Sustainability in Health Care

A study on the relation between sustainability initiatives and organizational design elements in hospitals

Rebecca Kersch
Elvera Laanen
Markus Wabnegg
Abhimanyu Julaniya

MSc CEMS-MIM 2011 - International Business Project
Rotterdam School of Management, Erasmus University
Squarewise

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By

Abhimanyu Julaniya
Rebecca Kersch
Elvera Laanen
Markus Wabnegg

RSM Erasmus University Rotterdam
Supervisor:
Alex van der Zwart

Squarewise
Supervisors:
René Heunen
Cécile van Oppen
Executive Summary

In the last few years, sustainability has started to attract increased attention of many hospitals. In an industry that has traditionally been rather slow in the adoption of business trends prevailing in other business areas, the topic is gradually entering the agendas of executives and board members who are trying to include sustainability in the long-term strategy and short-term planning of their operations. In this process, they are, however, experiencing several challenges that are – to a large extent – closely linked to the specifics of the health care industry they are operating in.

This report was created on assignment by Squarewise, an Amsterdam-based strategy consulting firm with a strong focus on innovation and sustainability. Building on previous research done by the consultancy on organizational design theory in relation to sustainability innovations, this research explores what factors in a hospital contribute to sustainability initiatives. Therefore, the concrete research question used in the course of this study was:

"Which elements of organizational design drive sustainability in hospitals and how do these elements enhance sustainability?"

The foundation of this exploratory study in the hospital industry was formed by a framework created by O’Connor (2008), including seven organizational design elements ("Metrics", "Interface Mechanisms", "Culture and Leadership", "Exploration", "Skills and Talents", "Decision Making and Governance", and "Structure"), and Squarewise’s alterations, comprising fourteen hypotheses for sustainable innovations. After conducting a literature research, a definition for sustainability in hospitals was formed. This allowed for identifying hospitals that are implementing sustainable initiatives in their organizations. In the subsequent empirical part of this study, ten guided interviews with hospitals in the Netherlands and German-speaking countries were conducted, using a structured questionnaire. In a final step, the findings were analyzed, testing the validity of the organizational design elements and hypotheses and adapting them to the hospital industry.

The empirical phase of the research resulted in a new, updated version of the organizational design framework. In total, eight hypotheses were supported, two were modified, four were deleted, and four new hypotheses were added to the model. All seven elements of O’Connor’s framework were found to show a significant impact on sustainability initiatives and were therefore left unchanged in the model (see below).
In terms of the relative importance of the elements, “Culture”, “Metrics”, and “Interface Mechanisms” proved to be the critical factors influencing sustainability initiatives in hospitals. Especially in the complex, rigid hospital setting, committed and visionary leadership and a culture open to sustainability innovations are needed to make the topic thrive throughout the organization. Similarly, a clear, long-term strategy aligned with balanced, interrelated sustainability metrics is needed to make the issue more tangible for executives and manageable in the short- and long run. Moreover, internal cooperation as well as external relations appear to be paramount in the compartmentalized and sometimes isolated hospital industry. Most importantly, however, the research showed that due to the high interrelatedness of all elements within the framework—isolated solutions are not feasible and therefore all elements of the model need to be actively managed to successfully implement sustainability in the organization.

Lastly, this research is valuable not only from a theoretical perspective, but also for the practical application of the framework. Concrete recommendations for managers were identified on several dimensions. Among these, for example, the alignment and integration of sustainability mindsets between medical and non-medical staff is critical in the rigid structure of the hospital setting. Also, an integration of sustainability targets in the complex goal systems of a hospital with the use of a Balanced Scorecard was deemed important. These are just two of the practical implications this research identified for the agenda of hospital boards. A list of actionable steps can be found in the appendix of this paper.

In conclusion, this study analyzes sustainability in healthcare from both a theoretical and practical perspective, provides a solid basis for Squarewise’s future consulting services, and serves as a roadmap for hospital executives to focus their efforts on.
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1. Introduction

Sustainability has become a thriving topic that is gaining attention across industries. At the moment, however, research shows that it is still not on the top of hospitals’ priority list, in a large part because investments in improving the sustainable character of hospitals are believed to result in a trade-off with the quality of patient care or financial results (Squarewise, 2011).

However, eight drivers of sustainability in hospitals can be identified (see section 2.1.4.), that lead to recent initiatives aimed at improving sustainability in the health care sector. National associations, such as “Milieu Platform Zorg” in the Netherlands, are now stimulating their member institutions - participating hospitals - to partake in initiatives and projects with a focus towards sustainability. Furthermore, entrepreneurs are introducing unconventional innovations and solutions in a variety of areas such as waste management, energy consumption, and improved logistics (Squarewise, 2011).

The strategy consultancy firm Squarewise is curious what the topic of sustainability can mean for the health care sector and hospitals in particular. Previous research and work by Squarewise have shown that organizations adopting an alternative organizational design approach show higher sustainability performance as well as a higher financial performance (Van Oppen and Brugman, 2011). This research triggered the creation of a model that defines seven organizational elements, including fourteen hypotheses, which positively influence sustainability by enhancing sustainable innovation. Additionally, it is important to mention that the terms “capabilities” and “design elements” are used interchangeably (see figure 1.1.).

![Figure 1.1. Organizational capabilities facilitating sustainable innovation](image_url)
The following research is conducted as an assignment for Squarewise and Rotterdam School of Management, Erasmus University. The company would like to see through qualitative exploratory research, if the model designed for “Sustainable Innovation” is also applicable in the health care sector, especially within the hospital sector.¹

1.1. Problem Statement

As things stand, little research has been done in the field of sustainability in hospitals, since sustainability is not on the priority list of the hospital boards. Therefore, it is pertinent to explore what constitutes a “good practice” when it comes to sustainability in the hospital industry, what the current good practices are and which elements of the organization play a role in it. The research builds upon the initial work of Squarewise, which has tested and identified that alternative organizational design correlates with better financial performance, but also with increased sustainability performance.

1.1.1. Research Objective

The research objective is twofold. First, a framework needs to be developed, of which the first part will clarify which organizational design elements a hospital should focus on in order to enhance sustainability initiatives. Next, this framework needs to be extended with useful hypotheses in order to examine how the organizational design elements should be managed to initiate the implementation of sustainability practices. The framework will be based on Squarewise’s initial research on sustainable innovations and then adapted to the specifics of the healthcare industry. It will be applicable in various ways. First, it can be used by hospital boards and management to test how the organizational design elements are currently aligned with the proposed hypotheses. Second, the framework can be used as a guideline for hospitals to become more sustainable.

1.1.2. Research Question

Following from this research objective, the following research question is used as a guide throughout the research:

"Which elements of organizational design drive sustainability in hospitals and how do these elements enhance sustainability?"

¹ As mentioned above, sustainability is a very new topic in the hospital sector and a definition of what constitutes a sustainable innovation within health care is not yet identified. After extensive discussion with Squarewise, it is therefore decided that the model shall be applied to sustainability initiatives, which imply a certain degree of innovation.
Definitions of the concepts mentioned in the research question will partly be explored and developed during the research. However, an overview of a current working definition of these concepts is presented below:

Organizational design of a hospital: Squarewise has developed seven organizational design elements, including fourteen hypotheses, which have been found to affect sustainable innovations within companies (see figure 1.1.).

Sustainability: In previous research (Van Oppen and Brugman, 2011), Squarewise has used the Triple Bottom Line of People, Planet, and Profit in order to define sustainability. These indicators have been used as a starting point to investigate sustainability in the health care sector (with a focus on hospitals). However, the definition and indicators of sustainability in healthcare could be altered after background research. The final working definition chosen for the qualitative research can be found in chapter 3 “Methodology” of this paper.

1.1.3. Sub Questions

In order to answer the aforementioned research question, various sub questions will coherently lead to a conclusion.

1. **What factors are important for assessing the sustainability performance of hospitals, i.e. how can sustainability be measured?**

This question needs to be addressed in order to assess what sustainability comprises within hospitals and how “good practices” for empirical research can be identified.

2. **Do the seven elements of Squarewise’s sustainable innovation model hold for hospitals?**

With regard to the seven elements presented in figure 1.1., this sub question will test the validity of these elements as a whole for the hospital sector.

3. **Do the fourteen hypotheses of the Squarewise model hold for hospitals?**

Taking into consideration the hypotheses linked to the seven elements, this question will address the validity of the hypotheses in relation to the hospital industry. Additionally, even though the element as a whole can be validated, it might be that differences in the hypotheses are to be identified.
1.2. Structure of Research

Before investigating sustainability within hospitals, the theory around sustainability in general will be discussed in brief. Subsequently, a quick overview on the history of sustainability in hospitals will be given and hospital-specific sustainability issues will be identified and discussed. Additionally, the theory with regard to general organizational design elements, adapted from the model previously presented (figure 1.1.), will be explained in depth.

Next, the methodology of the research will be explained, including a working definition of sustainability in hospitals.

Third, the findings of the research shall be presented. In this part, the organizational design elements and their relative importance within the framework will be explained by making use of hospital specific examples. This discussion shall coherently lead to the presentation of the centerpiece of this research, which is the model showing the organizational design elements and their respective hypotheses that have a link with sustainability.

Finally, an overall conclusion will be given, followed by the implications of the research for theory and practice and the limitations with directions for future research.

An overview of the structure of this report and the interrelatedness of the chapters can be found in figure 1.2.
2. Literature Review

Before discussing the various organizational design elements that have a possible influence on sustainability, it is crucial to first address the concept of sustainability from two perspectives. First, a general overview of sustainability and its various different definitions will provide an insight into the complexity of the concept, as well as into numerous company definitions for sustainability (paragraph 2.1.). Following from this, the discussion will include hospital specific factors of sustainability, providing an overview of the history as well as the main drivers of sustainability in hospitals. Lastly, organizational design elements and their specific contributions shall form the final part of this chapter (paragraph 2.2.).

2.1. Sustainability Research

Sustainability is not only a complex concept; it is also a topic with extensive literature and numerous dimensions (Quental et al., 2011). This part will not repeat the discussion of this abundance in literature, but will provide an overview of the various definitions, which are used to explain the concept of sustainability and relate this to how businesses translate sustainability to their day-to-day operations.

Hart (1997) gives a simple and clear definition: He sees sustainability as an economy that can be sustained indefinitely. This definition encompasses various aspects of sustainability and economy, such as strategy, revenue growth, and social needs. Many other authors in this period, however, focused more on the nature and environmental aspect of sustainability, due to the increasing awareness of human impacts on the natural environment. Daly (1996) places this in the perspective of ecological economy, with efficiency, justice and environmental impact as the main concerns of sustainability. Röpke (2005) extends the environmental view by defining sustainability as the use of a broader set of criteria used in evaluating different development options, while including the intrinsic value of the nature. These various views of sustainability in the sense of the environmental impact are based on the initial idea that the scale of the human economy should not exceed the capacity of the environment (Boulding, 1966).

Additionally, for various authors sustainability includes the principle that it is oriented towards social welfare and development (Sen, 1999). As such, sustainability takes a place in the community and the broader context in which it is placed, while maintaining a core focus on the development process. This definition is related to the idea of an equal development of people, and thus increasing social welfare. Authors such as Alkire (2002) also have distinguished between the need for sustainability
and the human capacity to respond to this need in relation to its individual needs, again placing the individual human at the center of sustainability.

Furthermore, various authors have stressed sustainability from the point of view of organizations. Zari and Liburd (2001) define sustainability as the ability of an organization to adapt to change in the business environment to capture best practices and to achieve superior competitive performance. In this definition, sustainability mainly refers to the capacity of a company or organization to stay competitive or gain a competitive advantage. Moreover, Gladwin et al. (1995) define sustainability as a development process that should meet the needs of the organization today while not compromising the ability of future organizations to meet their own needs. The needs of the organization refer to the profit-seeking behavior of for-profit organization.

Following from the given definitions, it becomes clear that sustainability constitutes a wide spectrum of concepts and that - although some might be interlinked - many specifically focus either on the environment, the society, or the needs and goals of an organization. Quental et al. (2011) emphasize the gradual shift of the past decade from the concern of the human impact on nature to a more balanced position that also includes human social capital and the position of the organization as a center of sustainability.

John Elkington (1999; 2004), when introducing and explaining the Triple Bottom Line (TBL) of People, Planet, Profit (PPP), explicates the various aspects of environment, population and financial return in one concept. This definition proved to be a turning point in the definitions of sustainability as now not only the environment was included, but also a more interesting aspect for profit-making business, namely the inclusion of the term “profit” in the definition. Additionally, this definition indicates the balanced need for all of the three Ps and argues that real sustainability can only be derived from this balance, between the aforementioned Ps.

### 2.1.1. Sustainability in Practice

It is interesting to note that in practice sustainability is starting to gain more attention, not only in literature, but nowadays also in boardrooms (Haanaes, 2011). The point of view that sustainability is not “just for tree-huggers”, but is a valuable business perspective that in the present business society can enhance CEO’s to “do what is right in the long term perspective”, is currently more embedded (Haanaes, 2011). Value statements are being written and communicated via annual reports and websites and companies are actively working or starting to actively work towards sustainability. According to Dyllick and Hockerts (2002), building on the renowned work “Our Common Future” of Brundtland (1987), corporate sustainability refers to “meeting the needs of a firm’s direct and
indirect stakeholders (e.g. shareholders, employees, clients, pressure groups, communities), without compromising its ability to meet the needs of future stakeholders as well”. In this definition, not only the shareholders are referred to, as Gladwin et al. (1995) indicate, but also the various other stakeholders of the organization.

In value statements of corporations and organizations of the 21st century, these different parts of sustainability are becoming increasingly more visible. It is not solely a sustainable profit that forms the core of their definitions. In contrast, the financial aspect is included in a wider spectrum of factors, which when combined form the meaning of sustainability from the perspective of a specific enterprise. The following two businesses are used as an explanatory example of the current use of sustainability statements.

Morgan Stanley has included a value statement with regard to sustainability stating the company is “committed to creating innovative, long-term sustainable business models that strengthen communities, advance economic opportunity and protect the environment” (Morgan Stanley, 2011).

Next, HSBC commits itself to “…aim to run a sustainable business for the long term. This is about achieving sustainable profits for our shareholders, building long-lasting relationships with customers, valuing our highly committed employees, respecting environmental limits and investing in communities” (HSBC, 2011).

In both company definitions, the several aspects of the Triple Bottom Line definition are well represented. Planet is referred to as “to protect the environment” by Morgan Stanley, whereas HSBC indicates that it adheres to “respecting environmental limits”. People can be seen in the “strengthening of communities” of Morgan Stanley, and the “building long-lasting relationships with customer, valuing our highly committed employees and investing in communities” in the statement of HSBC. Finally, profit is embedded as being committed to “long term sustainable business models” in the definition of Morgan Stanley and as “achieving sustainable profit for our shareholders” by HSBC.

All in all, the discussion above shows that companies are adapting the sustainability definition and their own value statements according to what the needs of the company are, as well as what the company values are, and what it can provide. Therefore, each industry might be characterized by a different approach to sustainability - a fact that is especially true for the complex health-care industry. In order to provide specific insights in this industry, the following section of this chapter intends to give an overview on the hospital-specific history and driving forces regarding sustainability efforts.
2.1.2. Sustainability in Hospitals

Since hospitals provide patient care for people within a community, they can be characterized by an inherent link to social responsibility and the people-related dimensions of sustainability (Kinney, 2010). Taking care of patients has always been the hospital industry’s core business, which fits very well into the social dimensions of the various definitions of sustainability.

In sharp contrast to this, however, stands the fact that hospitals belong to the biggest polluters and contributors to climate change in the world. In the United States, for instance, hospitals are the second most energy-intensive commercial-sector buildings, using twice as much energy per square foot as regular office buildings. In Brazil, hospitals even account for 10.6 percent of the country’s total annual energy consumption (World Health Organization / Health Care Without Harm, 2009). Moreover, medical waste incinerators are ranked among the top four sources for dioxin and anthropogenic mercury emissions in the US, substances that can easily spread through air, land and water (Kaiser et al., 2001). Given that these toxic emissions are prone to cause respiratory diseases and other illnesses within the population, hospitals are in that sense actually undermining the health of the communities that they are trying to serve. In fact, it is estimated that the hospital industry’s conventional energy use in the United States alone causes about $600 million per year in increased health care costs due to increases in asthma, other respiratory illnesses and hospital emergency department visits (World Health Organization / Health Care Without Harm, 2009).

This simple example alone shows that - due to the various positive and negative impacts on different dimensions of sustainability and especially the high complexity of all processes (Kaiser et al., 2001) - sustainability in hospitals is a controversial topic that is hard to grasp. The following part intends to give a short overview on the history of sustainability in the hospital sector and subsequently point out the driving forces and limitations on sustainability in hospitals.

2.1.3. History of Sustainability in Hospitals

Compared to non-medical organizations, the hospital industry in general has proven to be rather slow in the adoption of new trends and innovations in areas like technology or management practices (Carpenter, 2008; Zuckermann, 2000). This can be attributed to the fact that while other industries have been facing competitive pressures and high volatility for a long time, deregulation in the health care industry happened only recently. Over the past 30 years, the industry has developed from a highly regulated and predictable business into a competitive and dynamic industry with larger and more complex forms of organizations. It is therefore not surprising that health care providers are for the most part still novices within highly volatile and competitive markets (Zuckermann, 2000).
The historical high predictability of the industry and the fact that growth in size was the norm due to population increases, ageing and higher usage of healthcare services made hospitals less concerned about vision and strategic issues and directed their focus towards capacity optimization of physical and human resources. It is in the more recent past that financial viability has made long-term strategic planning and visioning a crucial issue (Carpenter, 2008; Zuckermann, 2000).

With this new focus on strategic planning, the hospitals industry has also started to pick up on sustainability – a topic that had been on the agenda in many other industries for several years. The fact that hospitals are turning from expert-oriented administrative bureaucracies into customer-oriented complex service providers creates the opportunity to install sustainability practices at the very core of the organization. As many management and long-term planning instruments are still in their infancy, sustainability can potentially be implemented in the early design of these systems (Weisz et al., 2009). What has started in the 1990s with increased attention to environmental issues and new management practices with the so-called “New Public Management”, has become a broader discussion on sustainability in the recent past (Weisz et al., 2006).

At the same time, the general public and various organizations have started to regard sustainability in health care as a major issue to be tackled. This can be verified by looking at a large number of international discussions and agreements. The World Summit on Sustainable Development in Johannesburg in 2002 identified health as one of the five big priorities for the future, the World Health Organization (WHO) proposed an integrated approach to environmental and health issues in its sustainability initiatives, and the European Commission pointed out six big threats to the Union’s well-being in 2001, four of which show a direct connection to health issues (Weisz et al., 2006). The year 2008 might also be regarded as a breakthrough year for health protection from climate change, with the WHO repeatedly embracing the global health community’s importance in its engagement with climate change (Neira et al., 2008). Additionally, many local governments are starting to introduce initiatives and new legislations that are directly aimed at promoting sustainability in health care, thus providing a favorable institutional background and promoting good practices in this area.

As a consequence to these recent developments, there is now increased evidence of momentum building behind efforts on sustainability in hospitals, a situation that has been characterized as a “green tsunami” washing over the hospital world at the moment (Carpenter, 2008). Studies carried out in the United States show, for example, that around 70 percent of hospitals were specifying green or environmentally friendly materials in some or all construction and renovation projects (Carpenter, 2008). These statistics are leading indicators of the potential changes and innovations in the industry. The industry trend towards more sustainable practices is set to continue in the future,
with several driving forces pushing hospitals to implement good practices. The next section intends to give an overview of these important factors and show their applicability to the health care setting.

2.1.4. Sustainability Drivers in Hospitals

In order to gain a better understanding on how to plan and implement sustainability practices in a health care setting, it is vital to identify the reasoning and drivers behind these initiatives and be aware of a number of limitations and challenges involved. As mentioned in chapter 1, the following eight drivers of sustainability in hospitals can be identified (Sustainability Roadmap for Hospitals, 2011).

1.) **Energy Cost and Energy Independence**

Among the many drivers for sustainability in hospitals, the reduction of energy cost appears to be the most common one. With energy consumption rising to two-and-a-half times the consumption of commercial buildings, hospitals can easily spot the potential to reduce their energy spending drastically. Supply challenges (in terms of rising prices of fossil fuel), new rate structures offered by utilities firms and changes in climate change legislation make this issue an even more pressing topic. Similarly, hospitals may also strive to look for sustainable energy solutions to achieve energy independence from fossil fuels that are set to be depleted in the future. It is important to note, however, that - while many energy cost reduction projects can be realized rather easily - others include major capital investments, expertise and long-term planning. These issues can be significant challenges for the success of a project.

2.) **Other Financial Drivers**

On a similar note, also other financial considerations, besides energy costs, can boost sustainability efforts in the hospital setting. Major areas of improvement potential include the reduction of waste costs, water costs and supply chain costs. WHO/HCWH (2009) estimates that the overall waste management costs could be reduced by as much as 40 to 70 per cent with the use of smart source reduction and better waste management. Additionally, sustainable solutions in water management are set to emerge in the wake of rising water prices. Lastly, also a major potential in sourcing may trigger sustainable supply chain management.

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2 If not stated otherwise, the information on the eight drivers of sustainability presented in this section is taken from sources available at http://www.sustainabilityroadmap.org/drivers/index.shtml (Sustainability Roadmap for Hospitals, 2011)
3.) **Improved Operations**

Apart from the mere cost side of sustainability initiatives, hospitals are increasingly aware of the fact that these good practices can also drastically enhance the efficiency and effectiveness of operations. Although extensive research still needs to be done, initial studies already show that synergies with indicators such as staff satisfaction or health outcomes do exist. The fact that some sustainability initiatives also have the potential to eliminate some levels of errors and improve patient outcomes also helps to explain why the topic is currently entering hospitals’ agendas.

4.) **Regulatory Requirements**

A political and legal perspective reveals important drivers for the industry’s sustainability efforts. As has been explained earlier in this paper, many local, national, and international rules and regulations have been introduced in the recent past that promote sustainable development. Especially the healthcare industry - which still heavily depends on regulations - is forced not only to comply with the respective laws, but also to anticipate future legal developments in order to stay competitive.

5.) **Community Pressure**

Apart from the operational and legal perspective, hospitals are also turning to sustainability in a response to increased pressure by the general public. There is evidence that progressive communities are starting to address sustainability issues and demand action by the health care industry.

6.) **Public Relations**

Contrary to being pulled towards sustainability by the community, hospitals are also starting to make use of their initiatives in a public relations context. In that sense, the industry is acknowledging sustainability as a powerful tool that adds marketing value. This does not only apply to attracting clients (i.e. patients and/or insurance companies) through the broader media, but also skilled personnel that appreciate sustainability in their employers.
7.) Climate Change and Environmental Responsibility

As has been stated before, the effects of climate change also include increased health care costs in the future – a situation many countries are trying to improve. Being at the core of the health care system, hospitals are starting to see themselves as main actors to counteract global warming by trying to reduce their emissions and improving their contribution in terms of the environmental dimension of sustainability.

8.) Social Responsibility

On an even broader level, various hospitals are starting to embrace the concept of Corporate Social Responsibility, assuming accountability for the principles of citizenship and responsible business practices. This general attitude of doing business has also proven to be a main driver for sustainability initiatives at various levels of the organization, measuring performance, tracking results and striving towards excellence in operations.

After discussing sustainability and its implications for the health care sector, the next part of this paper intends to give an overview on Organizational Design Theory and discusses its relevance for this project.

2.2. Organizational Design Theory

In order to assess organizational design elements as organizational capabilities leading sustainability within hospitals, first a theoretically and contextually appropriate model will be assessed and selected. In order to establish this theoretical foundation of organizational design elements, the focus of this paragraph will be on a model developed by O’Connor (2008). This model has been previously used for multiple studies conducted by Squarewise and will provide the theoretical basis for the choice in organizational design elements in later stages of this research.

Based on the rarity and newness of sustainable innovations within the healthcare industry, it will be assumed that sustainable innovations within hospitals can be considered radical innovations (RI’s). RI is defined as “an encompassing innovation that offer[s] either new to the world performance features or significant improvement (5-10 times) in known features or significant reductions (e.g. 50

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3 The organizational design framework described in this paragraph was introduced by O’Connor (2008). If not stated otherwise, the information outlined here was derived from this source.
percent) in cost, such that new application domains would open up” (O’Connor, 2008).

Radical innovations (RI’s) can bring a myriad of new benefits to the market as well as to the organization. It is argued that organizations can create the right management systems conducive to RI, but the majority has not. Therefore, systems theory and the dynamic capability theory, upon which O’Connor’s model of organizational design elements is based, are relevant because they assess the extent to which an organization can facilitate innovation—as is the purpose of this investigation within hospitals.

Based on this literary basis, the innovation capability model of O’Connor (2008) will be used to draw upon significant organizational design elements, likely to be conducive towards innovation, or for the purpose of this research on sustainable innovation. The innovation capability model (see figure 2.1.) is composed of seven organizational elements that are connected through synergetic relationships and as a whole form a management system. The seven elements in the model are 1) Metrics 2) Exploratory Processes 3) Culture and Leadership 4) Interface Mechanisms 5) Skills and Talents 6) Governance and Decision Making, and 7) Organizational Structure.

Figure 2.1. Innovation capabilities model
2.2.1. Metrics

In order to allow for an active management and evaluation of RI’s, differential budgeting systems and performance metrics need to be established. This element of the framework therefore emphasizes the importance of resource allocation and performance measurement (Elekan, 2009). Since innovations mostly differ profoundly from the day-to-day business prevailing in organizations due to its experimental nature, senior management requires management systems that are suitable for the different constraints and rewards as opposed to the characteristics of regular operating units. Among others, O’Connor (2008) cites the accumulation of technical capabilities, new partnerships, or new strategic directions as possible metrics for tracking the effectiveness of innovation initiatives.

In the sustainability context, the creation and communication of suitable metrics can also be seen as a crucial factor. Epstein and Roy (2001) argue that “it is difficult to achieve maximum sustainability performance unless management sends a clear message that sustainability performance is critical to the [organization].” Van Oppen and Brugman (2011) subsequently expanded this element by introducing two hypotheses that serve as a basis for Squarewise’s client projects and the research conducted in the course of this paper.

“Hypothesis 1 met: Sustainable innovation is fostered by a clear and achievable long-term strategy.”

“Hypothesis 2 met: Sustainable Innovation is fostered through the use of team-based sustainability metrics.”

2.2.2. Interface Mechanisms

This element discusses the extent to which the systems which generate innovations are linked with the external and internal structure of the organization. O’Connor (2008) argues that complete isolation of an innovation department might decrease its effectiveness since innovations depend on the leveraging of existing competencies while building new ones. Furthermore, the framework makes a distinction between external and internal interface mechanisms. In this context, external linkages are a source of knowledge creation for the organization. They allow for generating a variety of opinions and ideas through frequent interactions with key stakeholders such as potential customers or external partners. In terms of internal interface mechanisms, O’Connor (2008) proposes that the role of the innovation system should be communicated throughout the organization, innovation objectives should be tightly coupled to the firm’s strategic intent, the system should be loosely coupled with the organization in terms of access to resources, and the management processes
should be decoupled from the mainstream organization. For their framework on sustainable innovation, Van Oppen and Brugman (2011) added the following two hypotheses in the course of their research.

“Hypothesis 1 int: Sustainable innovation is fostered by internal cooperation and knowledge sharing.”

“Hypothesis 2 int: Sustainable innovation is fostered by external interface mechanisms that are focused on building collaborative relationships.”

2.2.3. Culture and Leadership

In relation to sustainable innovations and initiative-taking, this element argues that culture and a leadership style that understand and address the importance of these issues need to be in place. O’Connor (2008) argues that ideally, innovative management is seen as a key component of the organizations’ culture and leadership and as such embeds the development of initiatives. Additionally, it is identified that when this element is not in place, the alignment with the other elements in the model are stunned. Therefore, the importance of culture and leadership is once more stressed.

O’Connor argues that the culture and the leadership style are shown, for example, in conversations about the future path of the organization, a vision aligned with the issue at hand, and the investment in both innovation minded personnel and technology to enable such initiative taking. Van Oppen and Brugman (2011) added the following hypotheses to the framework:

“Hypothesis 1 cul: An open and learning culture facilitates successful sustainable innovation”

“Hypothesis 2 cul: Supportive and visionary leadership facilitates successful sustainable innovation”.

2.2.4. Exploration Processes

Exploration processes are a further element in O’Connor’s organizational design framework, since these are needed to successfully come up with new, situation-specific knowledge required for innovations. While predefined, structured processes are useful for efficiently delivering results in the short run, they impede learning and creativity because the task in itself is reduced to linking the only known means with the only agreed-upon outcome. Contrary to that, true exploration processes
embrace exploratory innovation rather than exploitative innovations, which are based on already existing knowledge within the organization. Knowledge creation through exploration processes may consequently stem from a simultaneous outreach to the market, evaluation, and technology experimentation. In their framework for sustainable innovation, Van Oppen and Brugman (2011) extended the element with two additional hypotheses.

“Hypothesis 1 exp: Sustainable innovation is fostered by an open innovation attitude that creates new links (with other departments, functions and knowledge areas) in new directions.”

“Hypothesis 2 exp: Sustainable innovation is fostered by allocating time in which employees can explore new links.”

2.2.5. Skills and Talents

Since innovation processes are not characterized by a simple routine that can be memorized and replicated easily, the importance of skills and talents for innovation is apparent. As risk, uncertainty, and novelty are very high in this context, knowledge cannot be proceduralized. Therefore, skilled, entrepreneurial employees are needed to guarantee advances in innovations. In that sense, it is important to recruit and hold employees with such a mindset in the organization, especially since these people do not tend to remain in a large organization for a longer period of time. On a similar note, appropriate coaching and mentoring is also crucial. Coaching in that sense should not be seen as a substitute for accumulating knowledge, but rather to identify and nurture talent for innovations. Van Oppen and Brugman (2011) further extended this variable for their sustainability-related research with the following hypotheses.

“Hypothesis 1 ski: Sustainable innovation is fostered by the selection of a diverse workforce with a collaborative mindset.”

“Hypothesis 2 ski: Sustainable innovation is fostered by tailored training of employees, encompassing the capabilities to think creatively and to cooperate.”

2.2.6. Decision Making and Governance

To allow for clear decisions and governance, selection criteria and involvement of key personnel are imperative. O’Connor (2008) identified two issues related to this topic. First, it is important for decisions on innovative initiatives to be based on a right set of criteria. O’Connor (2008) mentions the possibility to use real-options theory and venture capital approaches as a basis for decision-
making. However, he also argues for cautiousness with regard to internal innovations, as there is a need to reconsider and reevaluate continuously.

Second, the composition of governance is important for enhancing initiatives in an organization. Relying solely on senior management might cause a lack of awareness with regard to the development of innovation initiatives. Building on previous experience, distinct governance bodies need to be put in place in order to adhere to the needs of a specific project. As the needs and requirements of project may change or inherently differ, new people with the right knowledge and skills need to be appointed to govern the continuation of a project. In order to extend O’Connor’s model, Van Oppen and Brugman, 2011 added the following two hypotheses to the model:

“Hypothesis 1 dec: Sustainability criteria in decision making facilitate successful sustainable innovation.”

“Hypothesis 2 dec: Broad involvement in decision making facilitates successful sustainable innovation.”

2.2.7. Structure

In relation to innovation, it is crucial to understand how the structure of the organization is related to this issue. As such, O’Connor (2008) outlines the need for four factors related to structure and innovation. First, a group or department charged with the responsibility for innovation initiatives should be identified. Following from this, it becomes clear who is responsible and to whom to report to. Next, this group or department should additionally be charged with the responsibility to collect internal and external knowledge, in order to create knowledge accumulation. Third, this department or group should be staffed with employees who are measured on their performance. As such the organization will be more apt to reflect on its progress and to identify practices to improve. Finally, innovation needs a certain degree of freedom and therefore the definition of rules in relation to these issues should be carefully identified. Van Oppen and Brugman (2011) extended this last element by the following two hypotheses:

“Hypothesis 1 str: A skill based hierarchy facilitates successful sustainable innovation.”

“Hypothesis 2 str: Decentralized concentration of authority facilitates successful sustainable innovation.”
3. Methodology

As illustrated in the previous chapter, sustainability is gaining more attention in hospitals. However, there is no clear theory on how hospitals should manage their organizational design elements in order to foster sustainability practices. Thus, this report comprises an empirical research consisting of ten case studies, in an attempt to explore and describe these organizational design elements in practice. This chapter outlines the methodology applied to answer the research question as defined in chapter 1. by testing the elements and hypotheses mentioned in the framework proposed in figure 1.1.

In the preceding chapter, a literature review illustrated the issue of sustainability, its various definitions and how these can be applied to hospitals. In relation to sub question 1 (section 1.1.3.), the hospital specific definition of sustainability, which forms the basis for the following empirical research, will be introduced in paragraph 3.1. Paragraph 3.2. illustrates the case study approach, while paragraph 3.3. explains the development of the questionnaire used for conducting the interviews. Next, paragraph 3.4. outlines the specificities of data gathering, followed by paragraph 3.5. in which the data analysis will be explained. The chapter concludes with an explanation of how the final framework will be built (see figure 3.1.).

![Figure 3.1. Methodology Overview](image)

### 3.1. Definition of Sustainability

As becomes apparent from the discussion in chapter 2, various definitions on sustainability exist. This first part of the literature review is used in order to steer the research on the good sustainability
practices in the health care industry (see paragraph 3.2.). A definition on hospital specific sustainability, adapted from the existing literature on sustainability, will provide the basis and method on which good practices in the hospital industry can be identified. This is deemed critical due to the fact that sustainability is often viewed as a vague topic. Defining it will provide concrete areas to focus on.

In order to define sustainability, it is imperative to use various resources. Therefore, previous research conducted by Van Oppen and Brugman (2011), existing academic research on sustainability, additional literature on sustainability, and definitions of some of the pioneer firms operating across industries are to be used in order to reach such a definition. As a consequence, this research emphasizes the importance of five key factors that make up “sustainability” (figure 3.1.): financial health, environmental footprint, valuing employees, investing in communities, and relationship with patients. This analysis results in the following definition:

**SUSTAINABILITY:** Sustainability is aiming at running a sustainable hospital for the long run, while being **financial healthy**, building **strong relationships with patients** through high quality of care, valuing highly committed **employees**, lowering the **environmental footprint** and investing in **communities**.

As such, this definition is to be used in order to identify the right set of hospitals to include in this research as case studies.

*Figure 3.2. Five components of sustainability in hospitals*
3.2. Case Study Approach

The case study approach is appropriate as this research is exploratory in nature and multiple cases should allow for evaluating the organizational design elements and the hypotheses developed by Van Oppen and Brugman (2011) (see figure 1.1 and paragraph 2.2.). Additionally, multiple case studies enhance the quality of the research, as they will give an integrated set of data that can be compared to the hypotheses of the framework.

In order to ensure this quality, the goal of this research is to interview at least eight relevant representatives of hospitals that entail good practices related to the aforementioned definition of sustainability. Since the scope of this research does not allow for making quantifiable comparisons between hospitals, the term “good practices” instead of “best practices” is used in order to underline that in this research it cannot be judged whether a specific initiative is the leading practice within the industry. Related to the selection of good practices, it is important to determine on which criteria these good practices can be identified.

Two sources of data are needed in order to shortlist possible good practices. First, primary data collection, such as internal reflection with Squarewise, combined with interviews with an industry expert propose a set of possible hospitals to focus on. Additionally, secondary data search, using newspaper articles, hospital websites and other news items, finalize the short list of good practices in the industry.

Next, the case studies need to be selected based on various criteria. Due to the focus on the Dutch market, it is interesting to investigate sustainability practices and organizational design elements within Dutch hospitals. However, it is crucial to benchmark not only within the Netherlands, but also across borders. Therefore, several hospitals in German-speaking countries are to be included in the research. Next, within the Netherlands, a clear difference exists between academic and non-academic hospitals, which demands for an inclusion of both types of hospitals in this research to ensure validity. Moreover, hospitals need to be selected based on their sustainability practices, including the five factors mentioned before. A good practice hospital is identified as an institution that invests in sustainability initiatives, or at least makes its efforts visible.

Applying these criteria to various hospitals, ten hospitals can be identified that fit the criteria and are appropriate candidates for use as case study examples (table 3.1).4

4 Due to non-disclosure agreements, the names of the hospitals shall not be exposed.
3.3. Questionnaire

In order to ensure that the right data is retrieved from the interviews with the selected hospitals, it is important to develop a questionnaire that encompasses all necessary elements. The master thesis of Elekan (2009) is an important tool in preparing an adequate questionnaire, as she prepared questions about organizational design elements in line with O’Connor (2008). Therefore, this thesis is helpful in designing the right set of questions. In addition, hospital specific questions, for example, the difference between academic and non-academic hospitals, is important to address in this context. Therefore, the questionnaire for this research shall consist of four key parts.

The first part addresses general hospital information, focusing on their sustainability approach and the history of the hospital in relation to these practices. Next, insights in the specific sustainability initiatives will be collected, including the characteristics of the initiative and the persons responsible for imitating and implementation. The third part is the most comprehensive, detailed, and vital part of the questionnaire, as it addresses the various organizational design elements and how the hospitals deal with them. Finally, the interviewees will be given the opportunity to extend the interview by adding information that might prove to be vital, but has not yet been addressed by the questionnaire (see appendix A).

3.4. Data Gathering

In order to obtain the data necessary to address the main research question, at least eight interviews are to be conducted with the various identified hospitals.
3.4.1 Selection of Interviewees

Per hospital, one person with sustainability related responsibilities needs to be interviewed in order to gain insights in the sustainability practices of the hospital and how these are interlinked with organizational design elements. These employees can be contacted either via email or telephone as the necessary contact information is mostly readily available on the hospital website. Additionally, a one-page outline of the research will give the identified interviewees the possibility to gain insight in the objective of the research and consequently answer questions more appropriately. Furthermore, expectations of the interview are to be discussed either via email or telephone contact.

3.4.2 Conducting the Interviews

Depending on availability and geographic location, interviews are to be held either face-to-face or via the phone. Furthermore, interviews are expected to last between one to two hours, which may vary due to the information to be shared by the interviewee. Next, the objective is to record interviews where possible or use note-taking instead.

The interviews will be held in a semi-structured manner, using the questionnaire as a guideline for the interview in order to make sure that all important parts will be addressed. However, in order to gain extensive insights, it is imperative to give the interviewee freedom in answering.

Every interview shall start with an introduction of both parties and possible questions from the interviewee’s side. Next, the questionnaire will be used in order to address all issues of importance, leading to a coherent image of the sustainability practices of the hospital and the management of the organizational design elements. When necessary, interviewees will be contacted again in order to obtain additional information.

3.5. Data Analysis

The data that shall be gathered during the interviews will be analyzed in order to reflect on the hypotheses identified by Van Oppen and Brugman (2011) (figure 1.1). Interviewees will be asked to rate the importance of every element and as such the explicit importance of the various organizational design elements can be identified. Implicitly, hospitals are expected to address certain issues in more depth than others and thus importance can also be indicated in an implicit manner.
This will be included in a table to illustrate an overview of the importance of all organizational design elements.

This rating of importance and specific examples are expected to lead to an evaluation of the validity of the hypotheses developed by Van Oppen and Brugman (2011). Data will be compared with these hypotheses and they might be validated, modified or replaced by more appropriate hypotheses.

Next, this analysis will lead to the building of a framework specific for organizational design elements in the hospital industry that shall enhance sustainability.

3.6. Building the Framework

In relation to sub questions 2 and 3 and in relation to the main question (sections 1.1.2. and 1.1.3.), the framework will answer these questions by proposing the elements and hypotheses that should enhance sustainability specifically for the hospital sector.

In order to build the framework, the similarities and differences among the previous hypotheses and possible new or modified hypotheses will be taken into account. Next, the elements and final hypotheses will be included in one framework, providing an overview of all organizational design elements and hypotheses which hospital managers or boards should take into account.

Implications for theory and practice can be derived from the new framework in order to clarify the usefulness of the framework.
4. Findings

Building on the framework proposed by Squarewise (see figure 1.1.), this chapter presents the findings of the empirical research carried out with the help of ten hospital representatives. First, it is important to mention that the hospitals were selected on various criteria, one of them being the definition of sustainability (see chapter 3.). After conducting the interviews, it became apparent that a priority in sustainability initiatives is given to lowering the environmental footprint in combination with maintaining financial health. As such, figure 4.1. shows the amount of good practices per part of the definition of sustainability. From this figure it becomes clear that all hospitals focus on the environmental footprint, while for example, only ... hospitals are contemplating sustainability initiatives with regard to valuing employees.

![Diagram showing number of hospitals taking initiative on dimensions of sustainability]

*Figure 4.1. Number of hospitals taking initiative on dimensions of sustainability*

Before analyzing the specific hospital-related implications for each of the seven elements and fourteen hypotheses, a scorecard was developed in order to assess the relative importance of each area of interest, asking hospital managers which elements they consider to be important (table 4.1.). The relevance of the individual elements will be discussed when analyzing the specific elements. Additionally, it is important to stress once more, that in relation to the organizational design elements, this research focuses on sustainability initiatives undertaken by hospitals, which is closely linked to innovation, but differs in the sense that hospitals are still developing these initiatives.
The analysis is based on the framework developed by Squarewise, testing both the seven elements and fourteen hypotheses included for the hospital setting. Due to the different nature of the business hospitals are in, it is important to differentiate between general applicability of the hypotheses versus hospital specific findings of the interviewed hospitals. Therefore, each element is discussed individually in three subsections. First, the general applicability of the hypotheses to a regular organizational setting is discussed. Second, hospital-specific findings pertaining to the relevant organizational design element are presented. Lastly, implications for the framework are discussed and hospital-specific adaptations to the model are proposed.
4.1. Metrics

In Squarewise’s research paper, the two hypotheses proposed for the organizational design element “Metrics” directed the researchers’ focus on long-term strategic goals and team-based sustainability metrics (Van Oppen and Brugman, 2011):

“Hypothesis 1 met: Sustainable innovation is fostered by a clear and achievable long-term strategy.”

“Hypothesis 2 met: Sustainable Innovation is fostered through the use of team-based sustainability metrics”.

Also in the present research, “Metrics” proved to be a fundamental prerequisite for sustainability in hospitals. In the course of this research, seven out of ten respondents identified this element as an important influencing factor (see table 4.1.), especially focusing on the importance of performance management in the sense of creating and keeping track of sustainability goals.

4.1.1. General Findings

In terms of creating a long-term strategy, all hospital representatives pointed to the importance of determining a clear path for sustainability initiatives in the organization. The degree of specificity varied among the analyzed group, ranging from broad mission statements to concrete long-term action plans. In most cases, however, these strategic goals were not integrated with operational targets in the day-to-day business, which is a shortcoming that threatens the implementation of these ideas.

During the research process, the development of clear goals and sustainability metrics proved to be among the most important factors identified in the initial framework. Stated in the words of one hospital manager, effective measurement is crucial to “get things done”, since it is almost impossible to manage initiatives that are not measured. While hospitals acknowledge the crucial role of measurement in theory, many initiatives are, however, not tracked in quantifiable terms in practice. This is especially true for sustainability projects regarding employees, patients and the community, as these tend to have more complex and subjective results that are very hard to describe with objective indicators. While one hospital representative mentioned employee turnover, the ratio of full-time versus part-time positions, or the quota of female employees in the organization as possible proxies to measure sustainability achievements, these are still very rarely used in the hospital setting. As a consequence, the measurement of financial (mostly energy cost) and environmental effects is prevailing.
Moreover, even if sustainability efforts are in some way measured, many hospitals do not use this information to actively manage their sustainability projects. One hospital reported, for example, that the data is used for mere documentation issues, while no specific goals are formulated beforehand. This is where the link between “Metrics” and “Governance and Decision-making” as design elements becomes most apparent: hospitals that combine effective measurement with accountability and incentives and break their goals down into operational sub-goals appear to be far more successful in achieving their sustainability goals. A good way to handle this crucial task of performance measurement and management was identified in one hospital in the course of this research. In this case, the management board implemented a Balanced Scorecard that specifically presents 15 to 20 strategic goals and their interrelation in a Strategy Map (Kaplan and Norton, 1992; 1996). Using this framework, the selected hospital included measurable long-term goals for sustainability and defined their relationship to strategic goals in other areas. These goals were then broken down into operational targets in line with the Triple-Bottom-Line approach with what the hospital calls a “sustainability check”. This short-term, operational measurement system is used on a department level and coherent with the achievement of the hospital’s long-term sustainability strategy.

4.1.2. Hospital-specific Findings

Apart from the findings presented above, the research has also identified a set of hospital-specific characteristics that can only be found in this industry and will therefore be presented in this separate section.

When it comes to measuring sustainability in the hospital setting, there is an important complicating factor that needs to be considered. While commercial organizations are usually focused on both the effectiveness of a sustainability practice itself and its impact on the company’s bottom line, hospitals must also take the initiative’s impact on its second core goal – patient care – into account. Unlike regular profit-oriented businesses, hospitals cannot just consider a classic two-dimensional cost-benefit relationship, but also need to make sure that the quality of patient care is not compromised. This makes the complete measuring process of sustainability a very complex and difficult task and proves to be a major restraint to sustainability projects.

A further source for increased complexity in the measurement of sustainability in hospitals can be found in the high sophistication of products and services that are provided. On a departmental level, the sheer amount of different substances and chemicals in use, for example, makes it very difficult to track environmental outcomes. Similarly, the vast diversity of processes in patient care can also be seen as a complicating factor. On a hospital level, measuring sustainability and objectively
benchmarking it with others is also an almost impossible task. As has been mentioned by several hospitals in the course of this research, almost every organization provides a different mix of health care services and is influenced by a large amount of external factors, which make the formulation of comparable Key Performance Indicators (KPIs) highly debatable.

On a similar note, environmental certificates seem to be gaining importance. All of the seven Dutch hospitals that were interviewed are involved in obtaining a certificate. More specifically, one of these organizations is fully certified in terms of the construction of new buildings. Among the variety of different certificates, the Eco-Management and Audit Scheme (EMAS), introduced by the European Commission stands out as a good example of different certifications (e.g. ISO 14001) (EMAS, 2011). Again, it can be seen that up to now, clear measurement of sustainability can only be achieved in the environmental dimension, while the other dimensions are still too complex to adequately quantify. Efforts are being made to measure the social-related areas, but it is still too early to effectively make use of them.

In the hospital context, resource allocation has also been found to be an important factor. Respondents said that – in theory – budgeting procedures have a fundamental effect on the organization’s stance on sustainability. In practice, however, many hospitals were characterized by a very limited budget for sustainability purposes: One representative even reported that the share of their funds specifically set aside for sustainable projects was as low as 0.002 percent of the hospital’s total budget.

A feasible way of including sustainability in budgeting processes can be found in several Dutch hospitals, which institutionalized a rule to automatically approve all sustainability projects, which involved a relatively low amount of initial financial requirements (e.g. € 150,000 in a hospital in the Dutch sample) and promised a payback period of 4 to 5 years. This way, the hospitals ensure enough funding for economically sound sustainability investments by additionally including the total cost of capital in the calculation. While these budgeting rules promote the realization of valuable sustainability initiatives, it is, however, also important to notice that the positive effect of this policy might favor initiatives pertaining to the financial and/or environmental dimension of sustainability. Since employee-, patient- and community-related factors are much more difficult to quantify in terms of payback, there might be a bias against these projects.
4.1.3. Implications for the Framework

Coming back to the organizational design element “Metrics” and the two hypotheses proposed by the framework, it can be said that the findings of this research are very much in line with Squarewise’s initial results.

Overall, “Metrics” ranks second among all other elements (see table 4.1.), which proves the importance of this topic for sustainability efforts. Despite the difficulties described above, hospitals should heavily emphasize their efforts in this area in order to generate sustainable innovations.

According to the present research, hypothesis 1 (clear long-term strategy) can also be confirmed in the hospital context, where a clear, quantifiable strategy is especially needed to be communicated and spread throughout the organization (also see “Culture”).

Hypothesis 2 (use of team-based sustainability metrics) can also be validated to a certain extent, since the formulation of consistent, actionable operational targets is paramount for the implementation of the long-term strategy mentioned above. In accordance with the hospital-specific findings of this research, it might, however, be better to stress the importance of creating an interrelated set of sustainability metrics for the organization. Given the industry’s inherent dual focus on both financial result and quality of patient care, the targets should be developed not only in accordance with the strategy, but also considering a balanced approach, taking into account the interrelations that appear through the complexity of the organization. The creation of a Balanced Scorecard as such a performance measurement and management system might be helpful in capitalizing on the consequences of the two hypotheses.

Figure 4.2. Organizational design element “Metrics”: Hypotheses
4.2. Interface Mechanisms

The research work done by Squarewise introduces two hypotheses focusing on the interface component (Van Oppen and Brugman, 2011):

“Hypothesis 1 int: Sustainable innovation is fostered by internal cooperation and knowledge sharing.”

“Hypothesis 2 int: Sustainable innovation is fostered by external interface mechanism that are focused on building collaborative relationships”.

As explained earlier in this report, “Interface mechanisms” is all about knowledge assimilation, processing, application and management. Interface mechanisms play a twofold role in the sustainability process – first, to initiate good practices and second, to make them successful. The interface is what defines how the different components of the organization talk with each other – whether they are structured or random. The interface can be split into two broad categories: (1) the external interface on the one hand deals with external knowledge and communication and (2) the internal interface on the other hand promotes information sharing within the organization.

The empirical research of this study confirmed that the aforementioned factors play a key role in introducing, implementing and making the good practices fruitful. This is further confirmed by the importance of this element when compared with other organizational design features. Of the ten case studies examined, interface was prominent in seven (see table 4.1.). This is the second highest figure for an element among all the elements that are examined in this research.

4.2.1. General Findings

Regarding internal cooperation and knowledge sharing the research showed a diverse range of arrangements and mechanisms in place for internal interface in hospitals, some better than the others. These systems can range from a complete and formal structure to casual exchanges during breaks.

The benefit of creating strong internal knowledge management systems (KMS) are multiple – they increase collaboration among the departments within the hospitals, bring in new insights that lead to increased performance, enhance dialogue, and discourse. The end result is that more initiatives and ideas are likely to be constructed at the grass root level, a greater proportion brought to the pipeline and even more likely to be implemented with a greater probability of success and create value within the system.
The findings of this research also indicate that efforts taken by the management or the sustainability co-coordinator to improve the KMS have shown positive results. In one particular case, the formation of a commission to increase cross-departmental collaboration showed tangible benefits through improved interface and an increased sustainability profile. As is the case with external interface, lack of an internal interface also put heavy reliance on informal KMS and the connections are hence unstable and quite random. It has also been observed in several hospitals that the co-operation between different departments within the same organization do not take place on their own and more often than not require the intervention of the management or a commission to shape to fruition.

In the case of external interface mechanisms, the hospitals are apparently at the moment not able to utilize the maximum potential that external knowledge sharing has to offer because of two main reasons – (1) there is no formal structure for communicating with external parties in most of our case study hospitals and (2) the hospitals that do have such an infrastructure in place do not communicate on a frequent basis. A consequence of the lack of formal structure is that the employees working on the sustainability front have to rely on their personal contacts for information sharing and that not only leads to inefficiencies in the knowledge management but also creates uncertainties resulting from casual links.

As can be seen in hospitals that do have contacts with other good practice hospitals, however, the exchange of knowledge significantly enhances sustainability management. This is also strongly connected to the organizational design element “Exploration Processes” (paragraph 4.4.)

4.2.2. Hospital-specific Findings

In terms of internal interfaces, the analyzed hospitals reported major obstacles for the implementation of a working knowledge management system. In a few of the case studies, it becomes clear that hospitals that were starting to implement or improve their interfaces, struggle with how to integrate the system within the myriad departments and functions within the hospital. The complexity and rigid, hierarchical structures between the various departments in a hospital make it very difficult to support cross-functional integration.

In this context, formal networks can be useful to boost knowledge sharing and cooperation. Additionally, it is found that the presence of senior management such as a board member to oversee internal collaboration stimulates the KMS.
When it comes to external interfaces, an interesting fact in the Netherlands is that research- and academically driven hospitals seem to be cooperating more than their peers. The interviews conducted with three academic hospitals in the Netherlands all pointed towards this conclusion. A possible reason for this might be that since hospitals devote substantial resources in the form of money, time and effort it is only natural that they do not want to share it with other hospitals without any quid pro quo. Taking part in collaboration with multiple hospitals would be mutually beneficial to all the parties involved but concerns about free-riding and sharing information without receiving commensurate benefits appear to be major barriers. A similar situation can be identified in the three hospitals interviewed in the German-speaking countries, where external knowledge sharing occurs in an international network, whose members also have a strong theoretical and academic background.

4.2.3. Implications for the Framework

While having efficient and strongly structured internal and external systems is needed, it is equally important to have a link between the two to make use of all information gathered from outside and incorporate it within the organization.

The findings on the interface aspect seem to reaffirm the validity of both hypotheses. The two components of the interface are critical for spreading the use of good practices and increasing the sustainability profile of hospitals. Interface mechanisms are crucial as sustainability is a holistic and interrelated issue that cannot be easily split up into independent parts. To achieve the goals of sustainability an integrated approach needs to be adopted instead of the island-solutions that have been found insufficient to this end.

Figure 4.3. Organizational design element “Interface Mechanisms”: Hypotheses
4.3. Culture and Leadership

In the framework developed by Van Oppen and Brugman (2011), the organizational design element “Culture and Leadership” was translated into two main hypotheses.

Hypothesis 1: “An open and learning culture facilitates successful sustainable innovation.”

Hypothesis 2: “Supportive and visionary leadership facilitates successful sustainable innovation” (Van Oppen and Brugman, 2011).

As can be retrieved from the information in table 4.1., nine out of ten hospitals rated culture and leadership as an important factor in relation to sustainability initiatives. Therefore, culture and leadership can be seen as the major factor for facilitating sustainability.

4.3.1. General Findings

In relation to an open and learning culture, all hospitals show that an open and learning culture stimulates sustainability initiative taking and indicate the importance of openness and learning as a need to foster sustainability in the hospital. As identified in paragraph 2.2., an open and learning culture enhances the speed with which employees understand the need for sustainability, resulting in an open sharing of thoughts on the issue. The great majority of the case studies show that the stimulation of employees through communication, trainings and other reinforcements of culture enhances their intrinsic motivation to become more sustainable. One hospital exemplified this issue by mentioning the results of their interdepartmental training sessions. Via a large in-house campaign, led by training sessions and supported by information flows via the intranet and posters, the hospital realized a significant reduction in costs of computers being left on after working hours. The hospital calculated that the environmental footprint would reduce enormously, while simultaneously cost savings of €500.000 per annum could be realized, when the campaign would have optimal effects.

Closely related to “Structure” (paragraph 4.7.), several hospitals indicated the importance of being able to contact the responsible directors in a direct manner. An open culture with regard to communication, simplifies the sharing of initiatives and possible implementation of these initiatives. One hospital explained this by referring to the CSR policy that is currently being developed by the hospital. Even though the hospital is currently mostly concerned with the environmental aspect of sustainability, various environmental coordinators are working on a CSR plan, which they initially thought to be a plan for the far future. However, the openness of the culture resulted in a conversation with the board of directors, who immediately was enthusiastic about the idea.
To summarize, hypothesis 1 is not only clearly supported, but various case studies also indicate the strong link between culture and leadership, which was also identified by Elekan (2009). Especially the last example leads to the discussion of hypothesis 2 in which the importance of visionary leadership as a part of culture is explained.

With regard to **supportive and visionary leadership**, all hospitals mention the strong role the leader plays in the hospital when it comes to sustainability initiatives. As mentioned in paragraph 2.2., corporate culture can inherently be derived from a company’s leadership, and therefore leadership is of a great importance in relation to embedding sustainability in the corporate culture of the hospital. The relation between the vision of the leader and the actions following from this vision are found to be stronger than actions following from visions and initiatives of employees lower in the organizational hierarchy. In that way, leaders set an important example within their organization. Closely linked to “Decision-Making”, the great majority of the interviewed hospital representatives indicate that without the permission of the head or director of the responsible department, actions cannot be undertaken (paragraph 4.6.).

A variety of case studies indicate the important role the commitment of various directors plays in triggering employees to become more aware of sustainability. One interviewee indicated that leadership skills are paramount, as hospitals need enthusiastic leaders to make changes. One hospital exemplified this by stating that the sustainability driven vision of the new director of finance facilitates the budgeting for sustainable projects, such as investment in electrical bikes. Another hospital explained that the director of construction actively motivates the environmental coordinators to pursue sustainable changes in the construction of the hospital and current or future renovations. Additionally, another hospital mentioned the importance of the role of the chairman of the board of directors, who not only is responsible for sustainability within the hospital, but also actively pursues this.

The manner in which the leaders of the hospitals motivate their employees varies per hospital, but they all have in common that various motivational attributes are put in place. Active methods, such as the implementation of work groups, training sessions or inter/intra-departmental information sessions, as well as passive methods, such as the use of the intranet, posters and news bulletins, are manners through which leaders that are committed to sustainability increase the intrinsic motivation of their subordinates. Additionally, once the management is committed, sustainability appears to be a returning item on the agenda and during various meetings per year the board is actively pursuing clear updates on initiatives and implementation. Moreover, one environmental coordinator explained that due to the clear vision of the director of construction, to whom the coordinator reported directly, the ease of implementation of sustainability in the hospital significantly increased.
Furthermore, management commitment is also important in relation to transferring ideas from the top to the work floor, where they can be put in practice. As indicated by various hospitals, when management is actively pursuing sustainability, actions will be communicated more thoroughly and internal checkups will be executed on a frequent basis. Additionally, management is more committed to listening to ideas coming from bottom up and will create time and effort to listen and prepare budgets for sustainability initiatives.

To conclude, the hospital examples show that visionary leadership is highly important to make sure that communications means are put into place and that sustainability initiatives are actually heard and acted upon. Furthermore, the aspect of visionary leadership, identified in the case studies and by Van Oppen and Brugman (2011) can clearly be extended with the term “management commitment”. The importance of this additional term will become even clearer within the discussion of the hospital-specific context in relation to culture and leadership.

4.3.2. Hospital-specific Findings

Following from these findings, it is apparent that hospitals are unique organizations with a unique primary activity or task, namely the curing of human beings. From an organizational point of view, this objective divides the culture of the hospital in two parts related to the different staff; non-medical and medical staff members.

All hospitals have indicated the gap in commitment between the two types of staffing and therefore it is highly interesting to see how this affects not only the openness and learning of the culture, but also the leadership of the hospital.

Several hospitals emphasized the need for both enthusiastic leaders and committed management. This expressed need for clear commitment is closely linked to time, budget and priorities. Due to the nature of the business the hospital is in, the first priority is set on quality of patient care. One hospital strongly emphasizes that, due to this nature, sustainability is embedded in the culture of the hospital because a doctor does not want to cure a patient and put that patient back in a world in which it is likely to fall ill again. Therefore, as the hospital mentioned, sustainability is included in the culture of both the medical and non-medical staff members.

Further research, however, showed that this hospital is unique in its approach to sustainability, as it is contrasting to what many hospital representatives explain. One hospital addressed the gap between medical and non-medical staff culture, as a result of the daily practices of the medical staff. As they are constantly working on curing people, which can be argued to be a sustainable practice in
itself, they feel they should give the priority to this primary task. More specifically, a doctor with a limited amount of time per patient does not want to be occupied with separation of waste when examining or even performing surgery on a patient.

Eight of the interviewed hospitals indicated the commitment of the management as highly important in developing sustainability in medical departments. More importantly, they simultaneously stressed that there is a difference between having a vision and being committed to this vision. Referring back to the aforementioned priorities of the hospital, it is common that the board of directors of the hospital spend more time and money on the primary task of curing, than on curing in a sustainable manner. However, a management board that is truly committed to embedding sustainability in all aspects of the hospital can speed up the change in culture in this sense.

Three of the case studies showed the notion of a shift towards small sustainability initiatives in medical departments as a result of the commitment of management. One hospital mentioned that a board member saw the need to include the pediatrics department in a sustainable information session. As a result, the pediatrics department of the hospital calculated that it takes twenty minutes before a baby will be placed in an incubator, while it takes fifteen minutes to prepare the incubator. Therefore, the department now has changed from having the incubators turned on 24/7 to only when they are in use. This initiative came from the medical staff themselves after sustainability was communicated to them via the information session.

However, the majority of the hospitals explain that this shift cannot (yet) be seen as a part of culture, due to the ad hoc basis on which medical departments show sustainability initiatives. However, specifically environmental coordinators do recognize that once management is committed to expand the focus of sustainability to medical departments as well, actions will be implemented. Due to the fact that this expansion is only currently recognized by management as important for embedding sustainability, it is expected by the majority of the interviewed hospitals that it will take some time before visionary leaders can embed sustainability in the culture of the entire hospital, including medical staff members.

In conclusion, culture is not as apparent in medical as in non-medical staff culture, but in relation to openness, learning and leadership, a gradual shift is visible. Various leaders are currently more focusing on sustainability in medical departments and therefore learning and openness with regard to sustainability within these departments is also stimulated.
4.3.3. Implications for the Framework

This research proved to be in line with the findings of Elekan (2009) and Van Oppen and Brugman (2011). Culture is one of the driving factors for embedding sustainability in the hospital and this goes hand in hand with leadership, meaning that a visionary leader will enforce the speed and thoroughness of the embedment of sustainability in the culture of the hospital.

Moreover, this research additionally shows the specific concern for not only visionary leadership, but mainly the commitment of the leader, or, as found in various case study examples, the commitment of the management board. As mentioned above, three hospitals explicitly state the need of the board of directors as well as directors whose task is closely linked with sustainability issues, such as the director of procurement or construction, to show significant commitment to initiating sustainability in their daily operations. This is specifically important for hospitals as there is a high need for, for example, waste management of chemicals.

Furthermore, the difference between medical and non-medical staff culture with regard to sustainability also led to the perception that only a truly committed board of management can embed sustainability practices in medical departments.

Taking into account these findings, one change is proposed to the initial hypotheses. The above discussion shows that supportive management is important to embed a sustainable vision, but that strong commitment comes hand in hand with visionary leadership. As such, without commitment the implementation of sustainability is likely to be more difficult. Therefore, hypothesis 2 shall be changed slightly, including the stronger statement of “commitment” in order to show the necessity for hospitals leaders to not only support, but actively commit themselves to the vision. Hypothesis 2: “Committed and visionary leadership facilitates successful sustainable innovation”.

![Organizational design element “Culture and Leadership”: Hypotheses](image-url)
4.4. Exploration Processes

The two hypotheses that were developed by Van Oppen and Brugman (2011) are:

“Hypothesis 1 exp: Sustainable innovation is fostered by an open innovation attitude that creates new links (with other departments, functions and knowledge areas) in new directions.”

“Hypothesis 2 exp: Sustainable innovation is fostered by allocating time in which employees can explore new links.”

The central idea behind the exploration aspect is to look at how the particular hospital can generate ideas for sustainability best practices from within and from the outside of the organization. To a large extent the hospital can continue to rely on its strategy of exploitation, i.e. using its current knowledge resources to target increased sustainability, but these resources have their own limits. To go beyond these limits and to increase the sustainability characteristic of the hospital, the hospital is required to look beyond its existing realm.

There are multiple ways to make the best use of the exploration process as is demonstrated by our case study examples. Out of our ten case examples, exploration was deemed important in five cases, ranking fourth on the relative importance scale (table 4.1.). The interviews indicate that hospitals are now recognizing the constraints posed by relying on purely exploitation strategy and are turning towards exploration as a means of attaining their sustainability objectives.

4.4.1. General Findings

In terms of creating new links, it can be said that - as the focus towards sustainability is new, and the attention towards exploration in it, even newer - there are often no centrally organized structures or links to handle exploration. It is often the sustainability manager’s own task to explore new opportunities and come up with ideas. This limits the hospital’s innovativeness in ideas and the possible sustainability practices.

Other respondents mentioned that they have established external ties to different hospitals or business partners with whom they share knowledge and thus generate ideas for sustainability initiatives. The synergies resulting from this cooperation have resulted in innovative projects that would not have been developed otherwise. One hospital, for example, mentioned a long-term contract with a waste-management company in the course of which they constantly review their waste management system and look for better solutions. Another hospital emphasized an informal
network with other local businesses that are not operating in the healthcare industry, in which ideas are shared and developed.

Internally, cross-departmental cooperation can also be used as a valuable source of innovation. It was also discovered that the environmental core teams are often consist of members from various departments and functions within the hospital. The communication process hence transcends organizations and departments, leading to sharing ideas and brainstorming, which in turn creates new options that can be implemented. Such intrinsically motivated individuals play a key role in bringing the benefits of exploration into the departments and the organization as a whole.

Regarding allocating time for exploring new links, the research showed that there are only a few employees handling sustainability issues in the hospitals. Many of these employees have the sustainability assignments as an extra charge besides their own responsibilities in the hospital. An implication is that in the hospitals that are extremely active on the sustainability front, the employees working on sustainability are already tied up with existing work and have little time for exploratory processes. The lack of temporal and human resources makes the case more complicated.

4.4.2. Hospital-specific Findings

Specifically in the hospital industry, a large amount of latent knowledge is available throughout the organization. Since the organization comprises an extremely high amount of complex medical and non-medical functions, specialists are therefore needed at almost every point of the organization. As a consequence, very valuable and specialized, but implicit, knowledge exists. One hospital representative stated, for example, that there are multiple sources of innovation across functions and hierarchy levels but these appear to be stored in an isolated way. There is a strong indication that knowledge already lies within the organization, but it has to be found. One interview partner identified the key to leverage the innovation and creativity potential as the activation of this knowledge through an active interface.

The use of exploration networks is even more important given the fact that hospital-specific literature is still very scarce. A hospital representative in this research noted, for example, that due to the high complexity of different chemicals in use, little research has been done in areas with big potential for improvement.

One surprising hospital-related finding in the course of this research was that the academic institutions interviewed apparently have no direct link to scientific exploration processes when it comes to sustainable practices. This runs counter to their external interface as a teaching institution.
Instead they rely mainly on ideas generated through their daily operations and have some links with external networks such as sustainability networks that are not limited to the health care industry. With mainly the sustainability staff coming up with ideas and bringing in exploration contacts through personal networks, the range of ideas is limited.

### 4.4.3. Implications for the Framework

The main findings for “Exploration” as an organizational design element in the framework of Van Oppen and Brugman (2011) are very much in line with prior findings. Analyzing it on a hypothesis-level, some adjustments may be necessary.

With regards to hypothesis 1, creating links, hospitals with established links for their exploration processes seem to benefit greatly from their networks. Even though currently the majority of exploration is done by the sustainability managers themselves, hospitals are turning towards external networks to acquire knowledge. Hypothesis 1 can therefore be validated.

As for hypothesis 2, allocating time for exploring new links, no clear validation could be found. The hospital setting in general – and within that especially the medical functions - is characterized by harsh time restrictions that make the allocating of additional time for sustainability unfeasible. Hypothesis 2 might therefore not be valuable enough to be included in the framework.

Instead, the research produced another hypothesis that may be even more important for the health care setting. As has been described above, a lot of latent, but separated knowledge exists in the various departments of hospitals, which has the potential to increase the quality of sustainability practices. Therefore, a new hypothesis states: “Sustainability initiatives are fostered by finding, integrating and activating latent knowledge in the organization”.

![Diagram](image-url)

*Figure 4.5. Organizational design element “Exploration Processes”: Hypotheses*
4.5. Skills and Talents

For the organizational design element „Skills and Talents“, Van Oppen and Brugman (2011) identified two hypotheses including both the recruitment and training perspective of employee management:

“Hypothesis 1 ski: Sustainable innovation is fostered by the selection of a diverse workforce with a collaborative mindset.”

“Hypothesis 2 ski: Sustainable innovation is fostered by tailored training of employees, encompassing the capabilities to think creatively and to cooperate.”

In terms of the relative importance of the element within the framework, it has been found that hospitals are currently not considering this area a fundamental factor for managing sustainability initiatives. Only four out of ten respondents identified “Skills and Talents” as crucial, showing that the link of human resource management and sustainable practices is currently not very apparent in the healthcare industry.

4.5.1. General Findings

Concerning recruitment, only two out of ten hospitals mentioned that sustainability considerations are made when looking for and selecting future employees. Medical expertise for medical staff and technical expertise for non-medical personnel still seem to be the prevailing factors in the process, whereas diversity or a collaborative mindset are not explicitly emphasized in a sustainability context. One of the two hospitals that integrated sustainability in their recruitment process mentioned, however, that for several key positions sustainability requirements are explicitly stated in the job description. This points to the fact that with an increase in the importance of the specific role within the organization the need for considering sustainability also rises.

Unlike recruitment, most hospitals recognize the need to train and develop employees on sustainability issues. Four out of ten hospitals interviewed provide recurring sustainability training sessions, with two additional ones intending to do so. This shows that the need for developing capabilities like creativity and cooperation in the sustainability context has been identified by many organizations and is seen as an integral part of sustainability management. In the context of how these trainings should be done, many hospitals explicitly state the high importance of activating people. It is not enough to just have a message conveyed, but also to create enough motivation for the issue. One hospital representative pointed out the need for dynamic and rhetorically experienced coaches, which are needed to trigger what one interview partner called “a sense of urgency” among
the staff. Of equal importance is the representative function of the sustainability manager itself, implying that taking a strong stance on the topic and “going the extra mile” to achieve goals can help to convey this sense of urgency to the employees.

4.5.2. Hospital-specific Findings

Looking at the hospital-specific context, the most striking issue for managing skills and talents among hospital staff is the significant divide between medical and non-medical staff. As has been briefly mentioned in the discussion of the cultural implications (see section 4.3.2.), there is a clear difference between the two groups on sustainability issues. All hospitals surveyed cited this difference, which proves the importance of this finding. While non-medical staff, such as technical personnel and administrative employees, shows a rather high sensibility and openness to the issue, medical staff, such as doctors, does not consider sustainability as one of their core priorities. Many respondents attributed this difference to the fact that doctors see patient care as their primary focus and are not ready to compromise on their limited time. Interestingly, however, several hospitals reported that the nursing staff, which shows a similar exposure to patient care, shows a much higher acceptance to sustainability topics. Further research on the reason for this difference may be required.

As a consequence, the difference in sustainability-related skills and talents can potentially be a major threat to good practices. While technological staff, for example, develops and implements sustainability innovations, the medical staff should be on board as well, since this is the group that uses the specific equipment on a daily basis. Integrating the skills and talents is therefore a major task that needs to be tackled by sustainability representatives.

4.5.3. Implications for the Framework

With regards to the implications for the framework proposed by Squarewise, it can be said that the element “Skills and Talents” seems to be a factor of moderate importance with several specific peculiarities for the hospital sector.

When it comes to recruitment (hypothesis 1), it seems that hospitals do not attribute too much importance to sustainability when looking for and selecting appropriate staff. A reason for this might be that the high complexity of tasks – especially for the medical employees – does not allow concentrating on additional requirements regarding sustainability. Given the strict requirements for
medical positions, it may not be feasible for hospitals to emphasize on sustainability recruiting in contrast to other industries.

Regarding hypothesis 2 on training and development, the research showed that these initiatives are indeed important for enhancing sustainability in the hospital industry. Six out of ten hospitals regarded regular training as valuable and announced their plans to further emphasize this topic. Hypothesis 2 can therefore be validated for the hospital setting.

Lastly, the research pointed to a big divide between the medical and non-medical staff in terms of skills and talents. Since this area appears to be extremely important for implementing sustainability, a new hypothesis is proposed: “Sustainable innovation is fostered by integrating skills and talents between medical and non-medical staff”. Given the low relevance of sustainable recruitment for the hospital setting, hypothesis 1 can be substituted by this new area of interest.

![Skills & Talents Diagram](image)

*Figure 4.6. Organizational design element “Skills and Talents”: Hypotheses*
4.6. Decision Making and Governance

In the research by Van Oppen and Brugman (2011), the organizational design element “Decision Making and Governance” is composed of two hypotheses:

“Hypothesis 1 dec: Sustainability criteria in decision making enhance successful sustainable innovation.”

“Hypothesis 2 dec: Broad involvement in decision making facilitates successful sustainable innovation.”

Taking into account the scorecard presented in table 4.1., six out of ten hospitals stressed the importance of decision-making and governance in relation to sustainability initiatives. Therefore, decision making and governance can be seen as an important factor for enhancing sustainability. The following discussion will explain the feedback the respondents gave with regard to decision-making and governance and sustainability initiatives.

4.6.1. General Findings

In the course of the research, it has become apparent that hospitals identify sustainability criteria as important for enhancing the initiative taking and implementation of sustainable actions. This mainly becomes apparent because of the lack of integrated sustainability criteria in the decision-making framework. Hospitals identify that these criteria are currently being developed and are becoming more and more in use in the environmental practices of the hospitals. Therefore, major improvements are seen in energy and waste management initiatives, such as a reduction of energy of 20 per cent in one hospital in 2011, whereas the objective was to reach this target in 2013.

However, integrated criteria are yet to be explored, even though various hospitals identify a need for this exploration. One case study suggested the use of Total Cost of Capital (TCC) not only per investment, but also per group of investments. For example, once a department is debating the implementation of various environmental initiatives, not solely the cost of the separate investments should be taken into account, but the average TCC of all investments should be the criteria on which decisions are based on.

Additionally, all of the interviewed hospitals indicate the current priority given to costs as a criterion for decisions. As explained in the “Metrics”-paragraph (paragraph 4.1.) of this paper, many hospitals include a payback period of approximately four to five years in their decision making criteria, or solely look at the price of the initial investment. Environmental coordinators acknowledge the
importance of the financial aspects in decision-making processes, but argue that a more integrated set of selection criteria would improve decision-making. As has been mentioned before, the use of a Balanced Scorecard to include not only financial measurement criteria, but also qualitative criteria, may be a valuable management tool.

Finally, it becomes clear from the research that integrated and structured criteria enhance the overall structure of decision making, and thus facilitate the assignment of accountability over decision making. Various hospitals indicated that recently environmental concerns are placed in the portfolio of one of the members of the board of directors, and that therefore decision making is more structured.

To summarize, an integrated set, consisting of not only various cost related measurement systems, but also qualitative metrics, facilitates sustainability initiative taking.

Concerning broad involvement in decision making, the majority of the case studies identify that the need for broad involvement is significantly increased due to the lack of clarity in allocation of accountability. This perspective is, naturally, closely linked to a clear and integrated set of measurements, in the sense that when these are in place, the allocation of decision making is more easy to define.

Seven hospitals indicated that accountability for sustainability practices is assigned on a project-by-project basis and that therefore, for new initiatives, it is not clear to whom to report and who the key figure with decision-making power is. Mostly, in an official manner, sustainability is placed in the portfolio of one of the members of the board of directors, or it is vaguely embedded in either the service department or the HR department. However, the specificities of the job are not defined and therefore, the exact topics on which decisions are to be made are not given the full amount of attention that they deserve.

Various hospitals argue that sustainability is not a separate topic, but has to be integrated in the governance considerations of the organization, and that sustainability is a holistic issue that has to be handled in an integrative manner. Taking this into account, many environmental coordinators argue that sustainability is likely to be a part of their job, but it is not defined as such. Moreover, the environmental coordinators only have an advisory role and do not have decision-making power over budgets. As such, they can take initiatives but do not have the power to execute them. Relating this to the overarching fact that sustainability is not on the top of the priority list, it is apparent that, in general, hospitals are lagging behind in the area of sustainability compared to other organizations.
The majority of the interviewees argue that involvement from their side in decision-making will have a significant effect on sustainable initiative taking. To exemplify, one hospital showed that, due to the accountability given to collaborative teams, a promotional campaign to spread idea-sharing initiatives, could easily be implemented.

As such the involvement of personnel with knowledge about sustainability issues are argued to receive decision-making power on this topic. This is best done via assigning accountability to those who are mostly concerned with sustainability issues and via allocating decision making power to cross-functional teams concerned with sustainability initiatives.

4.6.2. Hospital-specific Findings

For hospitals, specific measurements need to be developed with regard to waste management and procurement. All hospitals are aware of their extensive environmental footprint and acknowledge the fact that this should be reduced as much as possible. In order to base decision-making on important and realistic data, measurement systems are needed for two types of business of the hospital, namely procurement and waste management.

Concerning waste management, the majority of the hospitals is working on separation of waste and a few even have more advanced systems in place, such as a “pharma-filter”, which captures toxic substances and as such helps to reduce harmful output. Still, hospitals identify the need for specific measurements for chemicals and the high amount of plastic the hospitals uses. They argue that when these measurements are put in place, the hospital will be able to take appropriate actions with regard to the more severe waste streams of the hospital.

Moreover, several hospitals emphasize the need for active sustainable decision-making in procurement. The majority of the hospitals are currently either starting to include or have already included sustainable procurement in their decision-making framework. However, with regard to medical supplies, the sustainability measurements are lagging behind. Only one hospital indicated that currently they are actively investigating the environmental footprint of various medical equipment, while more than half of the interviewees expressed an interest in such measurements.

Next, once again linked to the allocation of time and budget, hospitals identify that the allocation of accountability is not clearly defined with regard to sustainability. Due to the current changes in the hospital industry, additional burdens are placed on time and budget and therefore, seven of the interviewed hospitals identified that accountability is more clearly allocated with regard to the primary tasks of the hospital. As mentioned in “Metrics”, various sets of measurements are put in
place, but it is not clear to whom the results go to and who is responsible for additional initiative taking based on these outcomes. In this sense, sustainability is brought to the back and the allocation of decision making on this topic is not clearly defined.

Hospital specific examples show the support for the need of an integrated set of measurement for decision making, specifically for those activities that place a high environmental footprint. Moreover, allocation is specifically important in hospitals due to the low emphasis that is currently placed on clearly allocating decision making to various parties.

4.6.3. Implications for the Framework

The general and the specific hospital information show a strong support for the first hypothesis relating to sustainability selection criteria.

In relation to the second hypothesis on broad involvement, the research supports that involvement in decision-making is important. However, it can be argued that the focus should not be on broad involvement but on allocation of accountability. Currently, there exists a lack of clarity in who is to make decisions related to sustainability initiatives and collaborative practices. Therefore, the right allocation of accountability makes explicit who is to make these decisions and is responsible for the outcomes. This involvement can become broader, for example, when cross-functional teams receive decision-making power, but can also remain with certain key sustainability figures within the organization.

As such, hypothesis two will be substituted in order to explicate the importance of allocation of accountability: “Clearly allocating accountability facilitates sustainable initiative taking.”

Figure 4.7. Organizational design element “Decision Making and Governance”: Hypotheses
4.7. Structure

As developed by Van Oppen and Brugman (2011), the organizational design element “Structure” was translated into two main hypotheses:

Hypothesis 1 \(\text{str}^1\): “A skill-based hierarchy facilitates successful sustainable innovation.”

Hypothesis 2 \(\text{str}^2\): “Decentralized concentration of authority facilitates successful sustainable innovation.”

As can be retrieved from the information in table 4.1, six out of ten hospitals rate structure as an important factor in relation to sustainability initiatives. Therefore, structure can be seen as an influencing factor for facilitating sustainability.

4.7.1. General Findings

With regard to the hierarchy, as described in paragraph 2.2., traditional hierarchical organizations generally are seen to impose barriers on sustainability and initiative taking in this matter. In this research, however, all interviewed hospitals indicated that their structure is hierarchical and divisional based, where mostly the board of management has ultimate decision-making power. In relation to a skill based hierarchy it is therefore difficult to determine whether this hypothesis takes a positive stance towards sustainability in hospitals.

The majority of the hospitals do indicate that, due to the hierarchal structure, it is occasionally difficult to contact the right person with the authority to make decisions. One environmental coordinator indicated that the closed attitude of his supervisor significantly decreased his opportunities to inform managers and ultimately the management board, and therefore implementation of sustainability initiatives proved to be very difficult.

Additionally, many hospitals explained that reporting structures are highly important to increase sustainability initiatives. Transparency and flow of communication due to clear and structured reporting systems definitely enhance sustainability initiatives. In the hierarchal structure of the interviewed hospitals, it becomes clear that, when the management board sees need for it, reporting structures with regard to sustainability initiatives are put in place and yearly, or even monthly, updates are given not only to the management board but also to various other layers within the hospital. A clear reporting structure also seems to enhance the possibility for measurement and development of KPIs (see “Metrics”, paragraph 4.1).
Thus, reporting structures seem to be able to be put in place in a hierarchal hospital in order to clarify goals and identify whether performance measures are met. In relation to a skill-based hierarchy, hospitals have indicated that it is difficult to implement this structure, as they are in nature highly hierarchal.

With regard to decentralized concentration of authority, various hospitals have put in place interdepartmental workgroups on sustainability and, mainly, environmental matters. Moreover, three hospitals indicate that some of these teams and groups do not only have an advising role, but also (limited) decision-making power due to the functions of the members.

Another example of a clear structure is shown by one hospital that has three environmental experts employed in a fulltime position. Next, every department has their own environmental coordinator employed on a part time basis where sustainability and the environment in general are part of the complete set of tasks of this employee. Moreover, every department has various environmental agents. The environmental agents check how their departments are performing and communicate this either directly to the experts or to their environmental coordinator. Next, the environmental coordinators of all departments meet with the experts three times per year to discuss findings and initiate new practices and develop future plans. This example clearly shows how cross-functional teams enhance the sharing of knowledge on sustainability, increase the possibility for measurement and overall provide opportunities for additional sustainable initiative taking.

In contrast, hospitals mention several times the difficulty in autonomy. Due to the hierarchical culture, it is difficult for, for example, environmental coordinators, to practice their daily task on an autonomous basis. They do recognize that once autonomy is given to them, implementation of initiatives is significantly facilitated. Taking into account the example of the hospital including several interdepartmental teams, the membership of the director of finance highly increased the autonomy of the team as a whole due to the increase in power the director brought to the team.

To conclude, hospitals are more and more recognizing the need for cross-functionality in order to increase sustainability and include cross-functional teams and workgroups on sustainability across layers and departments. As a result, they clearly indicate the need for decentralized authority, especially for these workgroups. Next, it is mentioned that the functioning of these cross-functional sustainability teams will be strongly enhanced by a higher level of autonomy given to the team.

**4.7.2. Hospital-specific Findings**

As mentioned above, historically hospitals tend to have a hierarchical structure, which can put burdens on the taking of initiatives and idea generation within the hospital.
One hospital, which is very successful in sustainability initiatives and implementation, stresses the importance of the place of those employees concerned with sustainability in the hierarchy of the hospital. As one environmental coordinator of this hospital mentioned, the fact that she is placed right under the director of construction, who is also part of the management board and taking into account the fact she is the head of a cross functional workgroup significantly enhances her possibility to act autonomously and implement idea sharing practices. As the primary task of the hospital takes up high amounts of attention, she additionally emphasizes that people in environmental positions are mostly the ones taking initiative and spreading idea-sharing practices. She additionally mentioned that this position is increasingly important due to the difference between the needs and attitudes of medical staff members and non-medical staff members.

Another hospital showed that the placement of sustainability under a certain position is important according to their own structure. The hospital has placed sustainability in the portfolio of the quality manager, and as such sustainability is integrated in various quality measures of the hospital. By doing so, it is guaranteed that sustainability is anchored internally within every part of the organization, as the management of quality is a cross-departmental activity.

Multiple other hospitals mention that due to the hierarchical distance between them and those with autonomy, even when reporting structures are in place, it might take some time before clear and repeated communication about a certain initiative is established. Together these examples indicate the correlation between a highly placed sustainable position and the communication benefits this brings, such as the environmental coordinator, and the initiative taking of sustainable practices.

One interviewee elaborated on this topic by mentioning that she noticed the ease in formal communication due to the change of her position from being part of the facility management desk to the service desk. She emphasized that in her former position communication had to go via more formal ways in order to embed sustainability initiatives. This led her to conclude that when the official position within the hierarchy does not facilitate the embedding of sustainability, informal communication patterns are needed.

Furthermore, the size of the sustainability department is also seen as an important factor for enhancing sustainability. From the majority of the case studies it can be derived that, due to time and budget limitations, there are only one or a few environmental coordinators in place, while in practice the workload should be handled by twice as many employees. One environmental coordinator commented on the fact that the unexpected leave of a colleague placed a significant burden on his daily task, resulting in less time for additional initiative taking because obligatory tasks, such as governmentally obligated environmental permits, demanded the majority of his time.
To summarize, the above discussion leads to the understanding that, for hospitals, there is a high need for a higher placement of sustainability related positions in the hierarchy in order to enhance sustainability initiatives. Finally, the amount of employees occupied with sustainability issues is also emphasized as an important factor for increasing sustainability efforts.

### 4.7.3. Implications for the Framework

The general findings identified in this chapter show high support for the relation between decentralized concentration of authority in relation to decision making. However, with regard to a skill-based hierarchy, hospitals do not show a clear need for this in relation to sustainability initiative taking, mainly due to the fact that, historically, hospitals have a strong power based hierarchy.

Moreover, the specific hospital findings include the need for a high placement of sustainable related positions in the hospital hierarchy. As these positions are mainly the ones initializing sustainability, a high placement for such employees is of importance. Additionally, hospitals argue that currently sustainability related work is piling up, while no significant action is taking to expand sustainability-related positions. Therefore, the importance of an adequate size and amount of sustainability positions is emphasized in relation to sustainability.

Overall, the above discussion leads to the conclusion that hypothesis 1 cannot be validated due to a lack of appropriate data. Furthermore, the information retrieved from the interviewed hospitals indicate the need for the development of an additional hypothesis related to size and position: “A high placement of sustainability positions as well as an adequate amount of sustainability related positions facilitates successful sustainable initiative taking.”

![Figure 4.8. Organizational design element “Structure”: Hypotheses](image-url)
4.8. Updated Framework

Considering all findings generated through the empirical research in the course of this study, a new, updated version of Squarewise’s framework for sustainability in the health care sector can be presented. After analyzing all seven organizational design elements and fourteen hypotheses, the study found that all elements maintain their validity in a hospital setting and are collectively exhaustive to describe and enhance the management of sustainability initiatives. Regarding the hypotheses proposed by van Oppen and Brugman (2011), eight have been validated, two were modified, four were removed and four new hypotheses were added to the framework (table 4.2.).

<table>
<thead>
<tr>
<th>Alterations</th>
<th>Same</th>
<th>Modified</th>
<th>Deleted</th>
<th>Added</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

*Table 4.2. Total alterations in hypotheses*

This results in an updated framework including seven elements and fourteen hypotheses (figure 4.8).

![Organizational capabilities facilitating sustainability in hospitals](image)

*Figure 4.9. Organizational capabilities facilitating sustainability in hospitals*

According to the scorecard developed to analyze the relative importance of the elements, the research has shown that “Culture”, “Metrics” and “Interface Mechanisms” are the most important elements influencing sustainability initiatives in the hospital setting. It is, however, important to again point to the high interrelatedness of the elements within the framework. O’Connor’s (2008) organizational design element model is inherently systemic and therefore no element can be managed individually. Hospitals should consequently avoid trying to implement isolated initiatives, but maintain a holistic view that captures the complexities and interrelatedness of the system.
5. Conclusion

In this research it has been investigated not only which organizational design elements are found to be important by various hospitals but has also touched upon the question of how these organizational design elements enhance sustainability initiatives. In this final chapter, the sub questions proposed in chapter 1 will be answered subsequently, leading to an overall answer to the main question.

5.1. Measuring Sustainability

Concerning the measurement of sustainability in hospitals, it is important to understand on what parts of sustainability hospitals are taking initiative. Therefore, as explained in chapter 3 it is important to form a clear definition of the various factors on which sustainability can be measured. As such, the first sub question was:

Sub question 1: What factors are important for assessing the sustainability performance of hospitals, in other words, how can sustainability be measured?

The definition given on sustainability included five parts on which hospitals can take initiatives, as can be seen below:

Sustainability: Sustainability is aiming at running a sustainable hospital for the long run, while being financial healthy, building strong relationships with patients through high quality of care, valuing highly committed employees, lowering the environmental footprint and investing in communities.

This definition explains that the five factors mentioned above are important for assessing the sustainability performance of hospitals and can be used to evaluate whether a hospital is taking initiative on any or all five factors. Furthermore, the definition has guided the research in selecting appropriate case studies. However, it is important to mention that it is found in the conducted research that hospitals are mainly taking initiative to lower their environmental footprint, focusing, for example, on waste management and energy reduction, while initiatives on other parts are either lacking or not as extensive when compared to one another (see figure 4.1.).
5.2. Organizational Design Elements

The second sub question was addressed in the empirical part of the research:

<table>
<thead>
<tr>
<th>Organizational Design Elements</th>
<th>Metrics</th>
<th>Exploration</th>
<th>Culture</th>
<th>Interface Mechanisms</th>
<th>Skills and Talents</th>
<th>Decision Making</th>
<th>Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>7</td>
<td>5</td>
<td>9</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

*Table 5.1. Score of hospitals interviewed*

The model of O’Connor (2008) (figure 2.1) is clearly supported by the conducted research. All seven elements of the model are found to be important in relation to sustainability initiative taking in hospitals, even though the degree of importance differs. “Culture” is by far the most influencing organizational design element, closely followed by “Metrics” and “Interface Mechanisms”. “Exploration”, “Decision Making” and “Structure” are all found to be fairly important, whereas “Skills and Talent” has not been addressed as often by hospital representatives (table 5.1).

5.3. Hypotheses on Organizational Design Elements

The final sub question is created in relation to the hypotheses Van Oppen and Brugman (2011) interlinked with the model of O’Connor (2008).

This paper shows that the majority of the hypotheses are supported, as remained the same in a hospital specific context (table 5.2).

The three elements that were viewed as important by most of the hospitals (“Culture”, “Interface Mechanisms”, “Metrics”) have been only slightly altered. Interface has remained completely the same, while only moderate alterations have been made in “Culture” and “Metrics” in order to fit the hypotheses better to the hospital industry.
Table 5.2. Alterations in hypotheses

<table>
<thead>
<tr>
<th>Organizational Design Element</th>
<th>Previous hypotheses</th>
<th>Alterations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metrics</td>
<td>H1: Clear long term strategy</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>H2: Team-based metrics</td>
<td>Balanced, Interrelated metrics</td>
</tr>
<tr>
<td>Interface Mechanisms</td>
<td>H1: Internal cooperation</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>H2: External collaboration</td>
<td>None</td>
</tr>
<tr>
<td>Culture</td>
<td>H1: Supportive leadership</td>
<td>Committed leadership</td>
</tr>
<tr>
<td></td>
<td>H2: Open and learning culture</td>
<td>None</td>
</tr>
<tr>
<td>Exploration</td>
<td>H1: Creating new links</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>H2: Allocating time</td>
<td>Latent knowledge</td>
</tr>
<tr>
<td>Skills And Talent</td>
<td>H1: Recruitment</td>
<td>Integrating skills</td>
</tr>
<tr>
<td></td>
<td>H2: Training options</td>
<td>None</td>
</tr>
<tr>
<td>Decision making &amp; Governance</td>
<td>H1: Sustainability criteria</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>H2: Broad involvement</td>
<td>Allocation of accountability</td>
</tr>
<tr>
<td>Structure</td>
<td>H1: Decentralized authority</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>H2: Skill-based hierarchy</td>
<td>Placement and size</td>
</tr>
</tbody>
</table>

In total, six of the previously identified hypotheses have changed: Two have been modified slightly whereas four have been replaced completely (see table 4.2).

5.4. Coming Back to the Main Research Question

The overview of the sub questions above coherently leads to the addressing of the main research question.

Main Research Question: “Which elements of organizational design drive sustainability in hospitals and how do these elements enhance sustainability initiatives?”

All organizational design elements identified by O’Connor (2008) (“Culture”, “Metrics”, “Interface Mechanisms”, “Exploration”, “Decision Making”, and “Structure”) add to the initiating of sustainability in hospitals. The hypotheses added to these elements create an understanding on how the elements enhance sustainability initiatives. Therefore, to coherently answer the main question,
the next part provides an overview of how the organizational design elements need to be managed in order to actively initiate sustainability practices.

**Metrics** (paragraph 4.1) are important to accurately measure how the hospital is performing on specific sustainability initiatives. It drives the initiating and implementation of sustainability initiatives due to the creation of data on which performance can be measured. A clear long-term strategy is needed in order to ensure the anchoring of sustainability practices in both the present and the future. Furthermore, interrelated metrics are necessary in order to integrate the various parts of sustainability (environment, employees, patients, financial health and community) within the various departments and functions in a hospital. One hospital indicated that the use of a balanced scorecard is a helpful tool in integrating various metrics.

**Interface Mechanisms** (paragraph 4.2) are imperative in creating sustainability initiatives as they foster the sharing of knowledge in the hospital. Internally, collaboration is needed to extend the knowledge base and to create idea-sharing practices. Externally, knowledge needs to be gathered in order to fill a possible knowledge gap in the hospital or to add on existing knowledge. For example, academic hospitals are collaborating more thoroughly and are thus significantly improving their knowledge base.

**Culture** (paragraph 4.3.) enhances the initiatives of sustainability in hospitals when an open and learning culture is created. In such an atmosphere, employees and other stakeholders can interact on sustainability related topics without constraints being imposed on them. Additionally, in order to create an open atmosphere, it is imperative that management is not only visionary but also strongly committed to a sustainable vision. In this case, it can be stated that when management is intrinsically motivated and managed correctly, it spreads the vision in all layers of the complex hospital setting. This was especially identified in case studies where board members or managing directors were strongly involved in implementing sustainability in their practices, such as a finance director in one of the hospitals.

**Exploration** (paragraph 4.4.) is necessary with regard to initiating sustainability in hospitals, as new links within the hospital need to be created in order to combine and share initiatives and knowledge. Furthermore, knowledge does exist in hospitals; however, the knowledge is currently separated and spread over the various individuals, layers and departments of the hospital. Therefore, it is argued that latent knowledge needs to be integrated and activated in order to enhance sustainability initiatives. One hospital explored the integration of sustainable and medical knowledge by changing its procedures with regard to incubators in the pediatrics department, making its use of the incubators more environmentally friendly.
**Skills and Talent** (paragraph 4.5.) were not named as often as a central element. However, this area is closely linked to culture and intrinsic motivation and as such cannot be left aside when discussing organizational design elements in relation to sustainability. Training enhances sustainability initiatives, as people become more aware of the existence of the topic and the actions they can undertake to become more sustainable. Next, it is important to overcome the differences between medical and non-medical staff in order to integrate skills and talents of both types of staff and to create synergies between them. One hospital indicated with regard to this matter that collaborative training between medical and non-medical staff led to the acquisition of a more environmentally friendly MRI machine.

**Decision Making and Governance** (paragraph 4.6.) enhance sustainability when authority is adequately allocated to the right set of people, which might be environmental coordinators, interdepartmental groups or those who already have decision making power due to their specific function. Various hospitals showed that an inadequate allocation of accountability and authority is an important factor impeding the implementation of sustainability initiatives. Next, these authorities should base their decisions on criteria appropriate for measuring sustainability (see “Metrics”, paragraph 4.1.)

**Structure** (paragraph 4.7.) is the final organizational design element identified as having a major influence on sustainability. By decentralized authority, those who have the knowledge to make decisions also receive decision-making power. Next, once the size of functions related to sustainability is adequate, i.e. when a sufficient amount of employees have sustainability in their portfolio, the issue can be addressed adequately. The same holds for the positioning of sustainability-endorsed personnel. When placed higher up in the organization or in an overarching department, such as a quality department, sustainability initiatives can be driven more easily. One hospital exemplified the issue by referring to how the change in position from environmental coordinator to CSR coordinator enhanced the taking of sustainability initiatives throughout the hospital.

### 5.5. Closing Statement

As has been mentioned in the answering of sub question 2, the first three organizational design elements are found to be more important for initiating sustainability in hospitals than the remaining four. However, it is important to note once more the interrelatedness between all elements. Combined, these elements enhance sustainability initiatives and as such they cannot be seen separately when reviewing the organizational design and sustainability practices within hospitals. As
such, the combined model provides a clear overview of which organizational design elements hospitals should focus their attention on and the further discussion emphasizes how hospitals should address these elements in order to prepare their organizational design for implementation and initiative-taking on sustainability practices.
6. Beyond the Research

On a final note, it is interesting to understand the contribution of this paper both for theory and for practice. Therefore, the following paragraph presents the theoretical implications, followed by the implication from a practical point of view. Adding to this, the research pointed towards directions for future research, built on identified shortcomings of the research presented. Accordingly, the final part of this chapter shall inform the reader on future research steps to be undertaken.

6.1. Theoretical Implications

Existing literature discusses sustainability from a holistic point of view with specific focus on various industries. However, the hospital industry remained out of the scope of current academic research. As has been identified by this research, hospitals are entering the sustainability playground and are slowly initiating sustainability efforts within the hospital. As such, the topic is gaining importance in the hospital sector, and it becomes imperative to understand how the organization of the hospital deals with the inclusion of sustainability practices.

This research adds to the existing literature on sustainability by focusing specifically on sustainability in hospitals. Good practices were identified and certain organizational design elements of these hospitals were found to be important for initiating sustainability practices in hospitals. Understanding how organizational design elements influence sustainability in hospitals is a new area of research and therefore not only provides a new dimension to the existing theory on sustainability, but also entails interesting implications for boards and managers of hospitals.

6.2. Practical Implications

As has been mentioned before, research on sustainability in hospitals is lacking. As a result, this research can be used as a guide for hospital boards and/or hospital managers when addressing the question how the organization of the hospital can enhance the initiative-taking and the implementation of sustainability within the hospital.

The interviews with the hospitals provided various insights in relation to the specific steps hospitals can undertake to adapt their organizational design elements in such a way as to become more sustainable.
First of all, in order to manage the complexity of sustainability, specifically within a hospital context, it is imperative to be aware of the difference between the various staff members. The culture of medical and non-medical staff members is different and therefore a discrepancy exists in the degree to which staff members are focused on sustainability, with non-medical members seemingly being more aware of sustainability than medical personnel. Board members and managers can undertake action by using, for example, interface mechanisms to create knowledge sharing activities between the two groups of staff.

Furthermore, boards and managers need to know what to base their decisions on and how to evaluate their performance. As such, it is important to have an integrated set of metrics available to assess the (lack of) sustainability activities of the hospital. The use of a balanced scorecard, in order to not only integrate financial measures, but also more qualitative-related measures in the overall assessment of the hospitals’ initiatives, can be seen as a good practice. Moreover, and highly important, board members and managers should reconsider the manner in which they communicate sustainability. A visionary statement that is acted upon by supporting it in information sessions, trainings and decisions actively drives sustainability initiative-taking in the organization. Therefore, lively discussions on the topic within the board and management and including it in personal performance measurement enhance sustainability in hospitals.

These are just a few practical insights that can be of use for hospital board members and managers. An additional list including actionable steps is provided in appendix L. However, it is important to note that this research is an exploratory study and as a consequence more research is needed to provide an exclusive set of actions.

### 6.3. Limitations and Directions for Future Research

This research is unique as it is addressing the manner in which hospitals can manage their organizational design elements in order to become more sustainable. However, the research is not without its shortcomings and therefore it is important to note that future research can build upon the findings presented in this report in order to enhance the knowledge base on sustainability initiatives in hospitals.

As this research is exploratory in its nature, a limited sample of good practice hospitals has been interviewed as case studies. Additional interviews, within and outside the Netherlands, can provide a more coherent understanding of the various sustainability initiatives and the relation with organizational design elements. Furthermore, only one employee per hospital, who holds a
sustainability-related position, has been interviewed. This might create a bias in results due to the intrinsic sustainability perspective of the interviewed manager. As such, we propose to extend the interview database and include more benchmarking studies as well as interviews with multiple hospital employees. Furthermore, a priority list as to which organizational design elements of the model of O’Connor (2008) are viewed as most and least important by the various hospitals should be created. This leads not only to an understanding of importance rated among various hospitals, but gives an in depth understanding of priority setting per individual hospital.

Furthermore, there is a lack of a statistically robust foundation due to the exploratory nature of the research. In this paper, qualitative research methods were used to evaluate sustainability initiatives and organizational design elements. The next step would be to extend this study and to make use of quantitative research methods in order to test whether the model developed in this research (figure 4.8) holds for a large scale of hospitals identified as actively practicing sustainability.

Additionally, it is crucial to understand that sustainability is not only influenced by factors from within the organization, but that external factors can play a big part in achieving sustainability. In the course of this research, the major external influencing factors identified were political pressure from the government or municipalities, the legal environment, and peculiarities in the hospital industry’s funding. All of these topics were found to be of importance, but specific implications remain unclear due to the limited scope of this study. Future research should take the industry-specific external factors into account to produce more insights in how to assess the sustainability performance of a hospital in relation to their respective external setting and how to align a hospital’s internal organizational design with its environment.

A further extension of the research could also include the broadening of the industry scope from the hospital sector to other types of health care organizations, such as mental health care institutions or elderly care. These organizations might show different characteristics compared to hospitals and would therefore require an alternative setup of organizational design elements to enhance sustainability initiatives.

Next, the model developed in this report can be used for hospitals boards and managers to understand which areas they need to improve in order to become more sustainable. However, hospitals are just starting to measure their sustainability level and not every hospital is yet involved in using metrics for sustainability (“Metrics”, paragraph 4.1.). Therefore, it is important to understand when a hospital can truly label itself sustainable. Currently, sustainability measurements in hospitals are dispersed and there is a lack of a coherent measurement system. Future research
should be dedicated to understanding when a hospital is truly sustainable in order to prove the link between the elements hypothesized in this paper and the degree of sustainability.

Closely related to these measurement challenges is the need to draw a link between sustainability and the additional benefits it can offer for hospitals. In this paper, a few key performance indicators were identified that are currently used in hospitals to measure the impact of sustainable initiatives. Important examples are the use of payback periods or total cost of capital ("Metrics", paragraph 4.1.). However, in order to pinpoint the relation between sustainability and positive benefits for the hospital explicitly, it is necessary to identify a coherent set of KPIs to track its impact. As the interviewed hospitals mentioned, budget cuts make it more difficult for hospitals to implement sustainability. As a consequence, financial KPIs are important to identify synergies between sustainability and cost effectiveness. In addition, hospitals also mentioned that their core business is the curing of patients and that sustainability initiatives can help in the quality of this practice. Therefore, future research should investigate on making the benefits for both financial returns and quality of patient care visible. This can prove to be powerful tool to convince hospital boards of the importance of sustainability, especially when benchmarked against financial performance of less sustainable hospitals.
Bibliography


Milieu Platform Zorg (2009), www.milieuplatform.nl (online, accessed on 29.4.2011).


Appendices

Appendix A – Questionnaire

Analyzing organizational design elements for sustainability in hospitals

<table>
<thead>
<tr>
<th>General questions about the hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>- What is the hospital’s perspective on sustainability? Does it have an official/unofficial value statement?</td>
</tr>
<tr>
<td>- What is the history of the hospital regarding sustainability? How were the five areas of sustainability (financial health, relationship with patients, employees, the community and environment) addressed?</td>
</tr>
<tr>
<td>- Does the hospital have a (different) sustainability definition than the previously mentioned five areas?</td>
</tr>
<tr>
<td>- What is the hospital’s long term view on sustainability?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Questions about the sustainability practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>- What does the sustainability practice entail? Which part of sustainability is addressed?</td>
</tr>
<tr>
<td>- Who initiated this practice and when was it initiated?</td>
</tr>
<tr>
<td>- What is the goal of the practice? Why was this practice initiated and what was the motive behind it?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Questions about design elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Metrics – measures and monitors of sustainability initiatives</td>
</tr>
<tr>
<td>How does the hospital assign resources and is sustainability taken into account in this process? How is sustainability included in the budgeting process?</td>
</tr>
<tr>
<td>Does the hospital measure the sustainability performance of its activities? If so, on what levels?</td>
</tr>
<tr>
<td>Are people / departments held accountable? Is so, who and how? How are sustainability practices assigned – voluntary vs. forced / full-time vs. part-time / clear vs. ambiguous?</td>
</tr>
<tr>
<td>Does the hospital measure the link between sustainability and financial health?</td>
</tr>
<tr>
<td>Does the hospital measure the link between sustainability and quality of patient care? If so, how?</td>
</tr>
<tr>
<td>If it is measured, then who measures it and to whom do the results go?</td>
</tr>
<tr>
<td>How does the hospital deal with confidentiality of these results (knowledge sharing between hospital and/or departments)?</td>
</tr>
</tbody>
</table>
2. **Exploration Processes – interaction between departments, management, and external parties about sustainability and innovation**

What is the element of the organization taking the initiative towards sustainability (e.g. one person, a specific department, the board)?

Which department is primarily occupied with sustainability initiative(s)?

How is entrepreneurship stimulated within the hospital? Are there any internal guidelines for the innovation portfolio that concern sustainability?

To what extent does the hospital work together with external parties on sustainable initiatives? To what extent does the hospital conduct research on sustainability in cooperation with external parties?

3. **Culture – organizational culture of the hospital**

Is the culture of the hospital directed towards increasing sustainability? Why or why not? If yes, how so?

How does the hospital make sure that employees are committed to sustainable initiatives? Are employees stimulated to develop ideas? Are employees stimulated to work together?

Which role does management play concerning sustainable initiatives and how do they motivate their employees towards this subject?

Is there a gap between the culture and views of middle management and top management/board with regard to sustainability?

4. **Interface Mechanisms – knowledge sharing and usage of sustainability information by the hospital**

To what extent does the hospital cooperate with external parties concerning the generation of insights with regard to sustainability and sustainable initiatives? What type of external parties?

Does the hospital have any connection to universities or other academic institutions and make use of those to enhance sustainability?

Does the hospital take an open stance towards sharing of knowledge on sustainable initiatives? In case of cooperation, are these relationships usually short term or strong relationships?

Does the hospital stimulate cross-functional and cross-departmental cooperation?

How does the hospital absorb externally generated knowledge on sustainability?

5. **Skills and Talents – human capital and recruitment on sustainability criteria**

Does the hospital recruit a certain kind of people?

Does the hospital provide trainings with regard to sustainable initiatives? If so, in which areas of sustainability? (financial, patients, employees, community, environment)

What kind of people are put in charge for sustainability functions? Is it mainly medical staff or other
non-medical personnel?

6. Governance and Decision-Making – boards, power, and control within the hospital

To what extent is sustainability integrated in all decision-making processes of the hospital? How does the board dealing with these sustainability processes?

Does the hospital have people who are responsible for sustainability initiatives? Who is responsible for safeguarding the legitimacy of sustainability (that the innovation reaches the objectives of the organization)? Are those positions assigned or voluntary?

Is sustainability a part-time/additional responsibility or a full-time position?

To what extent does the governance structure influence successful sustainable initiatives?

7. Structure – organizational design of the hospital

How would you describe the structure of the hospital; i.e. hierarchical, matrix or flat? To what extent are employees autonomous?

Is the structure formal or informal?

What are the channels of formal and informal communication among employees?

Does the business of running a hospital allow different kinds of organizational structure?

Is this considered a big or small hospital?

Closing Question

Are there other good practices of the hospital, not discussed, with regard to sustainability?

Are there any additional elements where sustainability manifests in your organization that we did not discuss before?

What changes in the organizational design should be made in order to enhance sustainability?
Appendix B – Summary Hospital A

General questions about the hospital

The hospital has an official value statement on sustainability. It is mentioned on the intranet and in the annual environmental report.

Specific sustainability history: initially, there were two directors for facility management (FM)—this was split up in construction and facility management. The director of construction saw the need to integrate waste and energy. A new position was created, directly under him. Next, new issues popped up, such as the link with the safety department, which was incorporated in this function. Now the function of environmental coordinator encompasses not only waste and energy but also safety measures, quality insurance, procurement etc. Basically, everything related to sustainability.

Information about the sustainability practice

History of sustainability
- In addition to the information above, over the past 12 years (since the position of environmental and ARBO coordinator was created), MCL has become actively involved on the sustainability front. The hospital has its own energy centre, uses various types of energy storage, and is constantly improving its waste management system. Additionally, MCL is currently working together with the municipality of Leeuwarden in order to help the municipality attain its goal of becoming completely fossil fuel free by 2020. One activity in this is the use of geo energy (regain heat from the earth). MCL is the first cure/care center that uses this source to meet the heating needs of the hospital and the houses around the hospital.
- Most practices initiated by the environmental/”ARBO” coordinator and approved by the Construction Director/FM Director.
- Reasons:
  - Cost savings
  - Positioning of the hospital (partly image)
  - Need and curiosity for innovation / improvement

New initiatives: more on energy (still not enough) and sustainable procurement, now also with medical supplies.

Information about design elements

1. Metrics → important

For environmental practices, everything is measured and related to financial performance. General rule: all projects/initiatives with a payback period of 4-5 years will be implemented. The department is involved in the implementation of the project/initiative from the start to ensure sound finance.

Measurement is important to “get things done”

The hospital does not measure the relation between sustainability and quality of patient care.

The environmental coordinator initiates the projects and the departments under which these initiatives take place conduct the measurement of these sustainability initiatives.

Knowledge coming from these measurements is shared among departments via intranet or for
example, promotional posters within the hospital. Additionally, as the MCL is doing very well with regard to sustainability, the environmental/”ARBO” coordinator is frequently asked to join conferences and seminars to share knowledge.

Hospital is conducting long term planning → annual environmental plan → every year new goals for the next year. Long term plans such as the delta plan for 5 years.

2. Exploration Processes → important

Ideas come mainly from sustainability staff position (the environmental/”ARBO coordinator”) and the Director of Construction. The latter is very motivating and encourages employees to take sustainability into the account and places it high on the agenda.

Entrepreneurship is stimulated via work groups and the work council.

Cooperation with other hospitals: MCL mostly plays the role of information provider as it currently outperforms the other players in the industry.

3. Culture → important

It is embedded via the vision of the Director of Construction. Again this person is a key figure in this process because he reinforces the need for sustainability and this facilitates the implementation of ideas and advice provided by the environmental coordinator.

MCL makes sure that employees are committed via active promotion of sustainability (possibility for electric bicycles, information posters on how to save energy, etc.). Very important: they show that it is possible to reduce both environment footprint and costs, not only at work but also at home.

There is not necessarily a gap between the management and the employees. The Director of Construction has the autonomy and the power to make decisions. Only large budgets need to be discussed with the board of directors. This is, however, different from the medical staff, whose focus is on the quality of patient care.

Supervisory board is actively asking about sustainability.

4. Interface Mechanisms → important

The hospital has a lot of knowledge in-house and uses this knowledge extensively, e.g. with the building of new energy facilities in the new hospital. However, external consultants are also brought in from time to time and are actively monitored by MCL. Additionally, the hospital makes sure that it works with reputed external parties.

The hospital is part of Milieu Platform Zorg (MPZ) (www.milieuplatform.nl), and is actively involved in the government’s initiatives to increase sustainability in health care. Via these organizations and initiatives there is flow of information.

In terms of sharing knowledge, MCL’s annual environmental report is openly available and published both on the internal and external websites. MCL feels that its plans can also be used by other hospitals. However, due to the large amount of resources the hospital puts into developing its sustainability practices, it feels that its initiatives should not be blindly copied by other hospitals. MCL
is willing to help others but is reluctant to openly share all initiatives and structures it has developed.

Cross-functional and cross-departmental cooperation is facilitated by the work council and workgroups on environment and ARBO. Additionally, the environmental/ARBO coordinator serves as a bridge between departments as she is the overall coordinator.

The hospital actively takes part in seminars and conferences on sustainability and the environmental coordinator takes part in several cross-hospital initiatives.

5. Skills and Talents

Sustainability is mostly in the portfolio of non-medical parties.

For recruitment, sustainability is not a criteria.

The hospital provides various trainings that are also recurrent.

The environmental/ARBO coordinator stresses the fact that it is very important that you take a strong stance. As this individual’s position is by definition only of an advisory nature it might be difficult to see the implementation through. However, having a strong possibility and not being afraid to debate and challenge current practice is very important. (example, in the construction of a new parking lot it was decided, without contacting the environmental/ARBO coordinator, that normal lighting would be put into place. The environmental/ARBO coordinator found out, started a discussion and sent a request to the director of construction. The request was immediately validated and LED lighting was put into place).

Expertise groups are in place; specifically per function (the work council, ondernemersraad in Dutch, has their own group for fire safety).

6. Governance and Decision-making \textit{important}

Concerning decision-making, the Director of Construction has lots of power and has the possibility to directly inform the board of directors.

The environmental/ARBO coordinator is responsible for advising, but not responsible for implementation. Additionally, the hospital has a vision with regard to sustainability and is certified by NIAS (employee sustainability). In order to retain this certificate the hospital needs to comply with the requirements for these certificates. These are the responsibilities of the directors of the specific areas. (BREEM certificate for sustainable construction is part of the portfolio of the Director of Construction).

Full-time position is necessary to focus on the environment and sustainability initiatives.

7. Structure \textit{important}

Classic hierarchy, but difference in MCL is that the position of environmental coordinator is high up the hierarchy, just below the director.

Formal structure.

Channels of communication both formal and informal.
Small hospitals, the environmental/ARBO coordinator thinks, have more difficulty with implementing sustainability, because they don’t have the knowledge, the resources and the time to implement it.

**Closing Remarks**

Very important that as an environmental coordinator you not only give guidelines but also give concrete implementation plans.

MCL is doing so well because the position of environmental coordinator is high up the hierarchy.

Very important: vision of the management. In MCL innovation is very important, they achieve to be/have the following:

- increase public awareness of hospital
- need to have vision
- create a platform
- able to convince staff
- dare to invest
- dare to take risks (soil use had a payback period of 11 years, but still did it)

Communication is very important

Intrinsic motivation and vision of the top management is of extreme importance. Without that → forget about sustainability.

Other elements:

- Influence of general public, government, etc.
- Factor: there used to be lots of governmental subsidies, now mostly sustainability subsidies are given to for-profit companies not to non-profit organizations such as hospitals.
- Factor: the surroundings e.g. municipality of Leeuwarden puts sustainability high up on the agenda.
- Factor: external factors. The hospital has the vision for taking sustainability initiatives and the timing for initiating some of these practices has to be right. As a result of such a positive atmosphere, this hospital is currently building a lot, which also allows them to include sustainability initiatives in the construction plans without incurring additional costs.
Appendix C – Summary Hospital B

General questions about the hospital

The hospital has an environmental strategic plan that encompasses almost all the initiatives the hospital is involved in regarding sustainability at the moment. The plan is for 2010-2013 and has not been made public because the environmental coordinator did not want to publish any targets without knowing if they are attainable and realistic for the hospital. However, all three board members signed off on it and he is now willing to share it.

In this document the hospital defines sustainability according to the triple bottom line definition (people, planet, profit).

2 different organizational parts:

1.) staff position (1 person, the environmental coordinator)

2.) environmental core team – strong focus on initiatives, environmental opportunities, and external sustainability knowledge and innovation (composed of 8 members—work is on top of their regular workload and 2 rotating members)

Information about the sustainability practice

History of sustainability:

- The government highlighted how badly the hospital was doing regarding environmental regulations about 3 years ago;
- It ordered 26 separate researches/investigations that the hospital should conduct in order to meet standard regulations, particularly, to get the correct permit;
- It was externally initiated, but this environmental coordinator had to deal with meeting all these regulations first before they could consider initiatives above and beyond these required standards;
- The environmental strategic plan does try to go beyond the regular standards.

The hospital sees sustainability initiatives focused mainly on environmental initiatives (which are at the moment mainly financially/cost-savings driven). Quality of patient care and financial health are the hospital’s core business and most initiatives are environmentally focused.

Information about design elements

1. Metrics \textit{important}

Planning, for the moment, is in the environmental strategic plan until 2013. The document sets specific targets regarding energy reductions and goals from 2010 until 2013.

Budgeting: investments are made based on return on investment. Most of their initiatives are cost-savings driven; however, for instance if a more expensive MRI machine uses half the energy in comparison to an initially far cheaper MRI machine, they will make the investment in the more expensive machine as it saves energy and costs in the long run.

Impact on financial result is \textbf{not} measured.

Impact on quality of patient care is \textbf{not} measured.
The hospital is very open to knowledge sharing with other hospitals and external parties (i.e. Milieu Platform Zorg (MPZ) (www.milieuplatform.nl).

2. Exploration Processes
Initiatives stem mainly from the environmental coordinator and the environmental core team.
Cooperation stems from members working together in the environmental core team and they are from various departments, functions, etc (cross-sectional).
However, ideas can also stem from board members or anyone else that shows initiative.
Cooperation with other hospitals does happen as well as some knowledge sharing with a group such as MPZ; however, other external parties such as consultancies are not used.

3. Culture
Employees are stimulated to develop ideas as well as to work together.
There is a communication plan in place to be executed that will communicate the importance and relevance of sustainability to all employees. This will include constant audits in departments and a possible reward system for employees.
There is definitely a gap between middle management and top management/the board. Management has broader knowledge and the challenge is frequently to get everyone on board.

4. Interface Mechanisms → important
The hospital does cooperate with external parties, but generally just other hospitals.
The hospital takes an open stance towards sharing knowledge regarding sustainability innovations. For instance, it uses benchmarking such as MPZ’s “milieu barometer”. The relationships it has with organizations such as MPZ are long term.
The hospital absorbs external knowledge by presenting it to the environmental core team. For instance, a member of the team will have visited an organization with sustainability information and will then hold a presentation for the team about the innovation/visit.

5. Skills and Talents → important
There is a major difference between the medical and non-medical staff, as well as management and the board. Technical staff tends to be more open towards sustainability innovations, but medical staff needs to be on board since they use the equipment/innovations the most.
The environmental coordinator also feels comfortable talking to employees at all levels, departments, and functions in the hospital and also notices that individuals from various levels and departments approach him if they have questions/concerns related to his tasks.
Regarding recruitment, the hospital does recruit people with an open mentality towards innovation and sustainability, but does not actively search for it when recruiting.
The hospital intends to provide training to its employees regarding sustainability knowledge and innovation.

6. Governance and Decision-making
All ideas are presented to the board and need to be approved by the board—all three members need to sign off (the environmental coordinator’s choice in decision making, has to do with awareness but also support from the whole board if all members sign off).

7. Structure
Hierarchical structure, top down.
Environmental core team is cross-functional.
Communication goes both horizontally and vertically.
A different organizational structure is possible in hospitals and might even be more conducive to sustainable innovation.

Closing Remarks
A change in the organizational design that should be made in order to enhance sustainability is to create a more open culture among employees and the organization.
Appendix D – Summary Hospital C

General questions about the hospital

9200 employees.

The management board has implemented a long-term vision for the hospital, including sustainability.

The hospital has a commission on Environment and Sustainability, specifically, it:
- Initiates sustainability practices;
- Is responsible for sustainability.

Information about the sustainability practice

History of sustainability:
- end of 1980s: discussion on garbage in Germany → national discussion that started consciousness for sustainability;
- 1990s: focus was expanded from environmental focus to social/employee-related issues – it was considered to outsource certain functions, but in the end the board decided not to lay off the employees and keep them;
- present: initiatives for sustainable transportation to the hospital – incentives for public transport and increased usage of bikes, waste management, and the hospital operates an own energy plant.

Information about design elements

1. Metrics

It is very hard to measure sustainability.

Hospitals are very different, it is impossible to compare KPIs of two different hospitals – size, patient distribution, and for instance, type of treatment is so diverse that comparisons across hospitals are not feasible.

Using KPIs internally is also very difficult – there are many factors that make it impossible to draw conclusions from the development of KPIs (the hospital has grown a lot, there is no stable situation which would allow them to compare with the past).

Some KPIs (such as employee turnover, quotas of female employees, ratio of full-time vs. part-time positions) might be possible, but mainly on a departmental level.

2. Exploration Processes → important

Ideas are generated from daily operations.

No direct link of academic institution to exploration processes.

The hospital makes use of external networks (sustainability networks, etc.), also with organizations in the non-healthcare setting.

3. Culture → important
A management commitment is very important.
There is no gap between the board and lower management; commissions make sure that the topic is transferred properly.
The hospital has a pretty strong culture in terms of sustainability, and is well-known in this area.

4. Interface Mechanisms
The various commissions act as a tool to increase cross-departmental collaboration.
This issue has improved significantly over the last few years.

5. Skills and Talents
Vision is communicated to new employees when they enter the organization.
There are no trainings on sustainability.
There is a clear division between medical and non-medical staff.

6. Governance and Decision-making
Responsibility is not delegated, manager of departments are part of the commission and are directly responsible for the projects in their departments.
Sustainability tasks are assigned, not voluntary.

7. Structure
Classic, hierarchical structure.
Formal networks are very useful, informal networks are too unstructured.

Closing Remarks

Financial influence is very important:
- Hospitals are struggling with funding, the focus on sustainability is decreasing due to financial restrictions;
- Hospitals in Germany get their funding for construction from external sources and they do not have their own budget for construction – it is difficult for them to invest in sustainable buildings since they are not the ones who pay for it (Duale Finanzierung).

Hospital size
- A smaller organization has a big advantage because they are more flexible, it is easier for them to communicate sustainability initiatives, and to change the culture
### Appendix E – Summary Hospital D

#### General questions about the hospital

No official definition of sustainability from the management board.

The hospital has 2 different organizational parts relating to sustainability:

1.) staff position (1 person)
2.) ecology commission – strong focus on environmental issues
   
a. ecology commission acts as a consultant to the management board
b. no formal power, just consulting

Accountability of sustainability issues is on a project basis.

#### Information about the sustainability practice

History of sustainability:

- the management board in the 1980s introduced a staff position and an informal group that came up with the idea of an ecology commission
- this commission has been in place since 2001

Specifics related to sustainability of the hospital sector include:

- the constant focus on patient care
- a high complexity of products/medication
- there is very little literature on hospital sustainability
- development is significantly slower regarding innovation

#### Information about design elements

1. Metrics → *important*

The hospital does some long-term planning, but not on a project basis.

Budgeting: a very small budget (0.002% of total hospital budget) is set aside for sustainability initiatives.

The hospital is currently in the process of formulating goals – there are no clear sustainability measures yet (thus far they have only had goals based on reducing energy consumption).

The impact on financial result is *not* measured!

The impact on patient care is *measured*!

There is no accountability – only documentation of the initiatives and there are no specified goals relating to measurement → they suggest that in the future, operative departments should be held accountable.
2. Exploration Processes
Ideas come mainly from sustainability staff position.
Cooperation is based on the personal network of an individual as well as publicly available data.
The hospital is involved with some cooperation with other hospitals, but there is very little activity on sustainable matters.

3. Culture \(\rightarrow\) important
Regarding the management commitment of the board – management does not hinder sustainability, but it also does not enforce it actively.
Sustainability is currently not a big part of culture – similar to many other hospitals.

4. Interface Mechanisms \(\rightarrow\) important
Cooperation between departments is not a natural thing.
Connections are formed based on an individual’s staff position – an important issue in the hospital industry.
Cooperation is random and ad hoc.

5. Skills and Talents \(\rightarrow\) important
There are major differences between employment groups:
- technical positions, nurses, etc. show high sensibility
- doctors and financial positions show little sensibility

There is some latent knowledge, but it is not used – people wait until initiatives are started by others.
Regarding recruitment – a sustainability mindset of a person is not taken into consideration.
Training – no trainings are provided yet, but it is a goal of the hospital.

6. Governance and Decision-making
Accountability for sustainability practices is assigned on a project-by-project basis.
Sustainability projects are additional tasks on top of the regular workload for employees.
Participating in sustainability initiatives are mostly on a voluntary basis.
Sustainability should become an integral part of the job description of an employee.
If people have to initiate sustainability on a voluntary basis, they take a risk! Doing it on a voluntary basis might not be the best option.
7. Structure

Classic, hierarchical structure.

The fact that they are a university hospital does not make a big difference.

Size of the hospital might have an impact! Smaller hospitals can be more innovative and more engaged.

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Other elements?
- The potential influence of the general public, government, etc.
- Society will at some point demand increased sustainability of hospitals
- Sustainability will become an issue/major point of improvement for hospitals
Appendix F – Summary Hospital E

General information about the hospital

Sustainability has been on the hospital’s agenda for several years, several projects have been developed and implemented in cooperation with academic partners.

The hospital has developed a mission statement, which includes the three dimensions of the triple-bottom line concept.

The hospital does not have a sustainability commission; sustainability is the task of the quality management department.

Information about the sustainability practice

Projects include sustainability initiatives both in the operational day-to-day business and on a strategic level.

Historical development of sustainability:

- Sustainability issues started to appear on the hospital’s agenda in the late 1980s;
- After observing a sustainability-related event in 1989 in Vienna, the hospital joined a national network on sustainability (“Netzwerk der gesundheitsfördernden Krankenhäuser”) → the first dimension that was tackled was the human pillar of the triple-bottom line, due to the hospital’s heritage as a psychiatric practice.
- Starting in the 1990s, sustainability initiatives expanded to the environmental dimension.
- After 2000, sustainability projects with academic partners have been tested and developed on various levels of the organization;
- It is the only hospital in Austria with an EMAS-certification.

Information about design elements

1. Metrics → important

Metrics are defined on an operational and strategic level:

- Operational: the hospital has developed and implemented a “sustainability check” to track sustainability—which includes the triple bottom line approach (people, planet, profit). Managed on a departmental level, departments are responsible for achieving the goals.
- Strategic: the hospital has implemented a balanced scorecard and a strategy map that includes 12 to 20 strategic goals, incorporating sustainability measures.

2. Exploration Processes → important

The innovation and creativity potential can be found within the whole organization, the main task is to activate this knowledge → There are multiple sources of innovation across functions and hierarchy levels.
The interviewee mentioned U-Theory by Claus Otto Scharmer as relevant for this hospital—knowledge already lies within the organization, but it has to be found.

3. Culture → important
It is very important to adapt the organizational culture to take action on sustainability: people are aware and positive about it, but they do not act on it. There is a discrepancy between saying and acting.

A gap between the management board and lower management can be observed: leadership skills are paramount – hospitals need enthusiastic leaders to make changes.

4. Interface Mechanisms
System competence is important – how to integrate the system within the hospital?

5. Skills and Talents
Sustainability requirements/thinking are a part of the job description.

For training and development, it is important to create a sense of urgency. Dynamic, rhetorically trained coaches are needed to activate the employees.

There is a difference between medical and non-medical staff in terms of devotion to sustainability.

6. Governance and Decision-making → important
Sustainability is not a separate topic. Sustainability has to be integrated in the governance considerations in the organization → however, forming a separate commission, staff position, etc. might be a problem since a big amount of different positions might create a fragmented, complex situation – sustainability is a holistic issue that has to be handled in an integrative manner.

Quality management is in charge of making sure that sustainability initiatives proposed by the management are carried out.

7. Structure → important
Complex topics cannot be solved in a hierarchical setting, there has to be cooperation and coordination across departments, which is not reflected by a hierarchical system.

Responsible autonomy: everybody has to be involved in sustainability issues, a strict hierarchy is not helpful.

Formal networks can be too slow and inefficient – they are useful, but they might cause fragmentation if there are too many networks within the organization.
Closing Remarks

It might be useful to look into a hypothesis covering the matter that it may be harder to implement sustainability in a big hospital rather than in a smaller hospital → a change of values is hard to implement. However, small organizations might have the drawback that one “blocking” person within the organization might jeopardize the initiatives.
Appendix G – Summary Hospital F

General questions about the hospital

They built a new hospital in 2008 and are taking into account sustainability issues; however, since then not many changes have occurred on the sustainability level.

Information about the sustainability practice

History of sustainability:
- The hospital has had a value statement on sustainability for a long time, as well as an annual environmental report (for about a decade). The new hospital was built in a sustainable way. However, since this initiative the hospital has not actively pursued sustainability.
- The hospital mostly pursues environmental permits.

Information about design elements

1. Metrics

The hospital measures sustainability and financial performance, mostly in relation with energy projects. For example, in the environmental report it is included how much energy is used and compared to previous years’ energy usage and the financial gain from this is evaluated.

Sustainability is not measured in relation to patient quality of care.

Nobody is really responsible for sustainability within the hospital.

There is no clear structure where the results go to. ICT measures and provides reports, they analyze whether practices are on schedule or not, then ICT informs the various departments and for example, the environmental coordinator initiates a new plan when necessary.

2. Exploration Processes

There is no active exploration. The environmental coordinator has an advisory role and works 20 hours a week, as such, most of this person’s time is occupied by gaining the environmental permits and this leaves not much time for further exploration. This individual also recognizes the budget constraints, which entails that more expensive investments with regard to sustainability are difficult to be made.

ICT, environment, ARBO, and procurement are mostly working on sustainability and there is no centrally organized structure for this.

They do not work together actively with other hospitals. However, when they were planning on separating waste, they did talk to other hospitals about how they did this (this contact was via their external waste partner CITA that worked with other hospitals).

The hospital does not work with many external partners. Mostly with CITA and with DGMR, a research institute that researches sustainability.

3. Culture \( \rightarrow \) important
The culture is not really focused towards sustainability.
People do not come up with ideas themselves. Sustainability does not play a role in management board meetings.

4. Interface Mechanisms
See the example on waste management → some knowledge sharing, but this one example is rare.
The have no official contact with other hospitals.
Via information sessions the environmental coordinator informs people about non-budget related sustainability issues, then people come with ideas.
They used to be a partner of MPZ, but not anymore, now they are reconsidering joining this again.

5. Skills and Talents → important
The hospital does not look at a sustainability mindset in individuals when recruiting.
The hospital does not provide official trainings—the only training they provide are via information sessions, which are not obligatory and are not recurrent. There are no specific sustainability functions. It is mostly part of the function of the environmental coordinator, but ideas might also come from, for example, ICT and procurement.

6. Governance and Decision-making
The board of directors can make decisions.
The environmental coordinator is also part of the facility department and low cost initiatives are mostly easily arranged within the budget, if not within the budget, then it has to be asked of the board of management and that takes some time. Then, if the payback period is not quick or if the investment is too big, the initiative will not be implemented.

7.) Structure
Classic hierarchy, which is the formal structure of the hospital.
Channels of communication are both formal and informal.

Closing Remarks
Overall feeling of the interview is that the environmental coordinator commits only 20 hours a week and this is not enough to make a difference. Furthermore, this individual seemed to easily accept budget related issues and finds it sufficient to work mostly on the environmental permits.
Sustainability was mainly embedded in the building of the new hospital. Now that the sustainable energy matters are in place, sustainability has been brought to the background.
Appendix H – Summary Hospital G

**General questions about the hospital**

The hospital has an annual environmental report.

The hospital has sustainability embedded in the organization. Their philosophy is that they do not want to cure people and then put them back into a filthy environment.

The hospital is currently constructing in a sustainable manner.

**Information about the sustainability practice**

This hospital is the only one in the Netherlands that has a certificate for sustainability with regard to the whole hospital.

They are active in three phases:

- **Procurement**
  - Mostly non-medical → now they are looking into medical sustainable procurement.
  - Agentschap NL has set guidelines for becoming more sustainable. These are not obligatory, but they are trying to live up to these guidelines.
  - Currently 20% of all procurement is sustainable.

- **Construction**
  - The new hospital is constructed sustainably (green roof tops, energy management).
  - Every investment with an ROI of less than 5 years and with an investment of lower than 150.000 euros has to be implemented.

- **Energy efficiency management**
  - Goal was to reach 10% more efficiency in energy in 2013. This goal was already reached in 2011.
  - This is their main factor, as energy has the highest environmental impact

**Information about design elements**

1. **Metrics → important**

   The hospital publishes an annual environmental report internally.

   The management board actively wants to be informed about sustainability practices.

   Per department the hospital has a scorecard with smileys and red/orange/green dots to indicate how the department is scoring on environmental matters. These scorecards are discussed twice a year with all the departments.

   There are environmental agents (see structure) – coordinators.

   Measurement of sustainability – financials: the hospital uses business cases to measure the payback period. For example, this is why the procurement of green energy was easily decided upon, payback period of less than 5 years and huge savings in the future.
They do not measure quality of patient care actively. They do keep it into account though, for instance with regard to green rooftops and how patients perceive these.

The environmental coordinator can contact the management board directly. Twice a year they have a meeting based on an environmental audit.

2. Exploration Processes → important

The hospital recently has a new Director of Procurement. This person is highly committed to sustainability and very willing to look into improvements in that area. This new director initiated a work group together with procurement divisions of other hospitals in order to share knowledge.

One of the environmental coordinators takes place in the board of “Milieu Platform Zorg” and chairs for example, a workgroup consisting of 30 people, about health, safety and dangerous appliances.

Departments need to inform the department of procurement themselves whether they want to purchase sustainably. Procurement is also actively promoting this together with the environmental coordinators.

Initiatives mostly come from either the environmental part of HR, procurement, or obligations from management. Next to that, employees (mostly non-medical) become more and more aware of the importance of sustainability and suggest initiatives themselves.

With regard to external parties the hospital is very open to receiving new information. For example, the hospital works together with Netvang for artificial fabrics and the waste management of those fabrics.

There is an AMC “Arbo Milieu Commissie,” comprised of members of the hospitals of all layers and all departments that come together once every two months to talk about sustainability. Once an initiative is approved by this committee, it is more likely to also be approved by the board of management.

3. Culture → important

The employees of the hospital are part of the broader environment and citizens of the world. They are also asking critical questions about the hospital practices and initiatives.

The board of directors also finds sustainability important. They give the assignment to work out on a specific sustainability initiative and they accept ideas when the initiative gives a positive image, and when the investment is conformed to the market prices.

There are also big groups that do not feel the need to participate, mostly medical staff members. They focus on the patient care and do not have the time to focus on sustainability.

The main gap is between medical and non-medical staff members.

Employees are motivated by in-house information sessions, trainings and communication via website/posters/etc.

4. Interface Mechanisms → important
The hospital takes initiative in contacting other hospitals. As mentioned, the Director of Procurement initiated a workgroup with other procurement departments of various hospitals to share knowledge. Knowledge is mostly shared with other academic hospitals.

One of the environmental coordinators also has a board position in “Milieu Platform Zorg”.

Knowledge sharing between departments and functions is mostly done during the workgroups with the experts and coordinators (see part on structure) that come together twice a year. This enhances discussions and thus initiatives. Example: annually lots of flower vases fall. They are mostly cleaned with artificial fabric material. However, this places a huge burden on the environment so the hospital is now looking into how to clean this in another manner.

5. Skills and Talents
No recruitment requirements on sustainability.

The director of procurement initiated a three-day course for all employees of procurement to teach them about sustainable procurement.

The hospital provides training sessions, but mostly on an ad hoc basis. Additionally, environmental sessions are organized for the whole hospital to subscribe for. Even though they are not obligatory, they are quite popular.

There are no recurring events organized.

6. Governance and Decision-making →important
Mostly the management board makes investment decisions.

Smaller decisions can be made by the departments responsible for the specific initiative.

Initiatives with a payback period/a return within 5 years need to be implemented.

Sustainability is not an official part of anybody’s job. However, they have many people who are responsible either full- but mostly part time, with environmental issues.

AMC committee (see part on exploration).

7. Structure →important
The hospital has a divisional structure.

Communication flow is as follows: The environmental coordinator → the head of safety and health → head of HR → the management board.

The environmental coordinators have an advisory role. They coordinate, make sure the hospital adheres to regulations and receives the required permits. Additionally, this individual investigates how to improve sustainability of the hospital.

The hospital has three environmental experts (fulltime). Every division has their own environmental coordinator (part time). Additionally, every department has various environmental agents (180 in total). The environmental agents check how their department is performing and communicate this
either directly to the experts or to their environmental coordinator. The coordinators and the experts meet twice a year.

Communication is both formal and informal: formal via the newsletter, workgroups, meetings and intranet; informal via communication streams and people who know each other sharing ideas.

**Closing Remarks**

The environmental coordinators expect that in the future insurance companies will make sustainability a requirement.

Their most important reason, intrinsically motivated, to move towards sustainability is that the hospital does not want to place a cured person back in a world where he/she is likely to get sick again.
Appendix I – Summary Hospital H

**General questions about the hospital**

No official definition of sustainability is in place. However, sustainability for this hospital is specifically seen as environment-related.

Their work council is an important organ in deciding on initiatives regarding sustainability.

Regarding the history of sustainability of the hospital, there have been small environmental projects going on for 10-15 years, but it has never explicitly been linked to sustainability.

Discussions regarding sustainability and the relevance of it do occur in the organization, but it needs a push. This has been difficult since there are lots of cost savings occurring.

**Information about the sustainability practice**

The hospital has a vitality program for its employees and is working on a new building on the river Eem, which is intended to be constructed in a sustainable manner with sustainable innovations.

The new building’s location was chosen from ten locations and sustainability aspects were kept in mind in deciding. The initiative stemmed from a construction director within the organization. He took the initiative and also had contact with the media regarding the sustainability innovations of the new building.

**Information about design elements**

1. **Metrics**

   All initiatives are largely ad hoc and are measured on a case by case basis depending on feasibility and cost.

   The hospital is not investing in the old building anymore and had to make concessions regarding the many intended sustainability innovations for the new building due to budget restrictions.

   The hospital only invests in initiatives that have a return on investment within a few years, ten years, for instance, would be too long.

   The hospital does check its energy consumption levels through the use of an energy performance contract. However, there are no other clear measures.

   The impact on financial result is not measured and there is a lack in accountability. The impact on patient care will be measured in the new building.

2. **Exploration Processes**

   Firstly, a business case for each initiative is needed, reflecting on payback period, feasibility, and how realistic the initiative is. Then initiatives stem from individual staff members, technical/facility staff, the work council, and the board—which has the most influence and realizes that it is relevant, but sustainability initiatives always come back to the question: “does it benefit the patient more?”

   The hospital works together with external parties such as the local government in Amersfoort, the province, and the mobility platform in Amersfoort.
3. **Culture → important**

The current culture at the hospital limits sustainability initiatives. Most initiatives stem from the environmental coordinator, but rarely anyone else.

The culture limits sustainability initiatives and there is a gap between middle management and top management/the board. The hospital also lacks an entrepreneurial climate and it was described as limiting due to the fact that it is like having to deal with 100 small companies.

The priority for sustainability is low throughout the organization.

4. **Interface Mechanisms → important**

Cooperation between departments is linked to what has already been stated in the culture section.

The departments are islands that attend organization wide meetings, but there is no platform to share knowledge throughout the hospital.

It would be beneficial to insert a person in a strategic position in order to stimulate knowledge sharing as well as sustainability initiatives.

5. **Skills and Talents**

The hospital does not recruit based on a sustainability mindset, but the environmental coordinator does see the added value in doing so.

The hospital did have a workshop for the work council regarding sustainability, which resulted in some projects. There was also a procurement session on sustainable procurement, but no long term plans were made.

The environmental coordinator and the non-medical staff should mainly be in charge of sustainability functions. However, the manager of the environmental coordinator, for instance, is not interested at all in sustainability initiatives, which causes serious ideation and implementation problems for the environmental coordinator.

6. **Governance and Decision-making → important**

Sustainability should become an integral part of the environmental coordinator’s job description.

Currently, the hospital does not have specific individuals assigned to sustainability initiatives.

7. **Structure → important**

Classic, hierarchical structure.

This structure is formal, but at an informal level in order to get things done you use people that you know well (following different lines than the formal structure).

A more flat/horizontal structure might be more conducive to sustainability initiatives.
Size of the hospital might have an impact! It is a large hospital (3300-3400 employees), which also makes it hard to implement organization wide initiatives. Smaller hospitals can be more innovative and more engaged.

**Closing Remarks**

Amersfoort really sees quality of patient care as a core business and financial health is highly relevant due to budget restrictions and most initiatives are cost savings driven.

If there were one person, at any position in the hospital, who should be responsible for sustainability and would be most adequately positioned to “enforce” and plan such initiatives, it should be someone on the board of directors.
Appendix J – Summary Hospital I

General questions about the hospital

The medical faculty of the academic hospital has an environmental care system in place for 10 years now.

Since 2008 this system has been adapted and since 2009 it is in use for the entire hospital.

Currently, the hospital is under construction.

Information about the sustainability practice

The hospital has numerous sustainability practices. Many of them are environmental in nature:

- Environmental care system
- Waste management
- Some unspecified internal activities
- Sustainable construction

Many of the initiatives are initiated by the environmental coordinators. Then usually next by one board of management director, to whom the environmental coordinator reports to. This individual is very eager in implementing more sustainable initiatives.

Information about design elements

1. Metrics → important

The hospital measures sustainability according to their savings compared to previous years, which are reported in the yearly environmental report. Additionally, the hospitals measure its sustainability according to the certificates obtained for certain permits ("MVO prestatieladder"/sustainability certificate for the entire hospital). The level on which sustainability initiatives are at this hospital is mainly environmental.

Sustainability is included in the vision 2012 of the hospital with specific environmental goals.

The hospital measures the link between sustainability and financial health. Again, this is done with regard to the environmental aspect of sustainability. The hospital works with business cases in which ROI is calculated. Moreover, cost benefits are also included in the annual report and the environmental annual report.

The link between quality of patient care and sustainability is not measured.

Sustainability is included in the budget and “has to be implemented” when its payback period is less than 4-5 years and when it does not place an enormous initial investment burden on the hospital. Smaller initiatives can be implemented by making use of the budget of the responsible department (e.g. trash bins within procurement). Bigger initiatives need to be communicated via the taker of the initiative to the sector head to the responsible director and then the board of directors will give its permission.

People are not held accountable from the start. However, once an initiative is communicated and started to be implemented those who are driving the implementation will need to report.
The results are presented to the board of management in the annual environmental report. The hospital was thinking about doing less internal audits. Now they changed to departments doing their own internal audits, based on what the environmental coordinators described. Thirdly, the environmental department will conduct audits on a random basis. The hospital is now working towards including total cost of capital as a measurement system, to make sure that not just the initial investment is included but also the payback period. To bring this thought even further, they are now talking to not just look at one investment, but include all investments within, for example, a department or building process, and take the average TCOC to see whether the entire investment plan should be done.

2. Exploration Processes → important

Most of the initiatives come from the environmental coordinators. In general, the people within the hospital that are concerned with sustainability have a tendency to find each other and communicate amongst them. Additionally, the chairman of the board of directors takes a very positive stance towards sustainability. Example: environmental coordinators are now working towards implementing the environmental care system in all departments more effectively.

The environmental and safety health and welfare service department is mostly preoccupied with sustainability. Entrepreneurship is stimulated via works groups across the hospital. Additionally, the vision of certain members of the board of directors enhances entrepreneurship.

The hospital works together with external parties when additional knowledge is needed. IT works together with Agentschap NL to set sustainability guidelines and receive information on how to follow their guidelines. Additionally, they worked together with the company TNO to research their sustainability.

3. Culture → important

Due to the nature of the hospital (curing people) sustainability forms a part of the culture. However, certain systems work against this necessity. For example, people want to close the lights when they are not in their room, but the light switches are controlled centrally.

The vision of the board members is very important and various board members, including the new Director of Finance, take a positive stance towards sustainability; thus, the topic has become more prominent on the agenda. There are regular meetings and it is easy for, for example, the environmental coordinator to contact the responsible people of the board of management in relation to sustainability issues.

The hospital makes sure that employees are committed by triggering them to take responsibility themselves, via posters, the intranet, and other media.

In general, not the whole culture of the hospital is focused on sustainability. Especially this vision is low under the medical staff.

Employees are stimulated to work together via various work groups that they can form a part of. The highest gap exists between medical and non-medical staff members. However, some medical
members are also working towards sustainability. Example: the pediatrics department of the hospital calculated that it takes 20 minutes before a baby will be put in an incubator, while it takes 15 minutes to heat the incubator. Therefore, the department now has changed from having the incubators on 24/7 to only when they are in use. This initiative came from the medical staff themselves after sustainability was communicated to them via an information session.

The environmental coordinators notice positive responses on communication of sustainability initiatives.

4. Interface Mechanisms → *important*

External partners are included when additional knowledge is needed. (See above, TNO, Agentschap NL) → mostly advisory parties are included or those that have specific knowledge, about for example, sustainable construction.

The hospital does work together with other hospitals, mainly academic ones. However, the hospital does stress the need that every hospital contributes. As an academic research institute the hospital therefore has more contacts with academic ones.

Cross-functional and cross-departmental cooperation is highly stimulated. The hospital started with a contest with a prize question in order to stimulate sustainability. Furthermore, there are various interdepartmental work groups in which sustainability is the main topic (some of them are also chaired by the chairman of the board of directors). Currently, the environmental coordinators are working towards forming a committee in which people from all sustainability relevant departments are represented.

5. Skills and Talents → *important*

The hospital does not look at sustainability when recruiting.

The hospital does provide trainings and interdepartmental and departmental information sessions.

There are no specific sustainability functions. However, sustainability is in the portfolio of the environmental coordinators. Currently, there are two of them, while the workload would require four coordinators.

6. Governance and Decision-making → *important*

Sustainability is integrated in the sense that the minimum requirements need to be met. Additionally, the environmental coordinators indicate that their personal attitude makes sure that they are on top of new expenditures and include sustainability where possible. As the policy of the hospital takes a positive stance towards sustainability initiatives, investment with a payback period of 4-5 years are likely to be implemented.

Positions towards safeguarding sustainability are assigned to the environmental coordinators as well as those who voluntarily take part in the workgroups. However, officially the role of the environmental coordinator is of advisory nature and therefore they can become responsible when they are also taking part in the implementation process, however, official responsibility is not clearly defined.
Sustainability is in the portfolio of the chairman of the management board. Next there are two environmental coordinators and various interdepartmental work groups that are on a voluntary basis.

Officially decision making and responsibility lies with the service organization.

7. Structure \(\rightarrow\) important

The structure is officially hierarchal. However, the good personal bond between the environmental coordinator and the chairman of the management board and the various committees that are spread out over the layers of the hospital make communication easier.

The structure is officially formal, however, people with a positive attitude towards sustainability tend to find each other and initiate workgroups or various practices.

Communication is both informal and formal: formal via intranet, posters, newsletters and trainings; informal, via “coffee corner talks” and informal sharing ideas.

Big hospitals have the budget but the hierarchical structure might impede the easiness to implement sustainability.

**Closing Remarks**

The hospital is actively working towards sustainability. They try to implement it in every aspect of the new hospital construction and are striving for gaining specified certificates.

Most important reason why people are not doing sustainability: budgets are being cut, people have a lot of work, and/or they simply have no time and they do not make sustainability a priority (especially in medical departments).

External factors

- The municipality of Rotterdam is also pushing the hospital towards sustainability
- Time/budget are very important drivers
Appendix K – Summary Hospital J

General questions about the hospital

Sustainability is not implemented in the value statement of the hospital. However, the hospital does publish an annual environmental report, as well as a section on CSR in the annual report.

Sustainability is incorporated in the hospital in various manners.

Information about the sustainability practice

Sustainability is mostly included in environmental manners, such as waste and energy.

Lately, the interviewee indicated that this individual’s function has changed from being an environmental coordinator, to a CSR coordinator, which shows the changing perspective of the hospital on sustainability.

Currently, the hospital is working on a plan of ambitions to formulate the goals with regard to CSR, focusing more on the people side of sustainability additional to the planet side.

The hospital considers itself, in relation to other hospitals, progressive in for example its work and the people side of sustainability, whereas it also mentions the need to include sustainability more in the procurement of products.

Information about design elements

1. Metrics → important

Every initiative is measured and evaluated on a case-by-case basis. In general a payback period of three to five years is easily implemented, depending on the initial investment needed. However, also initiatives with a longer payback period can be implemented, when the (financial) results are clear.

Environmental numbers are continuously measured and evaluated. This is mostly done by the CSR coordinator and this person’s close colleagues.

Sustainability and the link with quality of patient care is not measured, although the hospital does keep this link qualitatively in mind, which results in initiatives that are not/cannot be completely measured but are hypothesized to have a positive impact on quality of patient care (green roofs).

In the new ambition plan metrics play an important part.

The CSR coordinator indicated the importance of measurement, even though the process might sometimes be vague and ambiguous.

2. Exploration Processes

The complete organization takes initiatives towards sustainability. They can be board driven or come from individuals.

There is a bias between initiatives coming from medical staff versus non-medical staff, in which the non-medical staff is mostly occupied with sustainability initiatives.

Initiatives might also stem from smaller budgets, which for example, motivates departments to manage their own waste streams more effectively.
The hospital is divided on a division basis and the service desk is responsible for environmental issues and is now also incorporating people initiatives, whereas the concern desk is mostly occupied with safety etc. These departments show the most initiatives and also include idea-generating initiatives to spread the initiative taking.

Externally, the hospital collaborates with other academic medical centers (for example about sustainability on the people side or procurement), but as well with regional hospitals.

3. Culture → important

The overall culture of the hospital is not directed towards sustainability, because the overall clear main task of the hospital remains the care for patients. The CSR coordinator also does not expect this to change as this is their core business.

Non-medical departments are more sustainably oriented than medical departments due to the nature of the business they are in.

The Board of Directors does take sustainability into account and it is in the portfolio of the chairman of the Board of Directors. In this sense, sustainability is on the agenda and therefore the board also actively motivates and asks for sustainability initiatives.

The hospital motivates employees to become more sustainable by including sustainability items in the newsletter, intranet, via trainings, etc.

There is not necessarily a gap between different layers of management, the gap is more interdepartmental with medical staff versus non-medical staff members.

4. Interface Mechanisms → important

The hospital collaborates mostly with other (academic) hospitals to share knowledge. Additionally, when external knowledge is used, for example with sustainable construction, experts in the field are included in the building process.

Cross-departmental knowledge about sustainability is created and shared. The service desk collaborates with the concern desk and for example the facility management desk about initiatives. Simultaneously, environmental and people related topics are discussed three times a year with the separate responsible persons from all departments. Three layers are important:

1.) Internal employees of environment and safety and health: they provide trainings and information sessions

2.) Systematical meetings with various responsible persons from different departments.

3.) Project basis: collaboration on initiating a new project or implementing a project is accompanied by various meetings in which knowledge is shared and created.

5. Skills and Talents

Sustainability is not included in recruitment; specifically, in the sense that it is not checked whether possible new employees have a sustainability vision. Concerning he sustainable employment of a
possible new employee, the hospital does check for loyalty and integrity, to see whether it is likely that the employee wishes to remain employed at the hospital.

The training aspect is very important in order to enhance sustainability initiatives. On the people side it is important to train people in their work style, work/life balance, and to give them coaching.

With regard to the environmental aspect, employees are trained on rules and regulations and also receive training on how they can make a difference.

The CSR coordinator explains that the intrinsic motivation of people in sustainable positions is very important to want to make a difference. In her function she could just focus on environmental permits, however, the drive to do “that something extra” is what generates initiatives.

6. Governance and Decision-making → important

Depending on the size of the initiative, decisions are either made by the board of directors or by the separate departments that are responsible for the initiative.

Most of the environmental decisions are made by the service desk, which is in close contact with the chairman of the board of directors, who is in turn responsible for environment and CSR.

Large initiatives are mostly started by the service desk and then the Board of Directors makes the final decision (for instance, as occurred with their pharma filter).

The board also decided to change the environmental coordinator into a CSR coordinator.

The CSR coordinator indicates that it is important that environmental decisions can be taken by the Service Desk, so that more autonomy is received by this desk.

7. Structure → important

The hospital is rather flat, consisting of a management board, responsible for 53 departments, of which the service desk and the concern desk are also part of.

The function of environmental coordinator was placed under the facility management desk and as such more occupied with environment matters on waste and energy management. However, now the function has changed from an environmental focus to a CSR coordinating function, the functions have been placed under service desk. This is important because the service desk has an umbrella function also incorporating the people side. Therefore, the focus of the hospital shifts from only focusing on the environmental aspect of sustainability towards a more embedded sustainable position.

With regard to the position of the CSR coordinator’s function in the hospital, this individual indicated that it is either important how you are placed within the hospital or how your informal communications streams are. Due to the official place in the hierarchy of this function, this individual works one on one with the director of the service desk, who is on the board of directors and collaborates with the chairman of the board of directors. As such, the official position already includes clear, structured and short communication streams. However, when the position concerned with sustainability is placed lower in the hierarchy, communication may become more difficult, and informal communication streams are important to make sure that those with decision-making power are updated on initiatives.
Closing Remarks

The main drivers to become sustainable for the hospital are efficacy and efficiency, doing something for the good cause (be sustainable because it is good), and the possibility of decreased costs.

Informal communication is very important.

Intrinsic motivation and the vision of higher management are of extreme importance.
Appendix L – List of Actions

In this appendix various initial steps are identified per element, which can help hospital board members and/or managers to align their organizational design elements with becoming more sustainable.

Metrics

- Integrate the hospital’s complex goal system using a Balanced Scorecard, creating a Strategy Map that shows the interrelations between these goals

- Align long-term strategic sustainability goals with operations through a “sustainability check”, including consistent short-term sustainability targets on a departmental level

- Use KPI-standards from environmental certificates as a reference point to track sustainability and expand it with measures pertaining to the patient-, employee-, and community dimensions of sustainability

- Develop budgeting standards for sustainability initiatives to speed up the approval process for these initiatives (for example automatically approving of projects with a payback period shorter than five years and an initial investment lower than € 150.000.

Interface Mechanisms

- Create internal formal networks within the hospital to kick off cross-departmental cooperation. Make sustainability a topic in the work council or similar existing network to capitalize on their reach within the organization and integrate different groups of employees (see “Skills and Talents”)

- Identify the knowledge available in the organization and, when a lack of knowledge is identified, make use of external networks with hospitals, suppliers, other businesses and patients to share knowledge (also see “Exploration”)

Culture and Leadership

- Create a clear vision and mission on sustainability and reflect on the wording; do not focus only on environmental aspects, but include all parts of sustainability as defined in chapter 3
• Communicate the vision and mission extensively internally and externally; via environmental reports, a piece in the annual report, via the external website and the intranet

• Make sure that sustainability is in the portfolio of one or multiple members of the board of directors and that their performance is also measured on sustainability to increase commitment

• Ensure that there is openness of communication so that people with sustainability related ideas can easily contact those with decision making power

• Focus on integration of medical and non-medical staff (see “Skills and Talents”)

Exploration

• Cooperate with other hospitals to create, share, and spread knowledge in national and international healthcare networks that foster sustainability (e.g. Health Care Without Harm or similar)

• In the case of academic hospitals, make use of the academic background, investigating on sustainability in hospitals from an academic viewpoint. Conduct research studies, integrating both academic staff and students in the process

Skills and Talents

• Conduct regular training sessions to enhance sustainability skills among employees, especially focusing on the use of charismatic mentors that create a “sense of urgency” among the staff. Include the sustainability manager in these trainings to act as a role model and underline his/her commitment for the issue

• Integrate medical and non-medical staff in these training sessions by creating cross-functional teams to kick off discussions between the two groups

Decision Making and Governance

• Define a clear set of sustainability criteria on which current and future actions can be measured (please refer to “Metrics”)

• Make explicit who is accountable for making decisions on sustainability
• Include the right people in decision making positions; people with knowledge and the right capabilities related to the issues of sustainability

Structure

• Decentralize authority with regard to sustainability, so that those with knowledge have authority

• Place the sustainability endorsed employee(s) higher in the hierarchy, preferably under the Quality Director, as this person can integrate sustainability in quality in all departments of the organization

• Make sure that sustainability is covered in an umbrella department (such as the aforementioned Quality Department) as the topic is rather broad and as such can be implemented in different parts of the hospital

• Ensure that a large amount of people have sustainability in their portfolio to spread the topic throughout the organization and equip them with sufficient time and resources