REAL ESTATE ADDED VALUE AND DECISION-MAKING IN HOSPITAL INFRASTRUCTURE

Johan van der Zwart

ABSTRACT

This paper explores the concept of adding value to corporate performance by real estate, and how this concept could be applied in decision-making processes for new hospital infrastructure. A literature review forms the starting point for interviews carried out with hospitals’ CEOs on how real estate added value is perceived and used in design-related decision-making processes. A ranking of real estate added value as perceived by hospital decision makers is then made. While flexibility is often mentioned as an important added value, it is never given top priority. Confronted with added values from literature, the main objective seems to shift to organizational strategic objectives e.g. stimulating innovation, improving culture and increasing user satisfaction. The architectural designs of a number of hospitals are analyzed in order to investigate tools for assessing organizational objectives by using the concept of real estate added value.

KEYWORDS

architectural design assessment, corporate real estate management, healthcare real estate, hospital infrastructure, added value

INTRODUCTION

Corporate Real Estate Management is usually defined as the management of the real estate portfolio of a corporation by aligning the portfolio and services to the needs of the core business, in order to obtain maximum added value for the business and to contribute optimally to the overall performance of the organization (Dewulf, Krumm, & De Jonge, 2000). This definition refers to the notion that real estate can add value to the overall corporate performance, or in other words, that real estate has an added value. Different authors have addressed possible added value of real estate (Van der Voordt & Van der Zwart, 2011). The main research question of this paper is how the concept of adding value by real estate is perceived and used by hospital decision makers. Insight in added value of real estate can be gained by comparing different lists, definitions, strategies and objectives from literature. This comparison will be used to define the added value of real estate that are further on discussed with CEOs of hospitals.

ADDING VALUE BY REAL ESTATE

In 1993 Nourse & Roulac listed possible interventions on how real estate could be linked to corporate business processes. Since then, De Jonge (1996), Lindholm (Lindholm, Gibler, & Leviäinen, 2006), Scheffer et al (2006), De Vries (2007; De Vries, De Jonge, & van der Voordt, 2008) and Den Heijer (2011) have contributed to research.

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on this topic. The different types of added value of real estate that result from this research are partly overlapping. Nourse and Roulac (1993) and De Jonge (1996) provide definitions of added values of real estate, Lindholm (2008; Lindholm et al., 2006) and Den Heijer (2011) use also descriptions to clarify the added value. All these authors give examples of possible real estate strategies connected to the added value. Besides this, Lindholm (2006) and Scheffer (2006) also give measurable objectives.

Table 1. Lists of added value of real estate

<table>
<thead>
<tr>
<th>Nourse &amp; Roulac</th>
<th>De Jonge</th>
<th>Lindholm</th>
<th>Scheffer et al</th>
<th>De Vries</th>
<th>Den Heijer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Estate Strategies</td>
<td>Added Values</td>
<td>Real Estate Strategies</td>
<td>Added Values</td>
<td>Real estate added values</td>
<td>Added values of Real Estate</td>
</tr>
<tr>
<td>Occupancy cost minimalization</td>
<td>reduce cost</td>
<td>reduce costs</td>
<td>cost reduction</td>
<td>reducing costs</td>
<td>decreasing costs</td>
</tr>
<tr>
<td>Facilitate and control production, operations and service delivery</td>
<td>improve productivity</td>
<td>increase productivity</td>
<td>Increasing productivity</td>
<td>increase productivity</td>
<td>supporting user activities</td>
</tr>
<tr>
<td>Promote Human resource objectives</td>
<td>improve culture</td>
<td>increase employee satisfaction</td>
<td>Changing the culture</td>
<td>increasing satisfaction</td>
<td>increasing (user) satisfaction</td>
</tr>
<tr>
<td>Facilitate managerial process and knowledge work</td>
<td>increase innovation</td>
<td>stimulating innovation</td>
<td>stimulate innovation</td>
<td>improving culture</td>
<td>supporting culture</td>
</tr>
<tr>
<td>Promote sales and selling process</td>
<td>marketing</td>
<td>promote marketing and sales</td>
<td>PR and marketing</td>
<td>supporting image</td>
<td>supporting image</td>
</tr>
<tr>
<td>Flexibility</td>
<td>increase flexibility</td>
<td>increase flexibility</td>
<td>increase of flexibility</td>
<td>enhancing flexibility</td>
<td>increase flexibility</td>
</tr>
<tr>
<td>Capture real estate value creation</td>
<td>increase value of assets</td>
<td>increase of value</td>
<td>expanding funding possibilities</td>
<td>increase real estate value</td>
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</tbody>
</table>

Table 1 gives an overview of the different types of added value of real estate. This table shows that the original eight alternative real estate strategies by Nourse and Roulac have been redefined over the years into real estate added value. Other types of added value are combined or split up or have been added new to the list. ‘Promote Human resource objectives’ is divided between ‘improve productivity’ and ‘increase employee satisfaction’. ‘Facilitate managerial process and knowledge work’ is divided into ‘increase innovation’ and ‘improve culture’. ‘Promote marketing message’ and ‘promote sales and selling processes seems to be combined into ‘promote marketing and sales’ and later into ‘support image’. As can also be seen in table 1, nine types of added value are mentioned by most authors. These are: (1) reducing costs; (2) improving productivity; (3) increasing user satisfaction; (4) improving flexibility; (5) supporting image; (6) increasing innovation; (7) improving culture; (8) controlling risks and (9) improving the financial position. Table 2 gives an overview with the definitions and the categories derived from literature. These 9 categories are used later in the paper to structure the analysis of the case study interviews.
Table 2. Nine types of added value of real estate defined from CREM literature

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Reduce costs</td>
<td>Maximize shareholders wealth</td>
<td>Performance for Stakeholders</td>
<td>Impact on core business</td>
<td>CREM stakeholder model</td>
</tr>
<tr>
<td>To reduce investment costs, capital costs, operational costs and other real estate related costs.</td>
<td>profitabiliy growth</td>
<td>profitability</td>
<td>economy</td>
<td>controller</td>
</tr>
<tr>
<td>Improve productivity</td>
<td>To increase production with the same amount of resources for production through a more effective use of real estate.</td>
<td>profitabiliy growth</td>
<td>competitive advantage</td>
<td>process</td>
</tr>
<tr>
<td>Increase user satisfaction</td>
<td>To create functional, pleasant and comfortable places for visitors, consumers and employees.</td>
<td>revenue growth and profitability growth</td>
<td>productivity</td>
<td>people</td>
</tr>
<tr>
<td>Improve culture</td>
<td>To improve interpersonal relations and communication by real estate.</td>
<td>revenue growth</td>
<td>profitability</td>
<td>people</td>
</tr>
<tr>
<td>Increase innovation</td>
<td>To stimulate renewal and improvement of primary processes, products and services by real estate.</td>
<td>revenue growth</td>
<td>productivity</td>
<td>process</td>
</tr>
<tr>
<td>Support image</td>
<td>To expose corporate objectives by using real estate as an icon for the organizational culture.</td>
<td>revenue growth</td>
<td>competitive advantage</td>
<td>people</td>
</tr>
<tr>
<td>Improve flexibility</td>
<td>To structure a real estate portfolio in a way that future spatial, technical, organizational and juridical adjustments are possible.</td>
<td>profitability growth</td>
<td>profitability</td>
<td>process</td>
</tr>
<tr>
<td>Improve financial position</td>
<td>To attract external financing to reinvest in the primary process or to improve the overall financial position of the organization by regarding real estate as an asset.</td>
<td>revenue growth</td>
<td>profitability</td>
<td>economy</td>
</tr>
<tr>
<td>Controlling risks</td>
<td>To anticipate on future real estate related technical and financial opportunities and risks.</td>
<td>profitability</td>
<td>process</td>
<td>controller</td>
</tr>
</tbody>
</table>
Table 3. Characteristics of the cases

<table>
<thead>
<tr>
<th>place code</th>
<th>category</th>
<th>size</th>
<th>phase</th>
<th>respondent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gelre Ziekenhuis</td>
<td>Zutphen</td>
<td>GZ</td>
<td>general</td>
<td>S</td>
</tr>
<tr>
<td>Gemini Ziekenhuis</td>
<td>Den Helder</td>
<td>GD</td>
<td>general</td>
<td>S</td>
</tr>
<tr>
<td>Vlietland Ziekenhuis</td>
<td>Schiedam</td>
<td>VS</td>
<td>general</td>
<td>M</td>
</tr>
<tr>
<td>Deventer Ziekenhuis</td>
<td>Deventer</td>
<td>DD</td>
<td>top clinical</td>
<td>M</td>
</tr>
<tr>
<td>Reinier de Graaf Gasthuis</td>
<td>Delft</td>
<td>RD</td>
<td>top clinical</td>
<td>M</td>
</tr>
<tr>
<td>Albert Schweitzer Ziekenhuis</td>
<td>Dordrecht</td>
<td>AD</td>
<td>top clinical</td>
<td>L</td>
</tr>
<tr>
<td>Meander MC</td>
<td>Amersfoort</td>
<td>MA</td>
<td>top clinical</td>
<td>L</td>
</tr>
<tr>
<td>Maasstad Ziekenhuis</td>
<td>Rotterdam</td>
<td>MR</td>
<td>top clinical</td>
<td>L</td>
</tr>
<tr>
<td>Erasmus UMC</td>
<td>Rotterdam</td>
<td>ER</td>
<td>UMC</td>
<td>XL</td>
</tr>
<tr>
<td>UMC Groningen</td>
<td>Groningen</td>
<td>UG</td>
<td>UMC</td>
<td>XL</td>
</tr>
</tbody>
</table>

Before each interview, background research was carried out for each case, including public documents available on the internet. The semi structured interviews comprised two main parts. Firstly there was an open interview, where respondents were asked which values were, or are, taken into account in the real estate decision-making process. In the second and more structured part of the interview, the respondents were asked to prioritize nine types of added value derived from literature that were presented on little cards. After this ranking assignment, the respondents were asked how these types of added value are visible in the (design of the) hospital building. After the interviews transcripts were made of the recorded interviews. These transcripts were summarized and sent back to the respondents for feedback.

RESULTS

The research findings are presented in two steps. First (a) a cross-case analysis of prioritized values, from 1 (highest) to 9 (lowest) is given. Secondly (b) accommodation choices supporting adding value are brought together by decoding the transcripts on the nine previous defined fields of adding value by real estate and comparing these descriptions with the definitions from literature.

a) Prioritizing added value

The results of prioritizing the nine types of added value by CEOs and project managers of ten hospitals are presented in figure 1. The horizontal axis is scaled from 1 = highest priority to 9 = lowest priority according to the respondents. The nine types of added value are presented on the vertical axis of the diagram. Next to these different types of added value, the priority ranks are plotted of all interviewed hospitals with their names abbreviated according to table 3. When two or more types of added value were given the same priority, they received the same average rank. The dashed-lined boxes cluster the most frequently given answers, usually showing a maximum of three exceptional ranks per added value type. The bold vertical lines show the average ranking per added value. The bold abbreviations show the hospitals with a median ranking for that particular added value. The types of added value on the vertical axis are ordered from the highest median rank (above) to the lowest median rank (below). If two types of added value share the same median, the average was used to choose the priority rank.

Figure 1 shows that supporting innovation, increasing user satisfaction and improving the organization’s culture are generally highly appreciated as added value by hospital decision makers. Cost reduction is highly prioritized by four respondents, but not ranked
as very important by five other hospitals. Because of this variety, the average rank is not very representative to express the different thoughts. Increasing productivity, optimizing flexibility and supporting corporate image are prioritized in the middle. Risk control and increasing financing possibilities are usually given low priority.

One hospital (GD) ranked the priorities of the nine types of added value almost opposite to (clusters of) most other answers. This hospital is currently planning a new hospital according to the so-called living building concept (LBC), a new form of Public Private Initiative. This leads to a preliminary hypothesis that building phase (initial; design / construction and exploitation phase) seems to influence the priority that CEOs give to the added value. Added value connected to the physical building (image, controlling risks and flexibility) is often higher in the initial/design phase; in the exploitation phase more organization-related added value (stimulating innovation, improving culture and user satisfaction) seem to gain importance.

Fig.1. Plot diagram of ranking prioritized real estate added value
b) Added values of hospital real estate

Each paragraph in this chapter firstly describes one type of added value based on the literature review, and secondly descriptions are presented of that added value resulting from the interviews.

INCREASING INNOVATION

Organizations in competitive markets are depended on innovations to survive and grow. These organizations need to provide workspaces that encourage and support innovative thinking and working. This requires the participation of the space users in planning spaces and providing the type, size, and design of workspace that creates an inspiring working atmosphere (Lindholm et al., 2006). Another possible real estate strategy is to emphasize knowledge work settings over traditional industrial paradigm (Nourse & Roulac, 1993). Also part of this strategy could be adding to ‘serendipity’: unintentionally making discoveries or finding new solutions by interference of others that results from planned and unplanned encounters between users (Den Heijer, 2011).

In the interviews hospital managers recognize stimulating innovation as the most important added value of real estate. Innovation is a continuous process of optimizing healthcare services for the benefit of patients. Hospitals are knowledge intensive environments where innovation can be stimulated by real estate if places are created where medical staff can meet. Most hospitals create meeting places such as a knowledge centre, study centre, or skills lab. Another real estate intervention to stimulate innovations is the spatial integration of different types of cure and care, but the present financing system with separate funding streams is mentioned to be an obstacle here.

INCREASING USER SATISFACTION

This added value is extra important in a labor market with many competitors (Den Heijer, 2011). User satisfaction is seen as a possibility to enhance profitability; many firms in a range of industries have recognized this indirect path to profit (Lindholm et al., 2006). By offering functional, pleasant and comfortable working environments with the requested level of amenities, the architecture of workplaces can lead to a lower staff turnover. From the perspective of real estate management it is important to react adequate to users’ requests. Also the choice for a good accessible location with an area of high quality of living for staff is a possible strategy.

In hospitals, it is not only patient satisfaction that is important: visitors, staff and personnel need to be considered. Therefore, this added value may be split up in satisfaction of consumers (potential customers of the hospital), customers (people that come to the hospital to visit a patient) and patients on one side and staff on the other side. Customer value increases in importance as added value in hospital real estate. Besides processes in which patients are central, there are also processes in which the healthcare process is central, or as reported by several respondents: it is in the best interest of patients if healthcare processes are well organized.
Patient satisfaction is connected to well being and concepts like healing environment and planetree, employee satisfaction results from an attractive and inspiring working environment. Places where patients stay deserve extra attention in materialization, important aspects are safety, visibility by personnel, daylight, use of color, orientation in the building, privacy and architectural quality of spaces. A central waiting concept can contribute to better waiting facilities. In this concept, patients are notified ten minutes before an appointment to go from the central waiting room to the decentralized small waiting rooms near the consultant rooms. Also single bed rooms contribute to patient satisfaction. Privacy and healing environment that result from single bed rooms are often mentioned as beneficial, as well as less bed movements and disturbance by personnel.

Most respondents emphasize that good staff with excellent medical skills and a customer-friendly attitude and behavior are of utmost importance. Happy employees make happy patients. Therefore good facilities for staff and healthcare professionals are important as well. Staff satisfaction depends on consult rooms, treatment rooms and separation of front-office and back-office; short walking distances and daylight.

**IMPROVING CULTURE**

De Jonge (1996) defines improving culture as using real estate as a means of effecting cultural change and improve interpersonal relations. This also relates matching the use of the real estate with the organizational or corporate culture (Den Heijer, 2011). This could be done by offering alternative working situations. Office concepts like an open floor plan or flexible workplaces could improve communication in the organization.

Though culture is merely a matter of shared values and behavioral rules focusing on high quality care, reliability and customer-friendly behavior, (changing) culture can also be supported by real estate. One interviewee mentioned that real estate is regarded as the outboard engine of the organization: creating another working environment changes the culture of the organization. Stimulating encounters between medical staff is seen as an important added value of real estate on the organization’s culture. This can be done by paying extra attention to places where medical staff and personnel can meet and change information. Almost all newly built hospitals have introduced a front-back-office concept. Front offices are the examination, treatment and consulting rooms where specialists meet their patients, the back offices are the places where healthcare professionals do their deskwork. These back offices are mostly located besides or above the policlinics, where most of the front offices are. For the back office different office-concepts are used, like office-boxes where each specialist has an own desk; desk sharing in an open office landscape or; flex-workplaces, where specialists have no own desk.

**REDUCING COSTS**

Nourse and Roulac (1993) describe ‘occupancy cost minimalization’ as the lowest cost decision, cost effective for quality space sought. Den Heijer (2011) refers to cost reduction not only to real estate costs, but also to overall costs or personnel costs, when a concept adds to a higher production or a lower percentage of absence. Reducing costs in any area has a direct and immediate impact on the financial position of the
organization (Lindholm et al., 2006). Creating insight into cost structure (De Jonge, 1996) and minimizing of life cycle costs, acquisition costs, operational costs, financing costs and other real estate related costs (Lindholm et al., 2006) are useable strategies for reducing costs as added value of real estate. Other possible strategies are outsourcing of real estate services; using corporate real estate expertise in real estate transactions of business units; centralization of activities; architecture of facilities with low exploitation and maintenance costs; efficient use of available space and periodical maintenance of the buildings in order to avoid unexpected high renovation costs. Investment in sustainability, leading to lower energy use for heating and cooling the buildings, can also be part of reducing costs as added value.

Since the introduction of the regulated market system in the Netherlands, reducing life cycle costs and total costs of ownership has become more and more important. Reducing costs of hospital real estate focuses on controlling investment costs and real estate related costs. Real estate measures to stimulate cost reduction include cooperation in building, design and management of hospital real estate with other care organizations and commercial parties, new ways of contracting such as Design and Build, or DBFMO (Design-Build-Finance-Maintain-Operate), strict space budgeting and space reduction by shared workplaces. This includes choosing an investment level that fits to the scale of the building. This is done by making life-cycle-casts, including long term real estate costs for maintenance, energy and facility, visible in business plans; slim-fit buildings with no more square meters then necessary and; strict budgeting of square meters per department. Quite often extra investments are needed to reduce life-cycle-casts of the building, e.g. sustainable measures in order to reduce energy consumption. Used energy-saving methods are underground cold-warm storage and activating the concrete construction for cooling and heating the hospital building. Decreasing investment costs is done by making slim-fit plans. Instead of building more square meters for future flexibility, future developments are anticipated upon by incorporating possible expansion possibilities to the building plans. These expansions can be presented later as separate business cases.

**IMPROVING PRODUCTIVITY**

Improving productivity will lead to increased profitability (Lindholm et al., 2006). This added value combines two alternative real estate strategies: ‘Facilitate and control production, operations and service delivery’ and ‘promote human resource objectives’ (Nourse & Roulac, 1993). The main objective of improving productivity as added value is to create ‘efficient environments to enhance productivity and greater efficiency’ and ‘control of operations aligning to the corporate strategy’ (Nourse & Roulac, 1993), or in other words: ’use real estate as a means of working more efficiently’ (De Jonge, 1996). This could be done by increasing production by the same available space and/or the same production with less space. Possible real estate strategies are offering adequate accommodation by architecture and floor-plans that support primary processes and location choice that support business objectives. Possibilities and consequences of Information and Communication Technology (ICT) plays an important role in improving productivity by real estate. Real Estate management is focused on good maintenance in order to avoid disturbance of the primary processes. Lindholm (2006) states that real estate and facilities decisions influence a number of personnel and
system factors, which influence the level of productivity of the individual and, subsequently, the level of productivity of teams and the profitability of the organization (Lindholm et al., 2006). Improving productivity is also connected to user satisfaction as added value, as several researches show that the working environment of employees also has impact on productivity. In this aspect, important objectives are: individual control on indoor climate; quiet workplaces; individual workplaces; visual attractive working environment and, last but not least, daylight and a window view outside. Therefore Den Heijer (2011) proposed to change this added value into ‘supporting user activities’, which could refer to increasing production or satisfying employees to make them more loyal to the organization but also to improving product’s and service’s quality by optimally supporting the primary process by real estate.

The main organizational objective behind increasing productivity as real estate added value in hospitals, as reported in the interviews, is ensuring that healthcare professionals can do their work as efficient as possible. This includes optimally facilitating medical care processes and supporting activities by spatial clustering of departments and centralization of the high technological functions in a hot floor. Another way to increase productivity is found in the use of a front-back-office concept. In this concept consult and treatment rooms are the front offices in which the doctors and patients meet, separated from the back offices in which the doctors do their desk work. This has to be supported by Information and Communication Technology (ICT) that makes place and time independent access to digital data possible. Combined consult and treatment rooms on the other hand lead to decrease of productivity because healthcare professional have to wait while patients (un)dress. Also expanding opening hours is reported as a possibility to increase productivity of real estate capacity.

Separating patient and personnel streams from logistical streams also contributes to increasing productivity. Separate logistics makes just in time delivery possible with decentralized storage facilities. Besides logistics of goods, also patient types have to be considered. Dividing patients in different groups (e.g. acute, urgent, elective and chronic) contributes to a clear building layout in which patients can easily find their way. Locations with high flow rates near the entrance avoid unnecessary patient flows within the building.

Also healing environment and single rooms can contribute to increased productivity due to shorter stay of patients and more efficient use of capacity. Single person bedrooms evoke fewer infections and speed up the healing process that might shorten the average stay in hospital. It also avoids problems of empty beds due to difficulties in mixing people with different cultural backgrounds or different gender. One hospital calculated that extra investments in real estate that are necessary for single person bedrooms, are reimbursed by decreasing the average stay from 5.2 until 4.8 days.

**IMPROVING FLEXIBILITY**

A strategy of increasing flexibility may include both physical workspace and financial terms. Many organizations form and reform work teams within their offices on a regular basis (Lindholm et al., 2006). Organizational, legal, spatial and technical flexibility of real estate contributes to minimizing occupancy costs over the long run (Nourse &
Legal flexibility is the choice between ownership, lease or rent of real estate and the subsequently possibilities of alteration and disposal of surplus square meters. Spatial flexibility is the physical adaptability of the building in external expansions or internal alterations of the floor-plans. Technical flexibility is the possibility to change the building installations and construction. Organizational flexibility is alterations in primary processes in order to make a more efficient use of the available real estate. Examples of organizational flexibility are opening hours, flexible use of workspace and innovative office concepts. Increasing flexibility also includes real estate interventions that implement more standardized space or more flexible multi-functional or multi-user concepts without individually territory or exclusive use for certain groups (Den Heijer, 2011). Lindholm (2006) states that some operating decisions that would follow from a flexible real estate strategy include choosing spaces that can be adapted to multiple uses and workers, creating flexible workspaces within the structures, negotiating short-term leases including options for expansion and contraction, and leasing rather than purchasing properties that are not essential to the core business (Lindholm et al., 2006).

Flexibility has to ensure that a hospital building is able to support changing business processes for at least 40 years. This means a robust building with construction measures that make different layouts possible. This has large consequences for the installation technology in the building that should be adaptable to these different layouts by using installation cable free walls when ever possible. Real estate measurements include standardization; multifunctional use of space; a clear separation between the supporting structure and fill-in, because of their different life cycles; extra power of load-bearing walls and floors, in order to cope with future functions; easy-to-adapt bed rooms (from a two bed room in two one bed rooms and vice versa) and; facilities that make an enlargement of the building easily possible. The organization of people is the most flexible factor in a hospital building, sharing consult, treatment and wards between departments are examples of organizational flexibility. Multi-functional and generic consultant rooms and a standardized back-office make this exchangeability between departments possible. Although flexibility is a very important issue in the initiative and design phase, after realization of the building it is seen as given fact that supports other organizational objectives like increasing productivity or user satisfaction.

SUPPORTING IMAGE

This added value combines two alternative real estate strategies by Nourse and Roulac (1993): ‘promote marketing message’ and ‘promote sales and selling processes. It is seen as physical institutional advertising (Nourse & Roulac, 1993) by exploiting the positive impact of real estate as a symbol of the organization (De Jonge, 1996) to express organizational objectives and culture. In terms of “practicing what you preach”, supporting image is usually closely linked to the organization’s primary goals, for instance by emphasizing the innovative, creative, sustainable or exclusive character of an organization (Den Heijer, 2011). Lindholm (2006) states that accessibility and visibility are key issues to attract customers and increase revenues. Physical design can be used to create an image for the company among its suppliers, employees, customers, and investors, an indirect way of adding value to the organization (Lindholm et al.,
2006). Possible real estate strategies are standardizing of the corporate identity, location choice and architecture that supports the corporate identity.

Although a hospital as an institute has a strong image on its own, many interviewees recognize that good architecture can contribute to the image of a hospital. Marketing by real estate is merely managed by steering on a nice and easy to access location in a lively and safe environment; a pleasant overall appearance; an attractive “healing” environment with a high percentage of one bed rooms; nice colors, materials and light and; nice facilities, in order to improve patient satisfaction and as a consequence to improve competitive advantage. This image is not only external for patients and consumers, but also internal for medical staff and employees. Some hospitals use pictures from their building as a marketing tool in personnel advertisements. Most interviewees report that patient should feel at ease soon, but how this could be done diverse into two directions. On the one hand, it is mentioned that a hospital should not look like a hospital, but more like comfortable known environments like houses or shopping malls. This is related to the planetree concept in which a hospital tries to give patients some of their house-like recognizable environment back. On the other hand, interviewees mentioned that a hospital should be recognizable as a hospital, a place where patients should feel free to walk in the main hall with their infuse palls to the restaurant.

CONTROLLING RISK

Real estate comes together with financial risks due to its relative long time horizon and large investment. These risks can be controlled by opting for different forms of tenure with mix of ownership, rent and lease and; monitoring of the local real estate market, human resource market and other contextual factors like legislation and regulation. Possible strategies are making space available for third parties and selecting suitable locations. Besides financial risks that can be controlled by being able to easily adjust the size and character of the real estate portfolio, Den Heijer (2011) refers also to controlling technical and functional risks by carefully monitoring the technical condition to make sure that primary processes are not hindered.

Real estate related risks are controlled by hospitals in different ways. This added value is least discussed and is mainly managed by real estate choices improving flexibility and marketability, a well elaborated business case and outsourcing of maintenance for a long period. The most mentioned way of controlling risks are slim fit buildings with no more square meters then necessary with expansion possibilities based on new business cases in the future and creating generic square meters that can be used by different departments or can be led to third parties if internal demand decreases. To control risks, some hospitals have brought their real estate under a separate Private Limited Company. External policlinics are mostly rented, to be flexible in the future. Also longer opening hours in order to optimize the available capacity to avoid expanding the building is mentioned.

Besides these real estate risks, also risk reduction in the healthcare process is mentioned as added value of real estate. Timely renovation or rebuilding the hot floors, good
maintenance on technical installations and air control are necessary to avoid cross infections between patients and other medical risks in the future.

**IMPROVING THE FINANCIAL POSITION**

Here real estate is seen as a capital asset that can contribute to optimizing the organization’s overall financial position. The objectives may be to maximize the value of the property portfolio or ensure that the lowest cost alternative is chosen considering all short- and long-term costs of owning versus renting (Lindholm et al., 2006). This includes also all real estate interventions that aim at resulting in a higher potential (market) value of land and buildings (Den Heijer, 2011). Profitability can increase by reinvesting surplus value of real estate in the primary process of the organization. Possible real estate strategies include way of financing real estate, location value with an acceptable current location and real estate value with current architecture, sale-and-lease-back, timely purchase and sale of real estate and redevelopment of obsolete locations (De Jonge, 1996), making buildings rentable and marketable to third parties, suitable for external (paying) users or by acquiring land on valuable locations in the real estate market (Den Heijer, 2011). However, proper management of the company’s portfolio must start with an inventory and valuation of current facilities, then management via a property information system (Lindholm et al., 2006).

Hospitals are built for delivering healthcare and not for increasing finance possibilities by real estate. A choice has to be made between optimizing the healthcare process during the functional lifespan or marketability in the future. This means that a hospital building is not regarded as an asset by most interviewees, but more as a resource for production. The layer approach that divides the function package of a (general) hospital according to building typology into four layers - hot floor, hotel, office and industry – with a focus on marketability of the different layers, is only partly used in newly built hospitals. Small hospitals seems to be more focused on marketability of the real estate then larger hospitals; although the profitability of the layer approach is lower in the case of small hospitals. Larger hospitals have a more functional and architectural perspectives on the layer approach, dividing a hospital in different parts that are installation technical and constructively different. Although there is a lot of skepticism on the end value of hospital real estate after 40 or 50 years, location value may be a possibility to increase the finance possibilities of the organization. Location value can be created by developing the urban area around a hospital with other parties (e.g. a healthcare boulevard). If this strategy is used, a hospital should be willing to relocate somewhere else, to be able to capture the location value in the future.

**DISCUSSION**

The qualitative approach of this research – using semi-structured interviews with open questions – delivered much information on how different types of real estate added value are perceived by hospital managers and how they are prioritized in hospital real estate decision-making. The results contribute to a better understanding of adding value by real estate and the values mentioned in literature, in general and specifically for the healthcare sector. Although quantitative concepts have been used to summarize and interpret the research findings - modus, mean, average, a plot-box - these results should
be regarded as qualitative data as well. As the priority diagram (figure 1) is a representation of only ten separate configurations, this diagram is not more than a first exploration of priority clusters. The validity of the results can be improved by conducting more interviews and organizing expert meetings to discuss and compare individual rankings. The same methods could be applied in other sectors like office organizations or higher education in order to explore similarities and dissimilarities in different fields.

A practical implication of this research is that it helps hospital decision makers to translate their organizational objectives into real estate goals. The research findings show that it is of utmost importance that added value is clearly defined in literature and made applicable to a certain sector. Current heterogeneity of the added value is visible in the different categories of added values derived from literature (table 2). This heterogeneity is a result of the attempts to categorize the different types of added value or to connect these values one-to-one to a specific stakeholder. Another concept could be defining different perspectives on each added value. Following Den Heijer’s CREM stakeholder model (2011), four perspectives on the added value of real estate could be defined: (1) strategic; (2) financial; (3) functional and; (4) physical. This concept is shown in table 4, in which these four perspectives are used to describe and summarize the perception of the added value of real estate by hospital decision-makers that result from the interviews. The balance between these perspectives make that one added value could be logically connected to a certain stakeholder, but not necessarily. If a certain type of added value gains in importance in time due to changing circumstances, it could transfer to the more strategic perspective of the policy maker.

What can also be learned from this paper is that in cases of a service organization like hospitals, user satisfaction as real estate added value may be better split up into employee satisfaction and customer satisfaction, or more specific to the healthcare sector, patient satisfaction. Although stimulating innovation is highly appreciated as added value of real estate, in the given descriptions it seems to be largely overleaping with improving culture as added value. This arises the question if stimulating innovation is a separate added value or that it could perceived as part of improving culture as added value, with the specific goal of stimulating a culture where innovative processes arise. As many respondents referred to controlling risks as avoiding accidents in healthcare delivery, an added value that could be added to the list is improving safety as risk reduction in the primary process.
## Table 4. Perspectives on hospital real estate added value

<table>
<thead>
<tr>
<th>Perspectives on real estate</th>
<th>Strategic</th>
<th>Financial</th>
<th>Functional</th>
<th>Physical</th>
</tr>
</thead>
<tbody>
<tr>
<td>adding value to organizational goals: how and to what extend are strategic organizational objectives achieved or obstructed?</td>
<td>value, resources and costs: what are consequences on financial impact on resources, real estate value, and life cycle costs?</td>
<td>fitness for use: how and to what extent is the user's functional primary process supported or obstructed?</td>
<td>impossibilities of real estate: physical consequences of real estate.</td>
<td></td>
</tr>
<tr>
<td>increase innovation</td>
<td>As added value highly prioritized</td>
<td>Innovation as a continuous process of optimizing healthcare services</td>
<td>Places for medical staff to meet each other</td>
<td></td>
</tr>
<tr>
<td>increase user satisfaction</td>
<td>Attracting and retaining good personnel Human in general is central</td>
<td>Extra investment in real estate for healing environment</td>
<td>Architectural quality of patient rooms</td>
<td></td>
</tr>
<tr>
<td>improve culture</td>
<td>Real estate as the outboard engine of the organization</td>
<td>Front/back-office concept Office concept (flex working, desk sharing or boxes)</td>
<td>Paying attention to places where people can meet.</td>
<td></td>
</tr>
<tr>
<td>reduce costs</td>
<td>Investments based on business plan No more square meters as necessary Future expansions based on new business plans</td>
<td>Investment level that fits the scale of the building Controlling investment costs and real estate related costs</td>
<td>Space reduction by shared workspaces Strict budgeting of space per department</td>
<td></td>
</tr>
<tr>
<td>improve productivity</td>
<td>Ensuring that healthcare professionals can do their work as efficient as possible Yeanly space budgeting per department based on production and turnover</td>
<td>Optimally facilitating the healthcare processes Front/back-office concepts Healing environment Single person bedrooms</td>
<td>Centralization high technical functions in hot floor Separating logistics from patient and personnel streams</td>
<td></td>
</tr>
<tr>
<td>improve flexibility</td>
<td>Supporting changing business processes during the lifespan of the building Extra investments in future flexibility Pre investments in expandability</td>
<td>Adaptability Multi-functional use of space Sharing consultant and treatment rooms, wards and other facilities Standardizing spaces Flexible office concept</td>
<td>Robust building that makes different layouts possible Separated technical installations Standardization Supporting structure and fit-in expanding possibilities</td>
<td></td>
</tr>
<tr>
<td>support image</td>
<td>Improve competitive advantage by using the building as a marketing tool, both for (potential) patients as employees Extra investment in architectural quality</td>
<td>Healing environment Percentage single bedrooms Hospital as hospital recognizable</td>
<td>Nice and easy access location Nice overall architectural appearance</td>
<td></td>
</tr>
<tr>
<td>controlling risks</td>
<td>Marketability of real estate Real estate in Private Limited Company External clinics rented</td>
<td>Longer opening hours to optimize available capacity Risk reduction in healthcare processes</td>
<td>Slim fit building with no more square meters as necessary Outsourcing maintenance for a longer period</td>
<td></td>
</tr>
<tr>
<td>improve finance position</td>
<td>Real estate is more a resource for production than an asset Cards as stakeholder Marketability of real estate Real estate as an asset (Potential) location value Urban Area Development</td>
<td>Choice between optimizing healthcare processes during lifespan of building or marketability afterwards.</td>
<td>Layer approach (hot floor, hotel, office and industry)</td>
<td></td>
</tr>
</tbody>
</table>

### CONCLUDING REMARKS

This paper has relevance for both further research, in terms of testing out the proposed ideas, and practice, in terms of applying the concepts in the design decision-making process of healthcare facilities. With this paper a first step is made in prioritizing, describing and defining the added value of real estate from the perspective of hospital decision-makers. The research design of this paper could be improved by including two more cases at the initiation phase, in order to make the cases in this phase equivalent to
those in the other two phases. Additional research is needed, in order to improve our understanding of how the concept of adding value by real estate appeals to different stakeholders and to establish also the perceptions of real estate added value from the perspective of other project participants or users. Besides this, more interviews with CEOs and real estate project managers of hospitals are necessary in order to test the results in a broader selection of cases. The data captured through the interviews could be triangulated by analyzing also documents related to the design decision process, including initial documents, Long Term Accommodation Plans, briefs for new hospitals and design drawings. In further research, the results will also be linked to building assessments on the added value of real estate, including floor plan analysis, in a number of case studies.
REFERENCES


