as well as other professionals. In part, these activities can be delegated to managers, but these activities do become more and more professional affairs (Noordegraaf, 2011). Thus, new professionalism advocates that professionals themselves develop their organisational capacities and become more ‘management-
minded’ (Noordegraaf, 2011). As such, professionals focus more on performance indicators like transparency and efficiency (Evetts, 2011; Gleeson & Knights, 2006; Faulconbridge & Muzio, 2008).

The implementation of the management concept of modularity within the design of professional service offerings seems to be in accord with this movement towards new professionalism. Implementing modularity during the design process requires professionals to become ‘management-minded’ and design their service offering in such a way that variety is provided at lower costs, and in addition, transparency is enhanced through pre-specifying modules with a specific function. However, much old professionalism is still around (Taylor, Hawley & Ebrary, 2010). The idea of professional autonomy and discretionary judgment and assessment are highly institutionalized within many professions (Evetts, 2011; Evetts, 2003). These institutionalized codes seem to contradict implementing modularity in the design of professional service offerings in terms of pre-specifying a transparent overview of reusable modules which could be mixed and matched by customers. Thus, although it is known that institutions associated with professionalism play a significant role in acceptance and legitimating new practices (Greenwood, Suddaby & Hinings, 2002), little is known about how these institutions influence how professionals craft the concept of modularity in redesigning their service offering (i.e., outcome and process dimension). Therefore, the overall research question is formulated as follows:

*How does the institutional context influence the implementation of the three modular design principles during the design process?*

4.3 Methods

To understand empirically the theoretical constructs associated with modular service designs and the underlying dynamics of (non-)legitimating design decisions, we applied a longitudinal case study (Eisenhardt, 1989; Siggelkow, 2007). A longitudinal case study is particularly well-suited to develop a holistic and in-depth understanding of a unique and complex phenomenon that plays out over time (Siggelkow, 2007; Yin, 2009). Moreover, a case study allows the questions of why, what, and how to be answered and for empirically exploring the theoretical constructs under study (Voss, Tsikritksis & Frohlich, 2002). Our study analyses the design process of a modular service design by a multidisciplinary group of professionals within an elderly care setting.
4.3.1 The case

The setting was a healthcare institute for elderly care in the Netherlands. This institute has the ambition of starting a new centre for providing person-centred care and services for independently living elderly who are in need of support. The institute’s main focus lies in supporting general practitioners (GPs) in diagnosing interrelated problems that older adults experience and providing interventions for these problems. We define the modular design process as the unit of analysis, the process in which a task force of professionals collaborated and shared knowledge to pre-specify and organize their combined service offerings in a flexible and person-centred way.

As modular service designs are associated with the provision of variety and person-centred care for lower costs (see e.g., Bohmer, 2005; De Blok et al., 2010a; 2010b; Essen, 2008), the institute became interested in this type of service design. Moreover, management of the institute decided to participate in a scientific project in which research concerning the design process of a modular service design was promoted. Within the scientific project, data was collected on the health-related needs and preferences of older adults in order to create segments with similar health-related needs (see Chapter 3). These segments and their specific health-related needs were inputs for the design process, in addition to the strategic objectives of the institute. The design process of the modular service architecture comprised seven plenary meetings with professionals from 10 different disciplines, three small group sessions, and in-between virtual discussions, reflections, and adjustments.

While being conscious that examining a single design process limits the generalizability of findings, a single case study can offer powerful results, especially when this case is special and provides certain insights that other cases would not be able to provide (Siggelkow, 2007). Our chosen setting was of particular value as it provided us the opportunity to observe the actual design process of a modular service design over time within a professional service setting. In addition, it was the multidisciplinary group of professionals who were responsible for making the design choices concerning the service architecture, which has, to our knowledge, never been reported in the literature.

4.3.2 Data collection

To achieve internal triangulation (Voss, Tsikriktsis & Frohlich, 2002), data on the design process was collected in multiple ways: a.) observations of the seven plenary meetings and three small group sessions with professionals from different disciplines; b.) 12 semi-structured interviews with the participants of the design process and two managers who were the principals for the design process; and c.) study of internal documents, such as the business case and in-between outputs of the different modular
design meetings. We kept a logbook during the design process and recorded and transcribed all plenary meetings and interviews. The observations of the plenary meetings provide data related to the design activities, critical events, and design choices made during the process (Langley, 1999). Approximately four months after the formal end of the design process, all 14 participants were interviewed about their experiences with the design process and the result. The interviews were semi-structured and varied in length from 45 to 90 minutes. An interview protocol was developed for providing structure to the data collection and to facilitate data comparison (see Appendix 3). Finally, a large number of informal conversations, e-mails, intermediate conversations with management, documents such as process descriptions and business cases supplemented the data. Data was collected between February 2012 and December 2012.

4.3.3 Data analysis

We applied multiple strategies to interpret the raw process data (Langley, 1999). First, we applied a time-ordered display (Miles & Huberman, 1994) in which we described the design activities, the critical events, those that are determinative for the rest of the design process, and the design choices made during the modular design process. A time-ordered display arranges data by time and sequence, preserving the chronological flow and permitting a good look at what led to what and when (Miles & Huberman, 1994). Besides displaying the process data in a time ordered display, we also used a narrative strategy to construct a detailed story from the raw process data (Langley, 1999). We provide this detailed description of the design process as a preliminary step aimed at preparing a chronology for subsequent analysis (Langley, 1999).

The second step in our data analysis involved the coding of the arguments used by the professionals during the implementation of modularity in the design of their service offering. We analysed the arguments mentioned by the professionals during the different meetings, interviews, and e-mail contact. We used the method of constant iteration to create mutually exclusive and exhaustive categories of arguments (Miles & Huberman, 1994; Anand, Gardner & Morris, 2007). During the first round of analysing the arguments used by the professionals, we assigned descriptive codes to segments of texts (Miles & Huberman, 1994). In doing so, we inductively observed and deductively recognized that both old professionalism and new professionalism were reflected in many arguments of the professionals. Based on the existing literature concerning old and new professionalism, we refined our descriptive codes and developed a coding scheme. In addition to old and new professionalism, the professionals also relied on the general institutional context in their arguments, which is therefore also incorporated in the coding scheme. Figure 4.1 provides an overview.
of the codes used for labelling the arguments provided by the professionals during the modular design process.

![Figure 4.1 – Overview codes](image)

One of the researchers read all the transcripts and identified citations that were attributable to the arguments provided by the professionals (Anand, Gardner & Morris, 2007). The researcher then assigned these citations to the theoretical first (i.e., general institutional context, old professionalism, new professionalism) and second-order argument types (i.e., dutchhealthcare system, routines and habits, professional autonomy, occupational boundaries, evidence-based medicine, tacit knowledge, efficiency enhancement, information on clients’ needs, multidisciplinary collaboration, commercial thinking and client as a person) (see Figure 4.1). The reliability of the
coding procedure was tested by asking two research assistants, unrelated to the study, to classify a representative set of 72 interpretive text segments (about 25% of the total) using the 12 codes as displayed in Figure 4.1. The overall agreement with the coding scheme was acceptable (i.e., 76% of their coding matched our coding).

Finally, we applied a visual mapping strategy (Langley, 1999) in which we relate the design activities, critical events and design choices to the arguments used by the professionals during the design process. Visual, graphical representations are particularly attractive for the analysis of process data because they allow the simultaneous representation of a large number of dimensions and they can easily be used to show precedence, parallel processes and the passage over time (Langley, 1999). Subsequently, these visual graphical representations were compared, and in these comparisons we searched for common sequences of events and common progressions in sources of influence (Langley, 1999).

4.4 Results

The results section is structured as follows. First, we will elaborate on the design process in terms of the design activities, critical events, and design choices made by the professionals during the modular design process in Section 4.4.1. The description will be chronological. Subsequently, in Section 4.4.2, we will elaborate on the arguments the professionals used during the design process to (non-)legitimate the application of the modularity principles within their specific service setting. Section 4.4.2 is structured around the three core modularity principles: specific function, relative independence, and standardized interface.

4.4.1 The modular design process

The evolvement of the critical events, design activities, and design choices during the design process is displayed in Table 4.1.
Table 4.1 – Overview of the activities, events and choices during the modular design process

<table>
<thead>
<tr>
<th>Meeting</th>
<th>1 (February 2012)</th>
<th>2 (March 2012)</th>
<th>3 (March 2012)</th>
<th>4 (April 2012)</th>
<th>5+6 (April – May 2012)</th>
<th>7 (May 2012)</th>
<th>8 (June 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design activities</td>
<td>The taskforce discussed designing care for elderly segments</td>
<td>The taskforce discussed how to specify functions for elderly segments</td>
<td>- The taskforce listed components that can be delivered to fulfil the functions (as specified in previous session)</td>
<td>The taskforce discussed the nature of modules (i.e., do modules involve a diagnostic and treatment part, or should separate diagnostic and treatment modules be distinguished)</td>
<td>- Multidisciplinary subgroups within the taskforce designed the different types of modules in terms of what is delivered and how modules are delivered</td>
<td>The taskforce discussed the process nature of the modules, including which discipline is involved per module and how the care within a module is coordinated</td>
<td>The taskforce discussed the documents they developed during the design process with management</td>
</tr>
<tr>
<td>Critical events</td>
<td>Management gave a presentation and stated:</td>
<td>The geriatric physiotherapist proposed a set of functions he would like to achieve for the two elderly segments</td>
<td>The geriatric physiotherapist proposed the idea that modules should involve a combination of multidisciplinary components that are interrelated content-wise</td>
<td>The GP and the specialist elderly care propose to:</td>
<td>(no critical events)</td>
<td>(no critical events)</td>
<td>(no critical events)</td>
</tr>
<tr>
<td></td>
<td>- the needs of two elderly segments are used as a starting point</td>
<td>- the supply need to be</td>
<td></td>
<td>- make a distinction between basic diagnostic, intensive diagnostic, and treatment modules</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meeting</td>
<td>1 (February 2012)</td>
<td>2 (March 2012)</td>
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<tr>
<td>Design choices</td>
<td>designed in a modular manner</td>
<td>To specify functions in terms of benefits for the two elderly segments</td>
<td>To conceptualize a module in this service setting as a combination of (multidisciplinary) components which are interrelated content-wise and together fulfil a specific function</td>
<td>- To decompose the service offering into basic diagnostic-intensive, diagnostic, and treatment modules - To specify diagnostic modules’ functions based on domains of human functioning</td>
<td>- To delegate multidisciplinary protocolled tasks within the basic diagnostic modules to one discipline - To formulate mix and match rules for the diagnostic modules - To refrain from specifying mix and match rules for treatment modules</td>
<td>- To explicate tasks and coordination mechanisms within multidisciplinary modules - To let the module’s design allow for a degree of personalization during delivery - To develop general process descriptions of mono-disciplinary modules for psychosocial functioning</td>
<td></td>
</tr>
</tbody>
</table>
During the first meeting, the institute’s management stated that the needs of two elderly segments should be used as a starting point in designing a modular service offering: ‘difficulties with psychosocial coping’ and ‘physical and mobility complaints’. Also, management stated that the service design should reflect the three modularity principles: specific function, relative independence and standardized interface.

The majority of the taskforce felt uncomfortable with using the two elderly segments as a starting point. As one participant, a nurse practitioner, stated: “it is difficult as there is not a client in front of you…which makes it abstract and difficult”. During the second meeting, the geriatric physiotherapist introduced a set of functions in terms of benefits he would like to achieve for the two elderly segments: ‘stay safe and in balance’, ‘become fit and mobile’, and ‘remain fit and active’. After this input, the other members of the taskforce also specified functions in terms of benefits they would like to achieve for the two elderly segments, such as ‘stay more self-reliant’, ‘effectively deal with illness and decline’ and ‘strengthen self-esteem’.

After specifying the functions, the discussion arose on ‘what’ should be delivered to fulfil these functions. At first the taskforce developed long lists of activities and resources per function, but also referred to occupations. For a few examples, a GP suggested that “we can provide information or training”; an occupational therapist’s idea was “we can offer a digital training tool”; it was also suggested by a GP that “how to deal with cognitive problems, such as mutual support, which we also can offer to partners. Also, we can offer group-based mutual support or individual counselling by a social worker”. Based on these lists, the conversation shifted to what is involved in a module within this specific service setting. The taskforce agreed with a geriatric physiotherapist that “a module is not a shop from which the appropriate components per customer are selected”. The geriatric physiotherapist proposed that a module should involve interrelated components in terms of content and characterized by multidisciplinary input. For example, the function ‘stay safe and in balance’ could be achieved by the combination of ‘muscle strengthening, improve endurance and a protein rich diet’, according to a geriatric physiotherapist.

Subsequently, the question arose of whether the modules involve both problem-exploratory components and treatment components, or if separate problem-exploratory or diagnostic modules and treatment modules should be developed. During the third meeting, the GP proposed: “…to make a distinction between basic diagnostic, intensive diagnostic and treatment modules…”. The GP and the elderly care specialist had thought about how to decompose the overall service offering after the third meeting. Besides the distinction between basic diagnostic, intensive diagnostics and treatment, they also proposed labelling the diagnostic modules based on the domains...
of human functioning (physical, psychological, social and cognitive). The other members of the taskforce quickly agreed on the proposed distinctions. As one participating nurse practitioner responded, “this provides clarity, we also discussed this last time, but then it remained abstract”.

Next, the taskforce split up into smaller groups to design the different diagnostics modules. From the moment that the basic diagnostic modules were explicitly described, together the taskforce decided that the basic diagnostic modules could be delivered by a specialist nurse. At the same time they specified when a client should be referred to an intensive diagnostic or treatment module. For example, for the module ‘Basic diagnostic psycho-cognitive’, the taskforce specified the following referral rules:

- “with indications of cognitive problems, refer to the module intensive diagnostic cognitive”
- “with indications for mood and anxiety problems, refer to the module intensive diagnostic psychic”
- “with indications for medication risks, refer to the module intensive medication review”
- “with indications for problems with daily activities, refer to the module stay self-reliant as long as possible”
- “with indications for fear of driving, refer to the module drive test”
- “in case of not meeting the Dutch norm of moving, refer to the module stay fit”

Based on the specification of the referral rules for the diagnostic modules, a discussion arose on whether the taskforce should also specify rules concerning the combination of different treatment modules, but it was quickly agreed that this was not doable because combining treatment modules involved knowledge which was hard to explain upfront.

During the seventh meeting, the taskforce split up into smaller groups and each smaller group was responsible for deciding who does what and when within each module and how information was to be shared among the different disciplines (e.g. multidisciplinary meeting, information system). Although the detailed process descriptions were developed, the taskforce agreed upon that process-related aspects of the module needed to be adapted during delivery, i.e., duration, individual- or group-wise, type of resources to be used. As one geriatric physiotherapist concluded “…we can standardize the process; day one intake about food, day two training…yet the intensity and the equipment should be adapted to the individual client’s needs…” The majority of modules involved input from multiple disciplines; however, the modules aiming at solving psycho-social problems involved input from a single discipline,
social work. As the social worker expressed, “…I don’t understand why a module should be multidisciplinary…”.

During the final meeting, the results of the design process were discussed with the management of the centre.

4.4.2 Argumentation used for (non-)legitimation of the modular design principles

The second step in our analysis involved analysing what arguments were used in (non-)legitimating the modular design principles: specific function, relatively independent, and standardized interfaces. We now elaborate on the arguments per modular design principle, starting with specific function. This step in analysing the data clarifies (a.) which modular design principle seemed to be relatively more difficult to implement and the reasons explaining the partially implementation of modularity, and (b.) how does the institutional context influence the modular design process.

Specific function

The modularity principle of specific function was discussed at two moments during the design process. At the beginning of the design process (meeting 1 and 2), the taskforce elaborated on functions in terms of benefits they want to achieve for the two elderly segments. Figure 4.2 provides a graphical overview of this first part of the design process, including the argument types used (in Figure 4.2 NP refers to New Professionalism and GI to General Institutional context).

Specifying functions for elderly segments was not an activity that the majority of the taskforce felt comfortable with. For instance, the elderly care specialist mentioned: “the needs of the elderly groups are described in general, but what is in each segment…what are the specific questions?” (NP: information on client’s needs). Also, formulating functions for the two elderly segments was experienced as uncomfortable as the segments’ needs were described subjectively of what elderly themselves experience, and holistically as the needs in multiple domains of human functioning, rather than based on a specific, objective diagnosis. During the second meeting, the geriatric physiotherapist proposed a set of specific functions, saying the following about this input: “…we (i.e., geriatric physiotherapists) are used to function-oriented working…” (GI: routines and habits). The other members of the taskforce also started to formulate specific functions during the second meeting, which indicates that the input of the geriatric physiotherapist was respected by the other members of the taskforce. In specifying these functions, the professionals took the subjective needs of the elderly segments as a starting point, rather than a specific diagnosis. The social worker questioned, “When an older adult does have an early form of dementia, but
does not experience complaints concerning their memory, should we then offer many diagnostics tests?” (NP: client as a person).

The GP focusses more on the holistic nature of client’s needs: “…we should have a broad perspective…nutrition, physical health, on all domains of human functioning…” (NP: client as a person). At the end, the professionals mentioned commercial benefits of formulating functions in terms of benefits they want to achieve for older adults. The psychologist stated, “…the way in which the treatment modules are formulated…that will appeal to the older adults…” (NP: commercial thinking). The social worker mentions similar arguments: “…it will help to attract older adults to the centre…” (NP: commercial thinking).

The modular design principle of ‘specific function’ was also discussed during the fourth meeting. The GP and the elderly care specialist together proposed
decomposing the overall service offering into basic diagnostics, intensive diagnostics and treatment modules and to specify diagnostic modules’ functions based on the domains of human functioning. Figure 4.3 provides an overview of this stage in the design process, including the argument types used (in Figure 4.3, GI refers to General Institutional context, OP refers to Old Professionalism and NP refers to New Professionalism). Note that the same symbols are used as presented in Figure 4.2.

The GP proposed distinguishing diagnostic modules’ functions in terms of domains of human functioning, which is quite common in the Dutch healthcare system. The geriatric physiotherapist reacts that another distinction in terms of severity of the problems should be made: “…what if a client does experience cognitive problems…do we offer expensive diagnostic tests within the basic diagnostic modules?” (NP: efficiency). The taskforce agreed that within the basic diagnostics, simple diagnostic tests are provided and within the intensive diagnostics, more complex and expensive diagnostic tests are provided. The GP argued “…as such we can work according to the stepped care principle…offer as little as possible in order to meet a client’s needs…” (NP: efficiency). Moreover, the GP argued that designing separate, basic diagnostic and intensive diagnostic modules “…helped in defining occupational boundaries…” (OP: occupational boundaries). The GP further argues that “…basic diagnostics should be delivered by a specialist nurse, and intensive diagnostic should be delivered by other professionals…” (OP: occupational boundaries). Also, the taskforce agreed to use the domains of human functioning as a starting point in labelling diagnostic modules’ functions.
Figure 4.3 – The argument types related to specific function used late in the design process
**Relative independence**

The design principle ‘relative independence’ was discussed three times during the modular design process. The first time, the taskforce discussed the way in which components should be combined into modules (meeting 3). Figure 4.4 provides an overview of this stage in the design process, including the argument types used (in Figure 4.4: NP refers to New Professionalism, GI refers to General Institutional context and OP refers to Old Professionalism).

The geriatric physiotherapist proposed combining content-related components delivered by multiple disciplines within a module: “…we should not think about modules which refer to specific professions such as ‘occupational therapy’…but we should think about a module as ‘exercise’”(NP: multidisciplinary collaboration). During this discussion, the geriatric physiotherapist often raised the question: “what do these elderly really need?” (NP: information on client’s needs and NP: client as a person). The geriatric physiotherapist also relied on his own experience in the nursing home: “…nursing home care is multidisciplinary…looking at psychosocial care…that is treated by the social worker and the occupational therapist…they do not argue about this is my job and that’s yours…” (GI: routines and habits, NP: multidisciplinary collaboration). Other members of the taskforce agreed and provide similar arguments: “…we should think about how can we deliver it as a team and not steal each other’s work…”(OccupationalTherapist) and “…we should offer multidisciplinary modules…not every discipline needs to provide their own module, but we need to create a sense of coherence…” (Pharmacist) (NP: multidisciplinary collaboration).

The social worker refrained from specifying multidisciplinary modules. During an e-mail conversation between the geriatric physiotherapist and the social worker later on in the design process, the differences regarding the multidisciplinary nature of the modules become visible when the geriatric physiotherapist wrote: “…it strikes me to see that there are (still) mono-disciplinary modules. I think mono-disciplinary modules do not offer the efficiency benefits of a modular service offering. We should focus on what can we offer a client and how to combine our offerings into a module…” (NP: multidisciplinary collaboration, NP: efficiency). The social worker reacts: “…combining is a good starting point, but not always necessary…” The social worker further argues: “…I don’t understand why a first contact or intake should be multidisciplinary, this is really something that’s so individual…”(OP: tacit knowledge and NP: information on client’s needs) and“… to us, each client is unique and so is their diagnosis and treatment…”(OP: occupational boundaries, NP: information on client’s needs).
Institutional and social context

Per function long lists of activities, actors, and services were listed.

Discussion: what is a module in this particular service offering? (i.e., is a module a shop? What to standardize?)

Geriatric physiotherapist propose: modules involve content-wise interrelated, multidisciplinary elements.

Psycho-social modules involve mono-disciplinary components.

Figure 4.4 – The argument types related to relative independence used early in the design process
The modularity principle of ‘relative independence’ was discussed for the second time during the fourth meeting (see Figure 4.3). After the proposed decomposition into basic diagnostic, intensive diagnostic and treatment modules by the GP and the elderly care specialist, the geriatric physiotherapist raised the discussion of “how to decide whether an older adult should receive the basic diagnostics or the intensive diagnostics; if it is up the elderly, they always will choose the more expensive intensive diagnostics” (OP: professional autonomy). The GP reacts to this by stating: “No, the specialist nurse will, in cooperation with the older adult, decide on the appropriate modules” (OP: professional autonomy). The taskforce agreed that basic diagnostic modules are offered first and, if necessary, additional intensive diagnostics and treatment modules are offered.

The modularity principle of ‘relative independence’ was discussed for the third and the fourth time during the fifth and sixth meetings. During these meetings, the taskforce discussed the combination of components per diagnostic module. The arguments used during this stage of the design process are displayed in Figure 4.5. (in figure 4.5 OP refers to Old Professionalism).

![Figure 4.5 - The argument types related to relative independence used late in the design process](image)

In designing the diagnostic modules, the taskforce mainly discussed at a detailed level what components together form the diagnostic modules, such as what diagnostic methods are used and who is involved in delivering the diagnostic module. For example, during the design of the basic diagnostic module of psycho-cognitive, a
boundary discussion arose: “…is a specialist nurse allowed to do the MMSE (diagnostic test)…” (Occupational Therapist), “…yes, if you provide her with the right instructions…” (Psychologist). Also, the taskforce relied on the use of evidence-based medicine and protocols, or “national guidelines” (Occupational Therapist) in deciding on the components within diagnostic modules.

**Standardized interface**

The taskforce paid relatively little attention to the modularity principle of ‘standardized interface’ and they did so late in the design process. Figure 4.6 provides an overview of this design stage and the arguments used. (in figure 4.4 OP refers to Old Professionalism, NP refers to New Professionalism and GI refers to General Institutional context).

During the fifth meeting, the taskforce started to specify rules concerning how the specialist nurse should refer to an intensive diagnostic or treatment module. As the GP stated, “…the specialist nurse has to filter the people with cognitive problems out and refer them to the intensive diagnostic module cognitive…” (OP: occupational domains). The taskforce relied on evidence-based diagnostic tests in terms of formulating rules concerning the referral to additional diagnostics and treatment. The geriatric physiotherapist also relied on efficiency-related performance indicators by advocating for descriptions about the way to combine modules: “show the sequence” and “create a decision tree” (NP: efficiency related performance). Limited attention was paid to the specification of interfaces between treatment modules. Arguments for not specifying interfaces between the different treatment modules relied on the notion of professional autonomy and tacit knowledge. The taskforce argued that (re-)combining modules involves a “clinical perspective”, that the viewpoint of the professionals should also be taken into account when combining modules. Also, the professionals relied on arguments concerning routines and habits. For example, the physiotherapist indicated: “…we already work together on a daily basis in the nursing home…and we will refer to each other…” (GI: routines and habits). Thus, as the professionals already refer to each other and thus are used to combining modules and interfaces between modules do not need to be standardized in terms of explicit rules.
Institutional and social context

Taskforce develops the different diagnostic modules in smaller groups

Discussion: how to deliver diagnostic modules + when to refer to what module

Discussion: how about mix and match rules between treatment modules?

Choice for diagnostic tests per module

Mix and match rules diagnostic modules

No mix and match rules for treatment modules

OP: Evidence based medicine
OP: Occupational domains
NP: Efficiency-related performance
GI: Routines and habits
OP: Professional autonomy
OP: Tacit knowledge

Figure 4.6 – The argument types related to standardized interface used during the design process
4.5 Discussion

The main question of our study was formulated as: “How does the institutional context influence the implementation of the three modular design principles during the design process?” Our study shows (a.) which modular design principles seemed to be relatively more difficult to implement and the reasons for this, explaining the partial implementation of modularity in the design of a professional service offering, and (b.) how the institutional context influences the (partial) implementation of the modular design principles.

With respect to the implementation of the three modular design principles, we identified three main, partially overlapping design phases, which each focus on one of the three modular design principles. Also, the level of detail of the design activities and corresponding design choices differed between these design phases. We labelled the three main design phases as follows: ‘the sense making phase’, ‘the decomposition phase’ and the ‘module design phase’. We will elaborate on these three design phases below.

The ‘sense making phase’ occurred at the beginning of the design process and the core design activities, critical events and design choices within this phase focused on making sense of the ‘abstract’ management concept of modularity. During this design phase, the professionals focussed on the modular design principle ‘specific function’ by specifying functions they would want to achieve for the target market. The ‘decomposition phase’ started approximately halfway during the modular design process. Within this phase, the focus was on the modular design principle ‘relative independence’ as the professionals decomposed their service offerings into smaller parts and discussed the interdependencies between these decomposed service parts. At the end of the design process, within the ‘module design phase’, the focus was on pre-specifying the modules including their interfaces. The professionals discussed how modules could be combined content-wise (functional interfaces), and also described how activities from two modules, performed by different professionals, could be aligned and how information between modules could be shared (organizational interfaces). Thus, the three modular design phases identified in this study differed in terms of foci on one of the three modular design principles, and in terms of level of detail of design activities and corresponding design choices.

Our study further shows that the more detailed the design activities and corresponding design choices, the more professionals flinch for the consequences of these design choices and fall back on their professional autonomy and tacit knowledge, i.e., old professionalism. At the beginning of the design process, when the focus is more on ‘making sense’ and the design activities and corresponding design choices involve a
more aggregate level of detail, the professionals relied more on ‘new professionalism’. As a consequence, the modular design principle ‘specific function’ seemed to be implemented relatively easily by the professionals, whereas the professionals seemed to experience more difficulties with implementing the modular design principle of ‘relative independence’, and the most difficulties with ‘standardized interface’. We displayed our core findings in Figure 4.7.

![Figure 4.7 – The influence of institutional context on the modular design process](image)

4.5.1 The influences of the institutional context during the design process

It is notable that old and new professionalism played significant roles during the modular design process. During the design process, the professionals could have relied on many different institutions, such as laws, rules, and financial structures, yet they primarily relied on their professional identity and the associated professional codes and values. A possible reason for the significant role of both old and new professionalism is that the modular design process involves the implementation of a management concept that reflects multiple elements of new professionalism. For example, multidisciplinary cooperation is an important practice in new professionalism (Taylor, Hawley & Ebrary, 2010; Noordegraaf, 2011) and it seems that implementing modularity in the design of the service offerings evoked this practice. The professionals took the opportunity to clarify multidisciplinary collaboration within the modular design. The social worker was the exception, in advocating that service offerings delivered by multiple professionals should be combined to the needs of each individual customer and that it is not necessary to pre-specify combinations upfront.
In implementing a service design that reflected multidisciplinary cooperation, the professionals were also confronted with compromises and erosion of their professional autonomy. In standardizing the functional interfaces of the basic diagnostic modules, the professionals formulated very specific mix and match rules about how to combine modules, which reduced their professional autonomy. Professional autonomy in turn is an important element of old professionalism (Evetts, 2011; Evetts, 2003). The elite professionals, such as the GP, elderly care specialist and geriatric physiotherapist, dealt with this reduction in professional autonomy by proposing the idea of handing over the basic diagnostic modules to a specialist nurse. Also, these elite professionals argued not to standardize the interfaces of the intensive diagnostic and treatment modules as combining these types of modules should be based on their professional autonomy and clinical perspective. Thus, the modular design process seems to fuel the debate concerning the changing nature of professionalism in terms of a movement from old professionalism towards new professionalism (Evetts, 2011; Taylor, Hawley & Ebrary, 2010; Noordegraaf, 2011; Evetts 2003), yet it seems that elite professionals do not want to bear the consequences, in terms of erosion of their professional autonomy in their day to day work. Our study further shows that at the beginning of the design process, professionals mainly relied on new professionalism, whereas when the design process progresses, the professionals tend to rely more on old professionalism in (non-)legitimating their design choices. We can think of multiple explanations for this finding, on which we will elaborate below.

First, the increasing use of old professionalism during the later phases of the design process may be related to the level of detail of the design activities being more confronting for the professionals. During the ‘sense making phase’, the design activities were rather abstract and during this phase, the professionals seem to be convinced of the usability of management concepts in designing their service offering. However, as the design activities and choices become more detailed and involved the design of the day-to-day work, the professionals rely more on current practices and old professionalism. The more concrete the consequences for their own positions become, the less willing professionals seem to accept modularity in the design of their service offerings.

Another reason, partly related to the day-to-day work of professionals, is the fear of changing roles and positions within the service delivery. During the ‘module design phase’, the professionals made choices concerning who is involved in the service delivery per module. Asking professionals to explain the way in which they will deliver their service offerings makes them vulnerable to criticism and to other professionals crossing their occupational boundaries (Sanders & Harrison, 2008). As such, relying on old professionalism in later phases during the design process can also
be seen as a political response in order to protect ones’ work patterns and codes of practice, or even the existence of their occupation.

A third reason for relying more on old professionalism during the later stages of the design process may be found in the domain of change management. At the beginning of the design process, a ‘new’ management concept is introduced, of which the professionals try to make sense in their particular service offering. It may be that later on during the design process the implementation of this concept becomes less challenging and energizing; because of this, the change management process falters after a period of time. This is also reflected in Table 4.1, which clearly shows the absence of critical events during the later phases of the modular design process. The stagnation of the change management process might be due to the time pressure. Management of the newly established centre had set strict deadlines for when the modular design must be finished. Also, management was less involved during the later stages of the design process. Less exchange and input may be an explanation for the stagnation.

Thus, multiple complementary explanations can be provided for why old and new professionalism played such essential roles during the different phases of the modular design process. An unanswered question remains of how the institutional context influenced the eventual modular design. Below, we will elaborate on how the institutional context influenced the modular design in terms of the modular design principles: specific function, relative independence, and standardized interface.

4.5.2 The influence of the institutional context on the implementation of the core modular design principles

The implementation of the modular design principle of ‘specific function’ mainly occurred at the beginning of the modular design process and was legitimated by new professionalism notions. Using elderly segments, whose needs were described subjectively and holistically as a starting point, was new to the professionals. Professionals in healthcare are used to configuring care based on diagnoses. Also, the professionals are not used to design care and services for groups of people. Generally, professionals tend to ‘design’ care and services ad-hoc, per individual (Lynn et al., 2007). The resulting modules’ functions reflect aims and themes that are more closely related to actual clients’ needs. For example, clients want to become ‘fit and mobile’ rather than receive ‘physiotherapy for a broken hip’. The professionals gave meaning to the modular design principle ‘specific function’ by formulating more person-centred outcomes of their service offerings. Service offerings have an outcome (‘what’ needs to be accomplished to satisfy the customer’s needs) and a process dimension (‘how’ this is to be achieved) (Grönroos, 2000; Goldstein et al., 2002). Notions of new
professionalism were used to legitimize the (re-)designing of the outcome dimension of the service offerings, in terms of formulating ‘specific functions’.

The majority of the professionals gave meaning to the modular design principle ‘relative independence’ by agreeing that: ‘a module reflects a set of multidisciplinary components that are content-wise interdependent’. The professionals argued that the (content-wise) interdependence between modules could be reduced by combining multidisciplinary components within a module and legitimated this by notions of new professionalism. The social worker could not agree with the design choice that a module reflects multidisciplinary components that are content-wise interdependent. A reason for this finding can be found in the different degrees in which specialization is institutionalized. The physical domain of healthcare is characterized by more institutionalized specialization, compared to the psychosocial domain (Kaslow et al., 2012). Also, in this modular design process, there were more professionals from the physical domain involved, compared to the number of professionals from the psychosocial domain of care. As a consequence, modules providing value in the physical domain more often involved multidisciplinary input compared to modules providing value in the psycho-social domain. Due to the limited psychosocial disciplines involved in the design process, the social worker may have felt more inclined to design mono-disciplinary modules.

Also, the social worker experienced difficulties in identifying her contribution within multidisciplinary modules, like saying for example: “…it is hard to indicate what we do…”. This could be the result of the service outcome dimension of psychosocial care being experienced as more ‘intangible’ compared to the service outcome dimension of the more physical-oriented care and services. Psychosocial problems often cannot be as easily appointed as more physical problems, such as a broken leg or cancer can. The bundle of various services to treat these psychosocial problems and the interdependencies between them may also be harder to identify. As a result, it might be harder to decompose psychosocial services into relatively independent parts. Thus, the modules providing value in the psychosocial domain mainly involved mono-disciplinary components and may be the result of the limited institutionalized specialization and the more ‘intangible’ nature of this type of care. These mono-disciplinary modules reflected less formalized contributions of disciplines and rather vague interdependency patterns between components within the module, but also between modules.

The modular design principle ‘standardized interface’ was mainly addressed at the end of the design process during the ‘module design phase’. Specific mix and match rules were specified for the referral from basic to intensive diagnostic modules and treatment, yet no functional interfaces between treatment modules were specified. In
both legitimating standardized interfaces between diagnostic modules and rejecting standardized interfaces between treatment modules, the professionals mainly relied on arguments reflecting old professionalism. The professionals specified functional interfaces between basic diagnostic modules and other modules so that it would be clear for the specialist nurse when to refer to what modules. Thus, a latent domain discussion formed the basis for specifying these functional interfaces. In legitimizing the design choice not to specify functional interfaces between treatment modules, the professionals mainly relied on their professional autonomy and clinical perspective. It is debatable that if the modularity principle ‘standardized interface’ had been discussed earlier during the design process, the professionals would also have specified standardized interfaces for the treatment modules. It might be that if the professionals made sense of this abstract concept, and relied more on new professionalism in doing so, that they would have formulated interfaces between the treatment modules. However, the concept of interfaces is a rather abstract concept within the context of services, and is multi-interpretable (De Blok et al., 2014). It could also be argued that considering the nature of complex elderly care, it is not completely possible to specify interfaces between the treatment modules upfront.

4.6 Conclusion

This study contributes to the debate on modular service design by identifying how professionals themselves (non-)legitimate modularity during a design process. To do so, we conducted an in-depth single case study of a modular design process within an elderly care setting. Our general conclusion is that the modular design process consists of three subsequent phases in which different institutional forces played a significant role. The three phases of the modular design process are labelled as ‘the sense making phase’, ‘the decomposition phase’, and ‘the module design phase’. At the beginning of the design process, the institutional forces associated with new professionalism played a significant role in legitimizing modularity in the design. As the design process progressed, the institutional forces associated with old professionalism played a more dominant role. Also, during the later stages in the design process, the professionals were less likely to legitimize the application of modularity in the design of their service offering.

4.6.1 Theoretical implications

Our case study contributes to the field of service modularity by revealing the underlying arguments regarding the implementation of modularity in the design of a professional service offering. In doing so, we indicate the importance of the institutional context in implementing modularity in the design of professional service
offerings. The more dominant the influence of new professionalism during the design process, the more then that the practitioners actually craft the modular design principles to their specific service offering. Thus, we provide insights about how professionals ‘reframed’ the abstract and managerial concept of modularity in a way that fits their particular practice (Dougherty & Heller, 1994). On the contrary, the more dominant the old professionalism was during the design process, the more the modular design reflected familiar practices. The modular design choices came to reflect practices ‘as usual’ (Dougherty & Heller, 1994). ‘Reframing’ is associated with more successful innovation efforts (Dougherty & Heller, 1994). Therefore, this research endorses the importance of professionals becoming more ‘management minded’ (Noordegraaf, 2009) in order to implement modularity within its full potential.

In line with implementing modularity in product design (Baldwin & Clark, 2000), implementing modularity in the design of professional services is a time-consuming and intensive process. The design process described in this study involved a rather linear process in which the level of detail of the design activities increased as the design process progressed. Our study indicates that this linear nature might not be the best way to implement modularity in the design, as during the detailed design activities, old professionalism reappears as a dominant influence. As such, it may be better to have a more cyclical design process in which after ‘the module design phase’, ‘the sense making phase’ starts again. This could be a topic for future research. Another topic for future research could be differences in which modular design processes lead to the associated benefits of modularity, i.e., low cost provision of variety and person-centred care.

4.6.2 Practical implications

A practical implication of this study is the finding that managers can influence a modular design process. First, managers can determine the requirements and constraints in terms of the starting points of the modular design. Also, when these requirements and constraints change along the design process, management must keep the taskforce informed and on track. Communication between management and professionals is essential in designing a modular service architecture. Especially, due to the importance of new professionalisms with a more dominant focus on organizational issues (Noordegraaf, 2011; Evetts, 2003). Second, managers can determine who needs to be involved in the design process. In doing so, they need to consider the differences in professional values, capabilities, and decision authority. It is important that professionals with decision-making authority are involved in the taskforce in order to make decisions concerning the content of the service. Finally, professionals themselves need to understand that the increasingly interrelated and multi-faceted demands of clients call for well-organized professional actions. As
healthcare in The Netherlands is currently heavily decentralizing, professionals themselves are forced to develop their organisational capacities and become more management-minded (Noordegraaf, 2011). In other words, professionals themselves have to invest in activities that support the delivery of their offerings, by, for example, explicating the value delivered to customers, identifying interdependencies with other services, and managing these interdependencies.

4.6.3 Strengths and weaknesses

A major strength of this research involves the rich description of a modular design process within a professional service setting. Such attention for the actual design processes of modular service architectures in professional services has not been described before in the service modularity literature. The other side of the coin is that this in-depth information concerns a single case within a specific service setting, which makes it hard to generalize our findings to other service settings. Future research could, therefore, focus on the design process within multiple cases and analyse more specifically how institutional practices influence the eventual design.