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van der Zwart, J; van der Voordt, DJM

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ADDING VALUE BY HOSPITAL REAL ESTATE - AN EXPLORATION OF DUTCH PRACTICE

Johan van der Zwart & Theo van der Voord

ABSTRACT

Objectives: To explore how hospital real estate can add value to the health care organisation, which values are prioritized in practice, and why.

Background: Dutch healthcare organisations are self-responsible for the costs and benefits of their accommodation. Meanwhile, a lively debate is going on about possible added values of corporate and public real estate in the fields of Corporate Real Estate Management and Facility Management. This paper connects both worlds and compares insights from literature with experiences from practice.

Methods: Added Values extracted from literature have been discussed with 15 CEOs and project leaders of recently newly build hospitals in the Netherlands. Interviewees were asked: (1) which values are included in the design and management of their hospital and why; (2) to prioritize most important values from a list of nine predefined values and; (3) to explain how the chosen real estate decisions are supposed to support organisational objectives.

Results: Stimulating innovation, user satisfaction and improving organisational culture are most highly valued, followed by improving productivity, reducing building costs and creating building flexibility. Image, risk control and financing possibilities got lower rankings. The findings have been used to develop a value-impact matrix that connects nine values to various stakeholders and possible interventions.

Conclusion: The findings and the value-impact matrix can make different stakeholders aware of many possible added values of hospital real estate, potential synergy and conflicts between different values, and how to steer on value add in different phases of the life cycle.

Keywords hospital; real estate; added value; accommodation; value-impact matrix

EXECUTIVE SUMMARY

This paper discusses how hospital real estate can add value to the organisation, which values decision-makers such as CEOs and project leaders incorporate in the design and management of Dutch hospitals, and what values are prioritized. Added Value is a multidimensional construct that includes various value parameters such as satisfaction, productivity, cost effectiveness, flexibility and risk control. Experience-values such as stimulating innovation, supporting user satisfaction and improving organisational culture showed to be most highly valued, followed by more tactically oriented use-values such as improving productivity, reducing building costs and creating building flexibility in order to be adaptable to changing care processes. Future-values such as image, risk control and future financing possibilities got lower rankings. Prioritized values showed to be different in different phases of the life cycle of the building, due to different contexts and different opportunities to change or to accept what is already there. The findings have been used to develop a so-called value-impact matrix. This tool can be used to make different stakeholders aware of possible added values of hospital real estate, conflicting values, and how to steer on value add in different phases of the life cycle.

INTRODUCTION: ADDING VALUE BY REAL ESTATE

Corporate Real Estate Management (CREM) is the range of activities undertaken by a company or real estate department to optimally align a corporate real estate portfolio to the organisational objectives and as such to add value to the organisation (De Jonge et al., 2008). The concept of adding value by real estate is usually linked to different lists of value parameters and related real estate strategies to facilitate the mission, vision and objectives of an organisation (De Jonge, 1996; De Vries, 2007; De Vries, De Jonge, & Van der Voordt, 2008; Den Heijer, 2011; Den Heijer & De Jonge, 2012; Jensen, Van der Voordt, & Coenen, 2012; Lindholm, 2008; Lindholm, Gibler, & Leviäinen, 2006; Nourse & Roulac, 1993).

Building on this literature, this paper explores the concept of adding value by real estate and how this concept is or could be applied in real estate decision making processes. In this first section, the concept of adding value will be discussed, first in general, then focusing on the added values of real estate. In the next section a study will be presented into value adding management of hospital real estate in Dutch practice. The paper ends with a reflection on the findings, some concluding remarks and practical implications.

Adding value by real estate

‘Adding value’ and related concepts such as ‘added value’ and ‘value-added’ are multidimensional constructs that are interpreted in different ways (De Chernatony & Harris, 2000; Jensen et al., 2012). In pricing literature the term ‘value’ is usually defined as the trade-off between the customers’ perceptions of benefits received and the sacrifices incurred (Lezinski & Marn, 1997). Woodruff (1997) mainly focuses on the benefits by defining customer value as the customer’s perceived preference for a product or service in achieving the customers’ goals and purposes. The costs of achieving these goals are not explicitly included in this definition. De Chernatony and Harris (2000) also focus on the benefits. Based on 20 in-depth interviews with leading-edge brand experts, they concluded that ‘added value’ includes both functional and emotional benefits, as perceived by consumers, relative to the competition; these often also result in benefits for the firm.

In his Real Estate Lexicon, Keeris (1997) states that real estate value is not unambiguous, rather it is subordinated to subjective appreciation (Keeris, 1997). Therefore, **IN REAL ESTATE LITERATURE ‘VALUE’ USUALLY REFERS TO THE STAKEHOLDERS’ (SUBJECTIVE) APPRECIATION IN ACHIEVING THE STAKEHOLDERS’ GOALS AND PURPOSES.**

Macmillan (2006) refers in his article *added values of good design* to Rouse (2004) and states that organisations recognise the corporate benefits of architectural investments. The added values include both tangible benefits that can be evaluated using a traditional cost-benefit analysis, and intangible benefits that are more difficult to measure (Rouse, 2004). In Rouse’s research employee satisfaction showed to be the highest rated objective of the real estate strategy, whereas corporate policy and procuring a building as part of a wider corporate development process were also mentioned. Besides financial value, Macmillan (2006)

describes three other types of value: use value, social value and environmental value. Use value is defined as the subjective quality of a product or service customers experience in relation to their needs (Bowman & Ambrosini, 2000). According to Macmillan (2006) social value is “created by making connections between people, creating or enhancing opportunities for positive interaction, reinforcing social identity and civic pride, encouraging social inclusion and contributing towards improved social health, prosperity, morale, goodwill, neighbourly behaviour, safety and security, while reducing vandalism and crime.” Environmental value arises from a concern for intergenerational equality, the protection of biodiversity and a precautionary principle in relation to the consumption of finite resources (Macmillan, 2006). Design principles to support environmental value include adaptability, flexibility, robustness, low maintenance and the application of a whole-life cycle cost approach.

In recent CREM literature, different values of real estate are mentioned as well, such as shareholder value, balance sheet value, investment value, commercial value, economic value, functional value, historical investment value, market value and reconstruction value. Based on fifty different definitions, Jensen et al. (2012) traced six different types of added value: use value (quality in relation to the needs and preferences of the users), customer/consumer/use value (the trade-off between benefits and costs for customers), economic/financial/exchange value (the economic trade-off between costs and benefits), social value (e.g. supporting positive social interaction or reinforcing social identity), environmental value (Green Facility Management, environmental impact of FM, sustainability), and relationship value (e.g. getting high-quality services or experiencing a special treatment and trust).

The definitions show that we should not speak about “the” added value of real estate, but about different types of added value, and that added value depends on who profits from the benefits and who is responsible for the sacrifices. The added value of a particular design choice or real estate intervention can be positive for one aspect and negative for another aspect, and can differ between shareholders and stakeholders such as clients, customers and end users. As a consequence, value adding management of real estate and assessments of the added value of different design solutions or interventions in buildings-in-use have to take into account the interests and needs of different stakeholders. The added value depends on what is perceived as desirable and feasible by different stakeholders in relation to their overall objectives.

EMPERICAL RESEARCH: THE ADDED VALUE OF HOSPITAL REAL ESTATE

In order to be able **TO OPTIMALLY STEER ON ADDING VALUE BY REAL ESTATE, STAKEHOLDERS SHOULD BE CHALLENGED TO EX-ANTE DEFINE THEIR OBJECTIVES AND TO DEFINE HOW REAL ESTATE MIGHT CONTRIBUTE TO ATTAIN THESE OBJECTIVES, AND TO EX-POST ASSESS THE OUTCOME** i.e. to what extent the objectives actually have been attained. The current paper discusses if and how decision-makers in the field of hospital

real estate try to add value by real estate, by which interventions, and which values are prioritized. In a separate paper various methods are presented to be able to assess the added value of design choices ex ante, when the building is still in the design phase (Van der Zwart & Van der Voordt, forthcoming). The Dutch hospital sector is in a transition phase of formerly being governmental regulated, with strict planning regulations regarding the number of beds per 10.000 inhabitants, strict building codes regarding m2 per bed and functional requirement, and maximum costs per bed and per m2, toward a more competitive market with less regulations regarding hospital buildings. Since the new regulations in 2008, Dutch hospitals themselves became responsible for the reimbursement of their real estate investments whereas in the old system all capital costs were financed by the government, provided that the hospital passed all steps in the application procedure and got a licence to build. As a consequence in the old times most hospitals were build according to the maximum allowed number of m2 per bed, which was not always optimally efficient. Investments above the cost standard were not allowed, even when this investment would result in lower running costs and life cycle costs. The transition from a governmentally steered system to a regulated market system makes this sector an interesting field of research.

Assessed values

Regarding the multidimensional and multi-faceted character of added value, both similar and dissimilar types of added value have been found in the publications mentioned above. Most common issues are: (1) reducing costs; (2) improving productivity; (3) increasing user satisfaction; (4) improving culture; (5) increasing innovation; (6) supporting the image; (7) improving flexibility; (8) improving the financial position; (9) controlling risk (see table 1).

Table 1, Nine added values of real estate

Real estate added value	definition
Reduce costs	To reduce investment costs, capital costs, operational costs and other real estate related costs.
Improve productivity	To increase production with the same amount of resources for production from more effective us of real estate.
Increase user satisfaction	To create functional, pleasant and comfortable places for visitors, consumers and employees.
Improve culture	To improve interpersonal relations and communication by real estate.
Increase innovation	To stimulate renewal and improvement of primary processes, products and services by real estate.
Support image	To expose corporate objectives by using real estate as an icon for the organizational culture.
Improve flexibility	To structure a real estate portfolio in a way that future spatial, technical, organizational and juridical adjustments are possible.
Improve financial position	To attract external financing to reinvest in the primary process or to improve the overall financial position of the organisation by regarding real estate as an asset.
Controlling risks	To anticipate future real estate related technical and financial opportunities and risks.

These nine added values have been discussed in 15 interviews with the CEO or real estate manager of 15 different hospitals (Van der Voordt, Prevosth, & Van der Zwart, 2012; Van der Zwart, 2014). Besides these nine often mentioned added values, sustainability has in recent years been added to the list. Therefore, interviewees were separately asked if and how sustainability was managed as one of the added values of hospital real estate.

Research methods

First, an explorative interview was conducted with the former CEO of the Orbis Medical Centre. Based on this interview and the literature review of the concept of adding value by real estate, 10 semi-structured interviews were conducted with hospitals' CEOs or real estate project leaders on if and how the added values mentioned before were incorporated in the design and management of the hospital. First an open question was raised to spontaneously mention which values were incorporated in real estate decision-making. Second, the nine values derived from the literature were presented on little cards in a matrix with 3 rows and 3 columns (Figure 1). Then the respondents were asked to rank the nine values according to their importance. The results from these interviews were later discussed in four reflective semi-structured individual interviews with hospital decision-makers who initiated a new hospital building after the introduction of the new regulations in 2008.

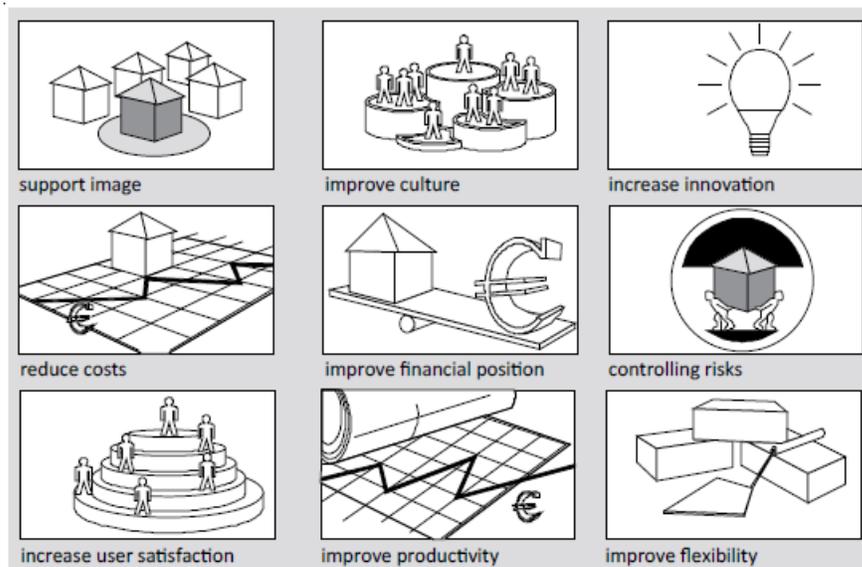


Figure 1, The assessed added values of real estate

The ranking of the nine added values occurred in three steps. First respondents were asked to prioritise the three added values in each row. Secondly, respondents were asked to rank the three added values per column on least importance. By these two steps the respondents were made familiar with the added values

used in literature in order to be able to prioritise all values in the third step. In the last part of the interview, respondents were asked how these added values were visible in the (design of the) hospital building and which real estate choices were supposed to support these values.

The four reflective interviews also started with an open question about which values are included in hospital real estate decision-making. However, the former step 2 – prioritizing nine values – was replaced by a discussion of the prioritization found in the previous ten interviews. After their reflection on the former ranking, respondents were also asked to describe how these added values were visible in the design of their own new hospital.

Case selection

In order to select appropriate respondents, a list was made of the hospitals involved in building or designing a new hospital in the period 2004 – 2012. This first list was presented to experts in the field and was updated with a few additional hospitals that were mentioned to be in the phase of initiating a new building process. This resulted in a list of 30 hospitals. A selection of cases was made based on heterogeneity in terms of three characteristics: 1) general, top clinical and academic hospitals; 2) size in number of beds and turn-over; 3) current position in the building process i.e. initiation, briefing, design, construction, or use (

Table 2). This made it possible to explore whether the type of hospital, its size and the phase in the real estate life cycle affects (priorities in) value added management.

The selected cases represent 15% of all Dutch hospitals and 50% of all Dutch hospitals planning or building a new hospital in 2004-2012. The selection includes 7 general hospitals, 6 top clinical hospitals and 2 academic hospitals. With regard to the number of beds, the case selection includes 4 small size hospitals, 5 medium size hospitals, 4 large hospitals, and 2 extra-large academic hospitals due to the integration of research and education facilities in the real estate portfolio. 5 hospitals were in the initiation phase of building a new hospital, 5 hospitals were constructing a new building at the moment of the interview, and 5 hospitals had a new building-in-use and were in the exploitation phase. Half of the interviews were conducted with CEOs, and half of them with the real estate project manager of the hospital. Information and documents available on the internet were studied in advance to gain a first impression of the hospital, its mission and vision, and main real estate objectives.

Table 2, Characteristics of the cases, S = small; M = medium; L = large; XL = extra-large

Hospital	city	code	category	size	beds	phase	respondent
Gelre Hospital	Zutphen	GZ	general	S	217	use	CEO
Gemini Hospital	Den Helder	GD	general	S	244	initiation	project manager
Zaans Medical Centre	Zaanstad	reflection	general	S	299	initiation	CEO
Diaconessenhuis Meppel	Meppel	reflection	general	S	330	initiation	project manager
Admiraal de Ruyter Hospital	Goes / Vlissingen	reflection	general	M	370	initiation	CEO
Deventer Hospital	Deventer	DD	top clinical	M	390	use	CEO
Renier de Graaf Hospital	Delft	RD	top clinical	M	397	initiation	project manager
Vlietland Hospital	Schiedam	VS	general	M	421	use	CEO
Maasland Hospital	Sittard	exploration	general	M	425	use	CEO
Alber Schweitzer Hospital	Dordrecht	AD	top clinical	L	475	construction	project manager
Meander Medical Centre	Amersfoort	MA	top clinical	L	600	construction	project manager
Maasstad Hospital	Rotterdam	MR	top clinical	L	620	construction	CEO
Medical Spectrum Twente	Enschede	reflection	top clinical	L	650	construction	project manager
UMC Groningen	Groningen	UG	UMC	XL	1097	use	CEO
Erasmus UMC	Rotterdam	ER	UMC	XL	1320	construction	project manager

RESEARCH FINDINGS

The results of the interviews are discussed according to the three steps in the interviews. First, value-based hospital real estate management in response to the open question is described (1). Second, the prioritisation of added values and the reflections on this ranking in the reflection interviews are discussed (2). Finally, accommodation choices supporting the added values of hospital real estate are described (3) and related to different perspectives on real estate.

Spontaneously Mentioned Added Values of Hospital Real Estate

Supporting the delivery of good healthcare in a cost-efficient way

The main purpose of a hospital is to deliver affordable high quality healthcare. Appropriate real estate is secondary but at the same time an important resource to achieve this organisational objective and to optimally facilitating healthcare processes. According to most respondents, real estate being a resource for production should always be judged upon its contribution to business processes and business economics. This topic is highly relevant from an economic point of view and relates to economic value. Supporting the primary process also means that the building should be comfortable. On the one hand the building should support patient's needs and wellbeing. On the other hand the building should be a pleasant and productive working environment for the healthcare professional. Therefore, the building should support an organisational culture of multidisciplinary and patient-focussed working processes. Multidisciplinary collaboration and well-thought communication between the board, managers and staff and the patients is a trend that hospitals have to make their own.

In spite of the widely used motto “the patient is central”, in most cases **SUPPORTING EFFICIENT HEALTHCARE PROCESSES IS A KEY ISSUE IN REAL ESTATE DESIGN AND MANAGEMENT OF THE BUILDING-IN-USE**. Managers assume that it would prove most helpful to the patients if health care processes are well organised and facilitated and as such support both customer satisfaction, labour productivity and employee satisfaction. Efficiency is connected to efficient patient logistics, well-organised healthcare processes and efficient logistics and transport of people and goods. From this perspective a hospital is a production factory. On the other hand, patients have to feel at ease and therefore the building must have an ambiance of hospitality. Furthermore, it has to fit with the budgets for exploitation costs and energy expenses.

Example: Deventer Hospital, Deventer

The building should facilitate the healthcare processes in such a way that the building meets the organisation's objectives from the first day it opens its doors. In addition, the building must be flexible in order to support business processes for a period of 40 years and to be able to cope with changing visions on healthcare delivery. The building concept is based on the vision that healthcare processes include four different patient flows: acute, urgent, elective, and chronic. This resulted in a process-based building with a focus on logical connections between medical healthcare processes.

Supporting the organisational strategy by the real estate strategy.

In most cases the possibilities and boundary conditions of the current real estate portfolio as well as the desired future supply is taken into account in the real estate strategy. Often organisational objectives such as transparency and appropriate healthcare are translated into the architecture of the building. But a strict translation of the organisational mission, vision and ambitions into the architecture is also mentioned as being difficult because of both the long planning and construction time – often 10 to 15 years - and the expected 40 years of exploitation afterwards. During this period the organisation will probably change its management structure and style, objectives, and vision on how to optimally organise healthcare processes several times. Flexibility is therefore often mentioned as an important criterion of adding value by real estate. Flexibility should enable the hospital building to support the healthcare processes for at least 40 years, under changing circumstances.

Example: Meander Medical Centre, Amersfoort

First a Long Term Accommodation Plan was made to formulate a real estate strategy. This strategy consisted of a renovation of the existing hospitals to support their use for another 10 to 12 years and in the meantime designing and constructing a new hospital on a central location. All complicated top clinical cure was centralized in the new hospital building. In addition, a regional hospital was renovated and

converted into a day care hospital and four outpatient centres were established in the region. The central building is divided into three parts: 1) a hot floor with all high technical functions; 2) wards with standard one-person bedrooms, and; 3) multifunctional examination rooms, all parts with different technical installations and constructions and different access to patients. Flexibility is realised by the expandability of the building, adaptability of the floorplan and exchangeability of rooms.

Increasing the opportunities to finance hospital real estate: writing business cases

Liberalisation of the regulations of hospital healthcare investments introduced new possibilities for hospitals to invest in new infrastructures, but also new risks. With the new regulations in 2008, hospitals not only became responsible for their own real estate, but they also became responsible how to finance their real estate within existing budgets for healthcare delivery, without extra financial support from the government. The new financing system has made the payment of investments and running costs dependent on production in terms of diagnosis-treatment combinations, resulting in a very business-like approach: no more square meters than necessary and life-cycle-costs as low as possible. The hospitals that started a new building project after the introduction of the new regulation show a shift from focusing on maximum capacity and quality according to the standardised maximum m² per bed and costs per bed towards less capital expenses and increasing productivity. Recently built and currently being built hospitals are designed and constructed on the basis of a business case and pay great attention to creating a compact building with a small amount of surplus square meters to enable future production growth, low capital costs and a high level of flexibility. **SLIM FIT BUILDINGS ARE ACCOMPANIED WITH EXTENDIBILITY IN THE FUTURE.** New business cases need to be presented to financiers in case of extensions. The planning and construction period decreased from the usual 10-15 years to 4-5 years.

Example: Gelre Hospital, Zutphen

From the first initiative on, it was known that the building had to be financed at own risk, reimbursed by healthcare production. Therefore, a business plan was presented to financiers. The starting point of this business plan was to focus on keeping the capital costs as low as possible in order to gain a competitive advantage with regard to the costs of healthcare products and services. This is accomplished with a cheap, functional and lean building with little surplus square meters and a focus on flexibility, anticipating future alterations. Also typical for this project is the short period of 4 years in total from initiative to design and construction.

Strengthening the market position

Due to the reorganization of health care towards a more free-market like system, health insurers have gained more power. In order to optimize the quality/cost ratio, health insurance companies are becoming more selective in contracting health care suppliers and in refunding patient's health care expenses. This will lead to a situation where no longer every hospital will deliver all types of hospital health care. Most

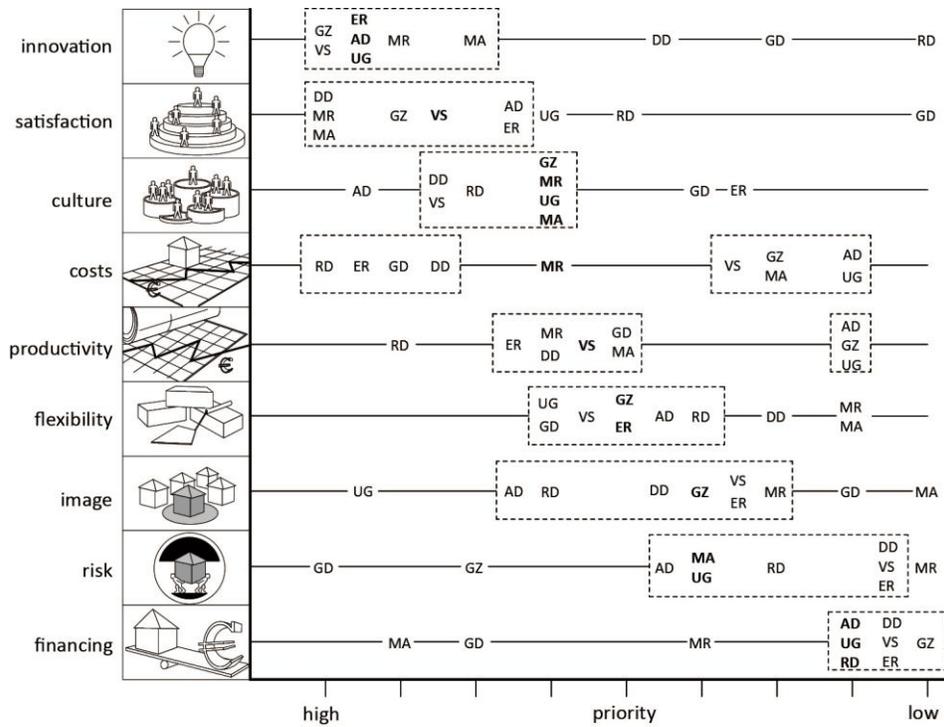


Figure 2, Plot diagram of prioritised added values of real estate

The horizontal axis is scaled from 1 = highest priority i.e. top 1 to 9 = lowest priority as ranked by the respondents. The nine added values are presented on the vertical axis of the diagram. Horizontally next to these added values the priority ranks are plotted for all interviewed hospitals with their names abbreviated according to

Table 2. When two or more added values were given the same priority, these added values received the same average rank. The dashed-lined boxes cluster the answers that were given most frequently, usually showing a maximum of three exceptional ranks per added value. The bold abbreviations show the hospitals with a median ranking for that particular added value. Due to the huge variety, the average rank is no representative expression of the different thoughts. Furthermore rankings represent an ordinal scale and no ratio scale. For this reason we present the median scores. The added values on the vertical axis are ordered from the least prioritised i.e. the highest median rank (below) till the most highly prioritised i.e. the lowest median rank (above, at the top). If two added values share the same median, the average was used to choose the priority rank.

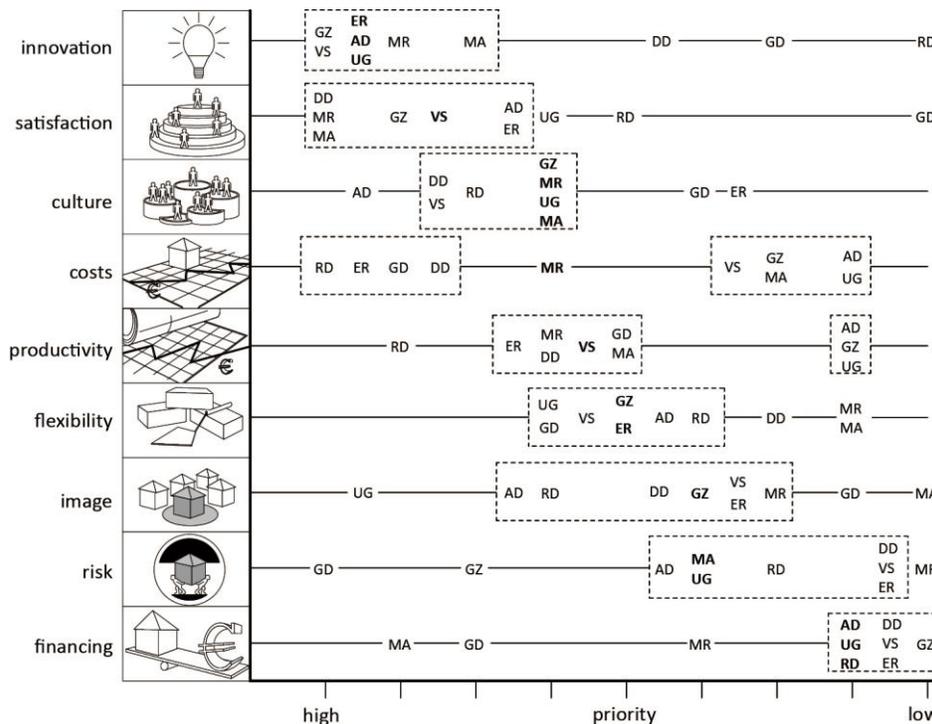


Figure 2 shows that supporting innovation, increasing user satisfaction and improving the organisation's culture were often given high(est) priority by the respondents. Cost reduction was highly prioritised by four respondents, but got a lower ranking by five other hospitals. Increasing productivity, optimising flexibility and supporting corporate image are prioritised in the middle. Risk control and increasing financing possibilities were usually given low priority by the respondents. One hospital (GD) ranked the priorities of the nine added values almost opposite to most other answers. This hospital was planning a new hospital according to the so-called living building concept (LBC), a new form of Public Private Initiative.

Regarding the function of the respondents, no striking differences came to the fore between the prioritisation of the added values of real estate by CEOs and by real estate project managers. However, **PRIORITIZED VALUES SHOWED TO BE DIFFERENT IN DIFFERENT PHASES OF THE**

BUILDING CYCLE i.e. between the initiation-phase, the design-phase and the use-phase of the building. By respondents involved in the initiation-phase, values such as risk management and increasing financing possibilities were highly prioritized, whereas in the use-phase stimulating innovation, user satisfaction and improving organisational culture showed to be highly prioritized.

Reflections on prioritized values in additional interviews

The findings from the ten interviews have been discussed in individual semi-structured reflective interviews with four hospitals in either the initial or construction phase of a new building. The interviewees showed to be quite critical about the top ranking of increasing innovation. They perceive innovation as a means to improve patient satisfaction and not as a goal in itself. Also according to the four additional interviewees, the main objective of a hospital is to deliver accessible, affordable and high quality healthcare. For this reason the additional interviewees also stressed the importance of improving efficiency. Although efficiency is always important, it became even more important after the new regulations in 2008.

Since the new regulations, risk control and financing possibilities are perceived as becoming more important as well. *“Without risk control and a good financial business plan, the other added values of real estate will never be attained. Therefore, **THE MOST IMPORTANT VALUES ARE THOSE VALUES THAT MAKE OTHER VALUES POSSIBLE.** [...] If this ranking [as in*

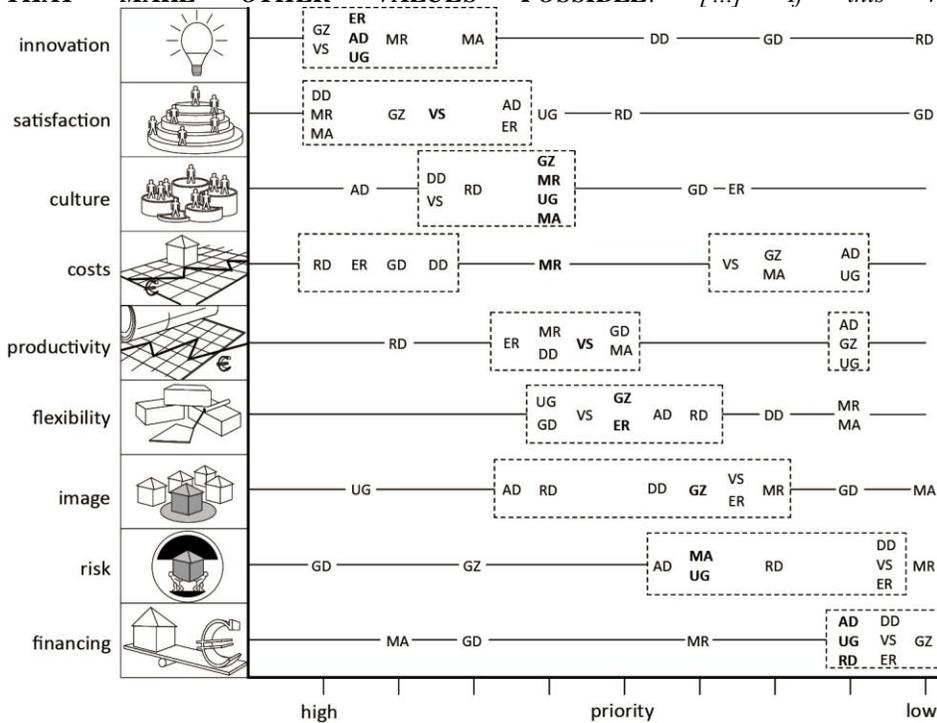


Figure 2] is followed, one stays in the old thoughts from before the regulations changed.” This may explain why the GD hospital ranked risk control as priority one, as this hospital proactively anticipated the new liberalisation of hospital real estate regulations.

In the reflective interviews, flexibility was also perceived to be more important than the rankings in the first ten interviews showed. How to cope with flexibility is not easy. Flexibility requires extra investments in the design and construction phase in order to save money in the use phase due to a higher level of adaptability of the building. Both costs and potential savings have to be included in the business case.

DISCUSSION

The ranking priority of figure 2 show three clusters of prioritised added values that can be related to the widely used triplet of people-process-place (Duffy, 1992). The top three prioritised added values by the respondents are stimulating innovation, increased user satisfaction and improving corporate culture. These three added values of real estate are related to 'people' and contribute to the organisational performance with regard to *'people working together, in a smart way organising things efficiently'* as one CEO mentioned in the interview. The second cluster of added values includes cost reduction, increasing productivity and optimising flexibility. These three added values all contribute to the (production) process of healthcare services and the prizes of these products and services. A flexible hospital building makes it possible to adjust real estate to new circumstances or new ways of health care delivery. This helps to improve productivity and to reduce running costs and as such reduces the price of health care products and services. As one CEO mentioned: *'Maybe it is not that surprising that improving productivity is in the middle of this configuration. Some added values are enablers and contribute to a higher productivity, others are more the result of an increasing productivity.'* The third cluster of added values - contributing to corporate image, controlling real estate related risks and improving finance possibilities - are related to the real estate portfolio and as such to 'place'. As one CEO mentioned in the interview: *'Contributing to the corporate image or financial possibilities are strongly related to the location and appearance of the hospital building. I can imagine that it becomes important if a hospital is located in the city centre, but otherwise it is less important as a real estate objective.'*

In addition to the clustering of values according to the triple place-space-use, another similarity came to the fore, with the triple cultural-value, use-value and future-value. This triple was mentioned in a PhD thesis of Niemeijer (2013) about the added value of hospital architecture. This triple is a slight adaptation of the triple use value, experience value and future value that is mentioned in the National Architecture Policy document 'Space for Architecture' (Architectuur Nota, ruimte voor architectuur Ministeries WVC & VROM (1991)) and the Fourth Nota on Spatial Planning (1988). These reports led to a lively discussion about spatial quality. Hooimeijer, Kroon, and Luttik (2001) conducted a study to conceptualize spatial quality. They came to the conclusion that spatial quality is contextually bound and dependent on location, time, scale, social and cultural influences. Different stakeholders have their own views on quality, depending on their particular interests and preferences. Hooimeijer et al. (2001) used the classic tension in design tasks between form and function as a starting point for the conceptualisation of spatial quality in (1) experience-value, (2) use-value, and (3) future-value. Experience-value focuses on identity, diversity,

recognition and meaning. Use-value regards functional suitability and effectiveness in use and exploitation. Regarding future-value, durability and long term efficiency are central, which asks for extendibility and adaptability. As such the three concepts represent form, function, and time. There is also a similarity with the three terms that Vitruvius used in his first treatise on architecture in 60 BC. According to Vitruvius, architecture must meet three criteria: (1) Venustas, which can be translated as the perception of beauty, (2) Utilitas, which focuses on usability and, (3) Firmitas, which refers to the strength and stability of the construction and as such to sustainable use (Hooimeijer et al., 2001). The main difference between then and now is that in addition to form, function and time, or experience, use and being well-constructed, cost efficiency and risk control are of growing importance.

Though hospital real estate is being regarded now more and more as a resource for production, there was a remarkable difference between the answers to the open question and the response to the question to prioritise nine predefined added values in the more structured part of the interview. In response to the open question what values are included in the design and management of hospital real estate, most respondents mentioned facilitating the primary processes and supporting productivity as the main objectives.

Confronted with added values of real estate mentioned in the literature, the main real estate objectives shifted from process-oriented priorities towards the contribution of real estate to organisational strategic objectives such as stimulating innovation, improving culture and increasing user satisfaction. Whereas **IN THE OPEN INTERVIEWS FLEXIBILITY WAS OFTEN MENTIONED AS AN IMPORTANT ADDED VALUE, IN THE RANKING ASSIGNMENT THIS ISSUE WAS NEVER GIVEN HIGH PRIORITY**, probably because it has been a common issue in real estate management for decades. Cost reduction splits the interviewees into two groups. Some of the respondents ranked cost reduction at the top of highly prioritised values, whereas others gave this issue low priority. This split does not follow the distinction between CEOs and project managers. Although in the open interviews most hospital managers call cost reduction a basic issue in most real estate decisions, in particular since the new healthcare real estate regulations, in the ranking assignment cost reduction only got median priority. The same holds true for productivity and flexibility. An explaining factor here might be the phenomenon of social desirability: respondents may tend to avoid the image of just managing on costs and risks.

Methodological reflections

The qualitative approach of this research – using semi-structured interviews with open questions – provided much information on how real estate added values are perceived by hospital managers and how they are prioritised in hospital real estate decision making. The results contribute to a better understanding of adding value by real estate and the values mentioned in the literature, in general and specifically for the healthcare sector. Although quantitative concepts have been used to summarise and interpret the research findings -

modus, mean, average, a plot-box - these results should mainly be regarded as qualitative data. The priority

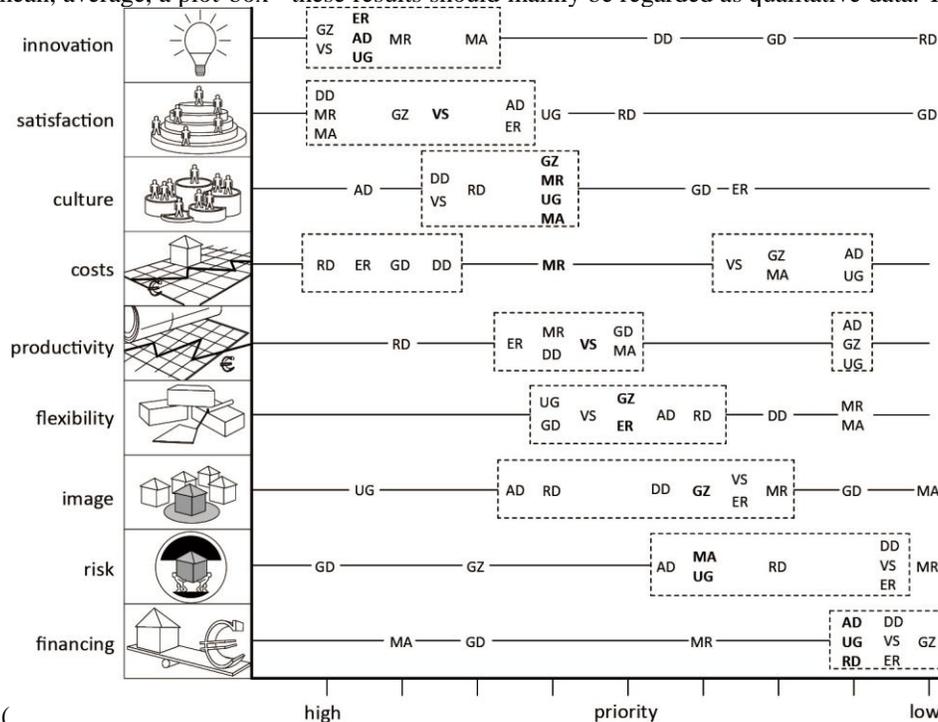


diagram (

Figure 2) is a representation of limited number of only ten rankings on priority and as such it is just a first exploration of (clusters of) priorities. Besides, the rankings by the interviewees might be influenced by their role in the organisation and their responsibilities. A second limitation of this research is the limited time per interview (on average 1.5 hours). A third limitation of this research is the broad scope including many possible added values of real estate. In order to get a better understanding of HOW to attain these values, by which design and management choices, further research in-depth is needed into all separate values, for instance into flexibility, productivity, cost effectiveness and risk control.

The overall validity of the results can be improved by conducting more in-depth interviews and organising workshops and expert meetings to discuss and compare individual rankings. Judgements of quality and decisions on design and management are often based on joint conclusions rather than on individual opinions and preferences. For this reason in future research it is recommended to supplement the individual interviews with focus group discussions with participants from the selected hospitals. An interesting topic for further exploration in in-depth interviews and group meetings is the impact of the position in the life cycle, ranging from initiation to design, construction and building-in-use. The preliminary findings are promising but should be assessed in-depth. Another interesting topic for further research is how to cope with complex “soft” constructs such as innovation and supporting culture. These topics showed to be highly prioritized but are not well elaborated yet. Finally it would be worth to apply the same research methods in other sectors such as office organisations or higher education in order to explore similarities and dissimilarities in different fields.

CONCLUSIONS AND PRACTICAL IMPLICATIONS

Based on the prioritisation of the added values of real estate in the interviews it can be concluded that experience-values such as stimulating innovation, supporting user satisfaction and improving organisational culture are highly valued. These are followed by more tactically oriented use-values such as improving productivity, reducing building costs and supporting the flexibility of the building in order to be adaptable to changing care processes. Future-value such as image, controlling risk, and future financing possibilities are mentioned as possible added values of hospital real estate as well. Prioritized values may be different in different phases of the life cycle of the building. In the initiation phase, much can be changed quite easily. Design choices will have a long-lasting impact on the use value, experience value and future value of the building and on the effectiveness and efficiency of health care processes. In the phase of a building-in-use one has to cope with the existing situation, with much more limited opportunities to change.

The research findings also show that it is important to be clear about the concept of added value and different value parameters and how to apply this concept in a particular sector. In hospitals for instance, it makes sense to split the value parameter *user satisfaction* into *patient satisfaction* and *employee satisfaction*. Although *stimulating innovation* seems to be a clear value, it was often connected to *improving culture* i.e. to stimulate a culture that supports and facilitates innovative processes. Based on the interviews, it makes sense to add *improving safety* as a separate added value. *Sustainability* should be added to the list as well. In the interviews this topic was not presented as an item on the predefined list but in addition to it. It turned out that this topic is not highly prioritized, usually argued by the statement that the main aim of a hospital is not to be green but to deliver affordable high-quality care. However, all interviewed hospitals try to contribute to environmental values, often in connection to the Corporate Social Responsibility debate. A restriction often made was that investments costs have to be paid back within a couple of years. It is expected that in the next coming years the pace and culture of “corporitisation” drives the quest for a sustainable dividend. Most other values can be perceived as preconditions for a sustainable future. In order to support decision-makers to apply the insights from this research into practice, a so-called value-impact matrix has been developed (Table 3). This matrix shows the nine added values plus sustainability in the rows, and four types of stakeholders in the columns (based on den Heijer, 2011). The cells include checkpoints of possible measures to attain the different values. This might help to optimally align the accommodation strategy with the organisation's overall strategy. **THE VALUE IMPACT MATRIX IS A TOOL TO ENABLE DISCUSSIONS WITH VARIOUS STAKEHOLDERS ON HOW TO OPTIMALLY ACCOMMODATE HOSPITAL CARE**, both in the initiation, design and occupancy phase. It may help to define the accommodation objectives in the initiation phase, to assess ex ante – in the design phase - if and how the building adds value to the organisation, and to assess ex post – in the building-in-use phase – which objectives actually have been attained. Using the value-impact matrix, focus groups with end users and other stakeholders can discuss design choices or accommodation characteristics

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in a more structured way by assessing all values from the perspectives of different stakeholders. After this inventory it can be checked whether all values and perspectives have been adequately addressed in a balanced way.

Table 3 PART 1, value-impact-matrix Experience-Value

		perspective on real estate			
		strategic	financial	functional	fysical
ADDED VALUE OF REAL ESTATE		adding value to organisational goals: how and to what extend are strategic organisational objectives achieved or obstructed by real estate?	value, resources and costs: what are financial consequences of the accommodation on resources, real estate value, and life cycle costs?	fitness for use: how and to what extend is the user's functional primary process supported or obstructed by real estate?	(im)possibilities of real estate: what is technically and physically possible in an existing or new building?
EXPERIENCE-VALUE	organisational culture & innovation	improving interpersonal relationships and communication within the organisation by creating meeting places for the medical staff and healthcare professionals. This contributes to an organisational culture of information exchange between professionals in order to improve and innovate healthcare processes and services. These meeting places include staff centres with space for specialists for their back-office operations, consulting rooms and classrooms for exchanging knowledge.			
	Encouraging communication and innovation by improving interpersonal relationships within the organisation.	The building supports the interaction between people and contributes to improving communication between staff and healthcare professionals with a focus on fewer medical mistakes.	Higher accommodation costs are recouped through noise, orientation & routing, privacy in doctor's offices and nursing rooms.	Choice for front-office and back-office concept and design of workplaces (flex workstations, desk sharing or private rooms) influences human interaction.	Attention to architectural quality of places for interaction such as workplaces, consultation rooms, restaurant, staff skills labs and knowledge centres.
	patient satisfaction & healing environment	Patient satisfaction is related to the welfare of patients and the contribution of the physical environment to the healing process. Important aspects of patient satisfaction are: view of nature, light, materials, noise, orientation & routing, privacy in doctor's offices and nursing rooms.			
	Positively influencing the healing process by pleasant accommodation facilities for patients.	The building contributes to the healing of patients and as such contributes to a better positioning of the hospital in the healthcare market.	Higher accommodation costs are recovered through a shorter hospital stay and higher occupancy due to higher patient satisfaction.	The built environment contribute to a more smoothly the healing process by reducing stress for patients.	Architectural quality of patient areas such as surgery and (singles) nursing room with extra attention for a view on nature, natural light, materials, noise reduction, privacy and orientation and routing trough the building.
	employee satisfaction	The satisfaction of employees is an important added value in any professional bureaucracy and the accommodation must support this. Healthcare professionals are the key staff in a hospital. This implies functional and comfortable workplaces for effective and efficient delivery of healthcare to patients.			
	Functional, enjoyable and comfortable workspace for employees.	Attracting and retaining well-qualified staff in an increasingly tight labour market.	Weighing possible reduction of staff turnover relative to higher investment in accommodation.	Processes where the medical healthcare process is central relative to processes where the patient is central.	Attention to architectural quality and functionality of workplaces.

Table 3 PART 2, value-impact-matrix Use-Value

		perspective on real estate			
		strategic	financial	functional	fysical
ADDED VALUE OF REAL ESTATE		adding value to organisational goals: how and to what extend are strategic organisational objectives achieved or obstructed by real estate?	value, resources and costs: what are financial consequences of the accommodation on resources, real estate value, and life cycle costs?	fitness for use: how and to what extend is the user's functional primary process supported or obstructed by real estate?	(im)possibilities of real estate: what is technically and physically possible in an existing or new building?
USE-VALUE	reduce accommodation costs	Reducing accommodation costs has a direct impact on the prices charged for healthcare products and services. Examples include low investment costs in new buildings or renovation, a fixed space budget for departments and the life-cycle-costs of accommodation including maintenance and energy costs.			
	Reduction of accommodation costs such as investment, capital, operating and maintenance costs.	Aiming for lower life cycle costs of accommodation and reduce the required number of square meters. This calls for investment that are appropriate to the scale of the building.	Reduce accommodation costs by minimizing initial investment, operating and maintenance costs.	Reduce demand for space by flexible joint use of consultation rooms, workstations, and offices.	Sober plans with slim-fit buildings that are appropriate to the demand for space and reduce energy costs by sustainability in order to make the hospital less dependent on traditional energy forms.
	increase productivity	More efficient use of the available space is possible by separating the front-office and back-office, using generic consulting rooms that can be used by several medical specialists at different times during the week. Increasing productivity should also ensure that healthcare professionals can do their work properly and efficiently. Separating patient flows (acute, urgent, elective and chronic) from employees and goods flows is widely used.			
	Increasing productivity through more effective and efficient use of the accommodation.	Ensure that healthcare professionals can perform properly and efficiently so that more healthcare can be delivered by the same resources or the same healthcare with fewer resources.	Determining (annual) budget of space for each department based on actual sales, production and the percentage of empty beds.	Optimal support of the accommodation to healthcare processes.	Logistics flows (goods, staff and patients), separated spatial clustering, and centralization of highly technical facilities (hot floor).
	use flexibility	Flexibility in use focuses on the extent to which the building can adapt to changes in healthcare processes without major modifications to the building. This type of flexibility makes it possible to organise the workplace according to the primary processes and this is a prerequisite for the innovative capacity of the organisation to improve healthcare processes.			
Spatial and technical flexibility to adapt the accommodation to changes in healthcare processes.	Supporting changing care processes throughout the economic lifespan of the building.	Additional initial investments in future flexibility and expandability, adjustments based on new business plans including initial investment and depreciation of unused space.	Standardising offices, consultation rooms and nursing rooms.	Robust building that allows different layouts by separating structure, technical equipment and spatial configuration.	

Table 3 PART 3, value-impact-matrix Future-Value

	perspective on real estate			
	strategic	financial	functional	physical
ADDED VALUE OF REAL ESTATE	adding value to organisational goals: how and to what extent are strategic organisational objectives achieved or obstructed by real estate?	value, resources and costs: what are financial consequences of the accommodation on resources, real estate value, and life cycle costs?	fitness for use: how and to what extent is the user's functional primary process supported or obstructed by real estate?	(im)possibilities of real estate: what is technically and physically possible in an existing or new building?
support image	The building as an icon adds to the sustainable position of the hospital organisation in society. Real estate can contribute to the positioning in society by means of the architecture of the hospital building.			
Propagating organisational values by using the building as an icon of the organisational culture.	Improve the competitive position of the hospital in attracting both patients and staff.	Additional investment in architectural quality of the building compared to gain extra revenue by competitive advantage.	A building in which patients feel at ease and welcome contributes to stress reduction and is part of a healing environment which will increase patient satisfaction.	Good location and accessibility, high architectural quality of the building where the human dimension is central.
Reduce risk and increase financial possibilities	Risk and financing of real estate focuses on the future potential of the physical environment in which adaptability and reuse opportunities are important aspects of future flexibility. In hospitals this is mainly associated with the layer approach, in which the hospital is divided into four types of real estate: hot-floor, hotel, office and factory. It is also possible to create land value for future use by developing a purposeful location.			
Anticipating on future technical and financial risks by considering real estate as an asset.	Balancing between real estate as an asset that must yield revenue as financial investment, or as a production factor that can make money by producing healthcare services during the lifespan of the building.	Marketability and re-use possibilities contributes to real estate as asset and location-value can be promoted through area development around the hospital.	Balancing between optimising healthcare process during the lifespan of the building relative to marketability for re-use of the building after the economic lifespan.	Dividing the building in different layers (hot-floor, hotel, office, and factory) so that building components can be used independent of each other.
sustainability	Within hospitals, sustainability focuses mainly on reducing energy costs so that healthcare can continue to be delivered in the future despite increasing energy prices. This means that investments are made in re-use of waste-energy from industry, heat and cold storage in the soil and other architectural energy concepts.			
Reducing energy, water and materials usage to maintain affordable healthcare with increasing commodity prices.	Sustainability is seen as part of social responsibility, but does not contain any investment that cannot be recouped within a specified period.	Additional ininitial investments are recouped by reducing energy costs in order to deliver durable and affordable healthcare with rising energy prices.	Increasing focus on sustainability in healthcare process: water management, waste management and recycling of materials.	Use of waste heat from industry, underground heat and cold storage, concrete core activation and other architectural energy concepts.

The value-impact matrix can also be used as a starting point for further research on adding value by real estate, both in the health care sector and in other sectors, and in different ways. For instance in a generic way by elaborating all cells by a literature review. And in a more case-related way by using the value-impact matrix as an instrument for ex-ante discussions to clarify the set goals, to assess the architectural design sketches, to define clear performance indicators, and to assess actual performance ex-post by Post Occupancy Evaluations of the building-in-use. So far, the value-impact matrix is an interesting tool for better understanding of possible added values of (hospital) real estate, how to attain these values, and why this is important from the perspective of different stakeholders. Additional research is needed to transform the value-impact matrix in an evidence-based design tool that can be used by architects and in co-design processes including user participation.

PRACTICAL IMPLICATIONS

- The overview of added values of hospital real estate can be used to raise awareness among decision-makers of opportunities for value adding management.
- Prioritized values in practice can be used as a reference frame to evaluate the current real estate strategy and tactical/ operational decisions in the design and management of hospital buildings.
- The value-impact matrix is a valuable tool to discuss how to add value by real estate and to explore potential synergy and conflicts between different values from the perspective of different stakeholders.
- Because design choices have a long-lasting impact on the use value, experience value and future value of a building, a careful analysis of the alignment of design choices to organisational objectives and taking into account the interests and needs of different stakeholders is of utmost importance.

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FIRST AUTHOR:

Johan van der Zwart PhD, Postdoc Architecture & Health, Department of Architectural Design and Management, Faculty of Architecture and Fine Arts, NTNU: Norwegian University of Science and Technology, Trondheim, Norway.

SECOND AUTHOR:

Theo J.M. van der Voordt PhD, Associate Professor Corporate Real Estate Management, Department of Real Estate & Housing, Delft University of Technology, Netherlands.

CORRESPONDING AUTHOR

J. van der Zwart PhD

Email: johan@van-der-zwart.eu