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Value-Based Health Care Real Estate Strategies

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ABSTRACT

Subject/Research problem

The healthcare sector in the Netherlands is shifting from a governmentally steered domain towards regulated market forces and performance-based financing. Organizational changes, new ideas about care and cure, demographical developments and technological innovations play their role, too. The changing context – internally and externally - will have a strong impact on the best possible match between demand for and supply of health care real estate. Although most health care organizations are aware of the necessity to change their real estate policy, many of them lack sufficient knowledge and tools to steer on the added value of their corporate real estate.

Research Question

How can health care real estate support organizational performance? Which considerations should be included in briefing, design and management of health care real estate?

Approach

Literature review; interviewing stakeholders; analyzing documents such as strategic accommodation plans; supervision of MSc students and a PhD student conducting case studies on health care real estate strategies in practice.

Result

This paper discusses the possible added value of hospital real estate to hospital performance. The concept of added value is illustrated by the impact of real estate interventions on costs and labour productivity and real estate as a marketing tool. Research findings from master theses show a slow but clear shift towards more value based real estate strategies. The findings will be used to further explore and test a conceptual framework of the link between real estate as a fifth resource and organizational performance.

Application

The theoretical model and research data may be used to improve our understanding of added value of real estate. Besides, the conceptual framework can be used to support complex decision making in briefing, design and management of health care real estate.

1. INTRODUCTION: A CHANGING CONTEXT

As in many other countries, in the Netherlands, too, health care real estate management is in a transition phase of formerly being steered by the national government towards a more open market competition with a growing autonomy of the health organization. In the near future all capital costs have to be paid back by the income from so-called treatment-diagnosis combinations. This new situation is in contrast with the traditional system. In former days once the proposal for a new hospital building or renovating an existing building had been approved by the government to fit with the planning regulations (i.e. the number of beds per 10,000 inhabitants), particular building regulations for health care (e.g. a maximum number of square meters per bed or per function), the standardized budget for investment costs per square meter, and usual permit requirements laid down in the national Building Code, health insurance companies had to pay all running costs related to the building. This changing context will have a strong impact on briefing, design and management of hospital real estate. Organizations will get new opportunities but will also experience higher risks. Health care organizations have to steer more on competitive advantage. Partnerships with private partners will be more common. Fritzsche et al. (2005) have clearly summarized a number of changes (Table 1).

Table 1: From supply-driven care to regulated market forces

From:	To:
Certainties	Opportunities and risks
Seeking approval	Taking responsibility
Building plans based on regulations and standards	Building plans based on a business plan
Retrospective costing of approved investments	Comprehensive budget including accommodation component
Book value (too high) based on technical life	Actual value of real estate based on useful life
Mainly ownership	Ownership of strategic assets only
Maximizing floor area and investments (within the permitted norms)	Maximizing operating efficiency and minimizing total costs
Mono-functional premises	Flexible premises
Investment assessed by Netherlands Board for Healthcare Institutions (CBZ)	Investment assessed by capital provider

Source: Fritzsche et al., 2005

Organizational changes (mergers, network organisations), demographic changes (population ageing, multicultural diversity), technological developments (digitization, new medical equipment, new installation techniques), fluctuations in the economy and changing views on health care and the responsibility of government, healthcare organizations, market players and healthcare consumers play their role, too. Hospitals become even bigger than before, as a consequence of mergers and adding extra functions to hospitals in so-called care boulevards, whereas at the same time a discussion is going on about the desirability of a Big Bang i.e. a decomposition of hospitals in smaller units that can be well integrated in the urban realm.

All these changes affect the health care real estate stock and cause a need for new health care real estate management strategies. Increasing emphasis is being placed on quality, flexible and demountable building design, 'healing environments', 'evidence-based design', differentiation in care provision through network organizations and thematic clustering of patient groups. New concepts such as the 'layers approach' are being unveiled. This concept has been developed in order to take better account of the different degrees of marketability that exist within a building by differentiating between so-called 'hot floors' (capital-intensive and specialized healthcare spaces such as operating rooms and IC), 'low care' spaces (nursing departments with a healthcare and hotel function), 'industry' functions such as laboratories and kitchens, and office space.

2. CORPORATE REAL ESTATE MANAGEMENT

Although the dynamism and complexity of the healthcare market can seem burdensome, it also presents a challenge. The growing influence of market forces is creating more scope for autonomy in decision-making on design, construction and management. Whereas until recently the Brief or Programme of Requirements was essentially an enumeration of the functional building standards of the Netherlands Board for Healthcare Institutions (CBZ), it is increasingly becoming a document that demands strategic consideration of the role of real estate and of opportunities and risks.

Careful decision-making with regard to new builds, rebuilds and sale of real estate (partial or complete) or with regard to the purchase or rental of other real estate requires a thorough knowledge of the real estate stock and the many internal and external developments. What steps need to be taken in order to eliminate or reduce discrepancies between demand and supply? How effectively does real estate support the primary business processes? One of the specialties that address questions of this type is Corporate Real Estate Management (CREM). The key issue is to bring the supply (locations, properties) into line with the requirements that arise from the primary process (the demand) and the strategic objectives of the organization with a view to creating maximum added value for the organization and thereby making the maximum contribution to total organizational performance. This paper discusses one of its key concepts: the added value of real estate. Based on a number of case studies the paper shows that hospitals still have a long way to go in order to optimize the added value of their real estate. The paper ends up with a plea for a further exploration and empirically testing of a conceptual framework that links organizations' resources to organizational performance.

3. STEERING ON THE ADDED VALUE OF REAL ESTATE

As long ago as 1993, the US real estate expert Michael Joroff called for a shift in real estate management from a purely operational approach – facilitation of the work processes through functional design and regular technical maintenance – to a more strategic one, including great emphasis on the role of real estate in achieving corporate objectives. According to Joroff, we need to move away from focusing on day-to-day spatial needs ('taskmaster' role) and the elucidation and apportionment of accommodation costs ('controller') towards independent and market-oriented real estate management ('entrepreneur'), tailoring strategic real estate decisions and corporate objectives ('strategist'). According to Hans de Jonge (2002), Professor of Real Estate Management and Development at TU Delft, there are several areas in which a well-designed building can provide significant added value to the organization:

1. *Improve productivity* by using real estate as a means of working more efficiently, i.e. doing more with the same resources, doing the same with fewer resources or – a combination of the two – doing more with fewer resources. For example by centralizing activities, or by promoting more efficient patient logistics.
2. *Reduce costs* by saving on real-estate investment and operating costs, additional costs and transport costs. For example through tougher floor-area criteria, measures to limit energy consumption, or the introduction of 'hot desking' in the office environment.
3. *Risk management*, for example by opting for different forms of tenure (rental, leasehold, freehold) or by making spaces suitable for letting to third parties.
4. *Improve the availability of finance* by using real estate to attract outside capital and by improving the organization's solvency and liquidity position.
5. *Increase flexibility*: By means of technical, legal and spatial measures, structure the real estate portfolio in such a way that alterations are possible without major structural works and the real estate can be used in a number of ways.
6. *Improve culture* by using real estate as a means of effecting cultural change and improving interpersonal relations (internally and with outside parties).
7. *Marketing*: Exploit the positive impact of real estate or use real estate as a symbol of the organization with a view to improving its image and selling more products and services.

Other possible examples of added value include 'underpinning or improving job satisfaction' or 'the creation of a healing environment'.

In her PhD thesis *Performance by Real Estate* a sound conceptual model has been developed that links organizational resources to organizational performance via added values (De Vries, 2007; De Vries et al, 2008) (Figure 1). This general conceptual model has been explored and tested in a number of case studies of Institutes of Higher Education, but it seems to be applicable to the health care sector as well. The present shift towards an open market competition with a growing autonomy of the health organization offers an opportunity to steer more strongly on the added values of real estate. In order to make it more concrete, three possible added values of real estate will be elaborated a bit more: cost reduction, labour productivity and real estate as a marketing tool.

Cost reduction

For cost control reasons the Dutch government has always applied stringent criteria with regard to the maximum floor area (m²) per hospital bed and the maximum permitted construction costs per m². Provided that plans remained within these limits, there was little focus on possible cost savings. This frequently prompted organizations to go for the maximum possible square metrage. Incentives to undercut the maximum permitted budget were, after all, virtually non-existent. There was only limited scope for investing extra with a view to saving on the operating costs at a later stage for energy and maintenance charges. There are ample opportunities here, given the growing influence of market forces, since cost savings directly benefit the healthcare facilities. This creates an added responsibility to make good choices when weighing up quality, investment costs and operating costs.

CONTEXT: Legislation, society, market, demography

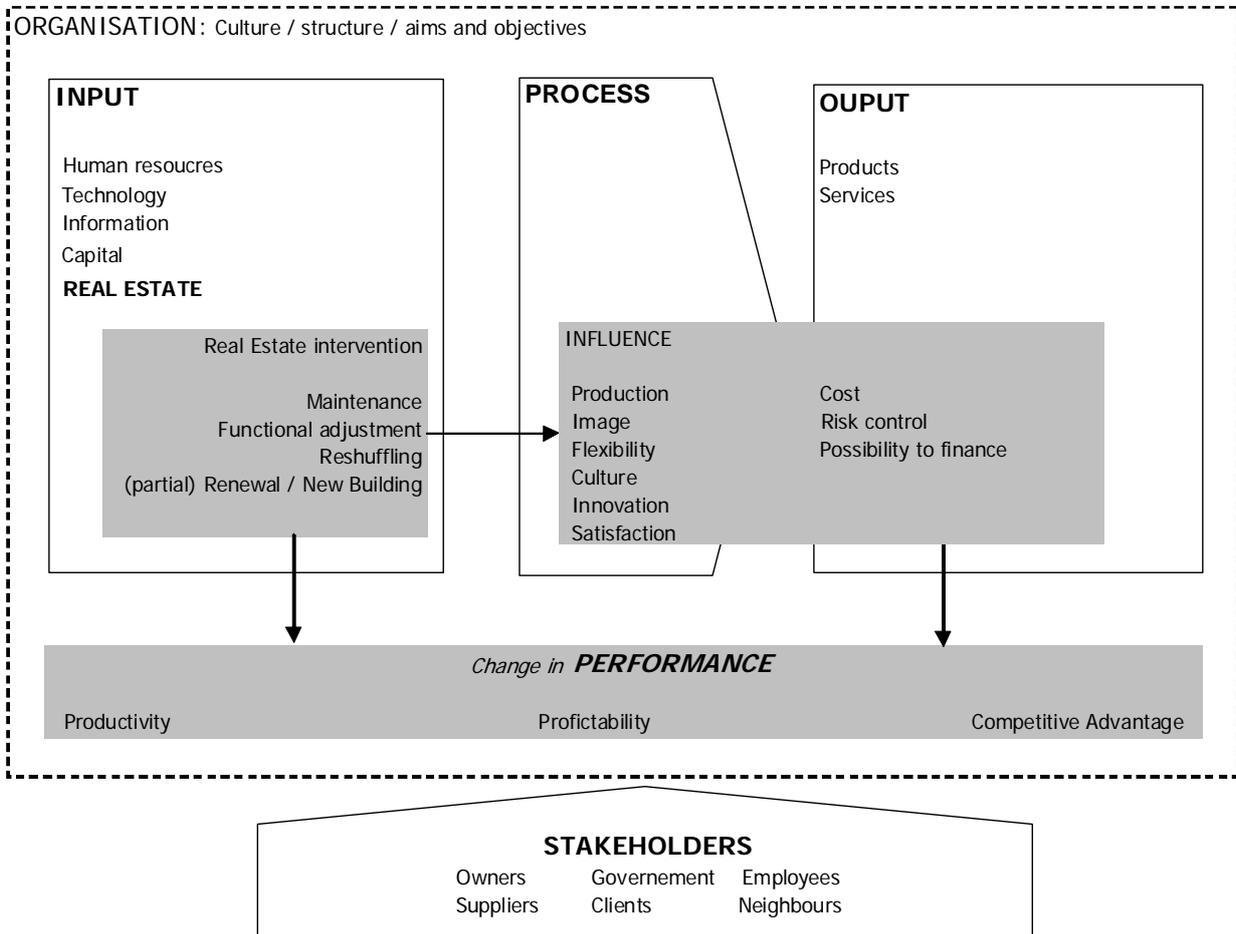


Figure 1: Possible impact of real estate on organizational performance (De Vries, 2007; De Vries et al, 2008)

It is extremely important to analyze the short- and longer-term cost implications of the program and the project as a whole. It is better to invest proactively in flexibility rather than being confronted at a later stage with high renovation costs due to growth, contraction or changes in the business processes. Little by little, a shift appears to be occurring – both in the Netherlands and abroad – from ‘cost motivation’ towards ‘profit motivation’, and from controlling costs to facilitating performance and added value. Input indicators such as cost per m², cost per full-time equivalent and m² per FTE or per workplace may well shed light on the efficiency with which resources are used, but they tell us little about effectiveness. When considering cost indicators, it is therefore wise not only to look at square metrage and Euros, but also to take account of the potential benefits and of the organization's goals and ambitions.

Labour productivity

An obvious example of the impact of real estate on labour productivity is the avoidance of unnecessary loss of time by ensuring an efficient building layout with short distances between frequently consulted colleagues and frequently performed activities. However, the impact of buildings extends beyond merely minimizing the distances that staff has to walk. Scope for communication and social interaction and the possibility of concentrating on one's work invariably score very highly when office workers are asked to identify the key contributory factors to labour productivity (Barber, 2001). Advanced technology, adequate filing space, individual indoor climate control and the possibility of personalizing one's workplace likewise score highly. Other relevant factors are ergonomically designed chairs, a visually attractive working environment, variable lighting levels, privacy and daylight access/view. The extensive research conducted into the impact of indoor climate shows that a good indoor climate can make a 10–15% difference to perceptions of labour productivity (Stoelinga, 2007). Many of these findings in office environments probably also apply to labour productivity in healthcare facilities. A study by Achterberg et al. (2006), based on an extensive literature study and interviews with people on the 'shop floor', has explored the links between labour productivity within in-patient nursing care and interventions in the built environment. The impact of the interventions investigated on staff performance has been expressed as a percentage of the maximum savings in working time that can be achieved, which has in turn been translated into operating-cost savings over 25 years. According to this study, it is possible to achieve a maximum operating-cost saving of 3.5% by means of spatial interventions. Improving the atmosphere and the interior of a building could yield a potential saving of 2.7%. The cost savings to be achieved through structural measures (light, sound, temperature, ventilation) and improvements relating to ICT and building automation can amount to 3.0% and 4.2%, respectively. In total, it is possible to save upwards of 11% in operating costs. A significant underlying factor in the relationship between buildings and labour productivity is the fact that a carefully designed environment and a pleasant stay foster greater self-reliance and well-being and thus reduce the need for care. An interesting detail is the floor covering in the corridors. Soft flooring absorbs the sound of staff walking around, which serves to reduce sleep disturbance, meaning that residents are less inclined to call the nurse. Aside from data on costs and staffing levels, the study by Achterberg et al. is based heavily on expert opinion and 'evidence-based reasoning' (the logical extrapolation of possible effects from empirical data). There has been only limited validation of the model. As the study does not indicate the level of investment required (and thus the payback time), it is not yet clear what combination of interventions will be the most cost-effective.

Real estate as a marketing tool

Real estate can also be used as a means of building a profile within the healthcare market. An important part of marketing lies in identifying which market segments an organization is best equipped to serve, what are the most suitable products, services and programs for reaching these target markets, and what implications this has for the position of competing facilities. Possible criteria that can be used for market segmentation include geographic factors, demographic factors (for example a focus on particular age groups), or variables relating to the type of healthcare product, with the aim being to strengthen the current position or exploit a gap in the market. In a liberalizing market, clients – patients and healthcare insurers – can, after all, choose from a broad range of products and services. Factors that influence the ultimate choice are: price, quality, level of service, waiting times, accessibility and distance. Healthcare organizations will need to focus on one or more of

these items in order to compete with other healthcare facilities. In marketing parlance, this is referred to as the '4 Ps' concept: Product, Place, Price and Promotion (Kotler, 2003). According to Treacy and Wiersema (1995), organizations can add value along three axes: a) best price/quality ratio (operational excellence); b) best customer service (customer intimacy); and c) best product (product leadership). It has been found that businesses are more successful if they make a clear choice for one of these value orientations without neglecting the others. The step-by-step plan shown in the panel below (Van Loon et al., 2006) can be used as a guideline when seeking to translate the desired image into suitable premises. The outcomes of these steps provide important input for the schedule of requirements and for the dialogue with the architect.

Step-by-step plan for identifying the desired image (Van Loon et al, 2006)

In advance: Nominate one or more coordinators.

Step 1. Internal analysis

Identification of the organization's background and roots, characteristics, vision, mission and core business. Sources: annual report, policy documents, website, interviews with key personnel.

Step 2. External analysis

Analysis of the market, the players and their target groups. Sources: statistics, Chamber of Commerce, competitors' websites.

Step 3. Creating awareness of corporate identity and corporate image

Group discussion in order to engender in the decision-makers an awareness of the 'personality' of their organization, the type of market profile that the organization wishes to (or is able to) build, and the role that real estate can potentially play in this task.

Step 4. Identification of the organization's core values

For example in a workshop with someone from the Board of Directors, line management, the PR and Communications department and a number of user representatives, preferably accompanied by the facility management consultant and/or someone from an advertising agency. Use picture associations in order to encourage 'out of the box' thinking (e.g. images of cars or cartoon characters). Have each participant choose one or more pictures which, according to him/her, chime with the desired image of the organization, giving reasons.

Step 5. Identification of the desired image

Identification of 'common starting points' (CSPs) for the desired image (van der Grinten, 2004) based on a group discussion about the stated core values (differentiated by target group).

Step 6. Assessment of the current premises

Discussion on the image of the existing premises with reference to a number of characteristic photos. To what extent are the common starting points represented? Are there specific problems?

Step 7. Identification of requirements to be met by the new premises

The use of images is to be recommended in order to identify how the organization wishes to see the CSPs reflected in the future premises. Core values evoke different associations and interpretations. A clear explanation of the CSPs is therefore essential. For example, ask all participants to choose two images (giving reasons) that epitomize what the organization stands for, and one image that evokes precisely the type of association that it wishes to avoid. It is important to refer back to earlier statements in order to establish a conscious link between CSPs and images of premises.

4. RESEARCH FINDINGS FROM MASTER THESES IN REAL ESTATE MANAGEMENT

Evidence that there is still much to be gained through strategic real estate management in the healthcare sector can be found in a study by van Hasselt (2005). In her MSc thesis on *Corporate Real Estate Management in Hospital Care*, Van Hasselt (2005) has attempted to position three hospitals on a so-called CREM thermometer, based on interviews and an analysis of Long-Term Accommodation Plans (Figure 2). The columns of the thermometer are headed with the five stages of development of real estate management as identified by Joroff et al., while the rows comprise the seven potential sources of added value of real estate as specified by de Jonge (2002). It is a matter of interpretation what exactly is the position on this 5-point scale, but the scheme gives an indication.

	Operational	tactical	Tactical	strategic	strategic
	Stage 1 Control	Stage 2 Minimize costs	Stage 3 Standardize use	Stage 4 Adapt to market	Stage 5 Contribute to primary process
Productivity increase		C	B A		
Costs reduction	C		BA		
Risk control	C		B	A	
Flexibility		C	B A		
Value of real estate		BCA			
Marketing		C	B A		
Culture	B	C	A		

Figure 2: Position of three hospitals on a CREM thermometer. Source: Van Hasselt, 2005.

The three hospitals featured in the study are found to display major differences in this regard. With regard to productivity, hospital A scores highest here, with serious efforts being made to extend hours of business and achieve logistical improvements in the care processes. In the new building, great emphasis is placed on an efficient floor-plan layout with less floor space. Hospital C is less active in this regard, although some consideration has been given to the centralization of related activities and more efficient organization of clinics. Scores for hospital B lie between the two. Here new office concepts are being introduced, with multifunctional and shared use of space. In addition, a review has been conducted of ways in which the workplace might be made more effective and efficient and plans are in hand to implement the findings. Viewed collectively, the three hospitals rank somewhere between stages 1 and 3 on the development ladder of Joroff.

Research involving five facilities in the mental health sector also showed that the various ways of adding value to real estate still receive limited attention at portfolio level (Van Looveren et al., 2007). Paramount importance is given to the wishes of the residents and staff – the ‘users’ perspective’ – by offering a range of care and architectural concepts tailored to the varying levels of care. Major emphasis is also placed on information from, and the wishes of, local facility managers. Technical quality is regarded more or less as a fundamental prerequisite. Specific problems in this area result in maintenance at building level. In the case of certain facilities, there is already a tendency to broaden the focus to include the future value of real estate (by building in and promoting flexibility and marketability) and its economic value (by monitoring book values and operating result) from an ownership perspective. The added value of real estate remains seriously neglected as far as other corporate objectives are concerned.

In 2008, Huisman compared the long term accommodation plans of five hospitals in three periods: 1996, at the (start of a statutory obligation by the Ministry of Health to write a long term accommodation plan); 2002, when a new format has been introduced; and 2006, at the end of statutory obligation (Huisman et al, 2008). Furthermore strategic documents have been studied. It turned out that a growing attention is being paid to the added value of real estate to hospital performance, with a focus on patient satisfaction, flexibility and image. Much attention is being paid to an improved logistics of patient assessments, in order to reduce waiting times and the number of times that patients have to come to the hospital for an appointment with one of the specialists. One of the most eye-catching findings was that not much attention is being paid to explore long term trends and scenarios such as growth, shrinkage, specialization in network organizations and so on.

A fourth MSc thesis to be mentioned here is the study of Boelens (2009, forthcoming). He compared three hospitals on if and how they steer on the added values that have been mentioned by prof Hans de Jonge. Again it turned out that hospitals are on their way, but the definition and measurement of the concept of added value still has a long way to go. Table 2 shows some examples of concrete measures that hospitals take into account in their real estate strategies.

Table 2: Examples of concrete measures to improve the added value of hospital real estate

Cost reduction	Concentration of formerly different locations on one site
	More efficient spatial lay-out
	More efficient use of space by sharing reception desks, waiting rooms and examination rooms
	Reduction of maintenance costs by improved maintenance planning and use of more sustainable materials
	Reduction of energy costs by better insulation, high quality installations and storing energy (warm and cold)
Improving of productivity	Shorter distances between functions by clustering of functions with frequent interactions
	Intramural and extramural health care delivery on different spots
Improvement of image	Nice overall appearance by nice use of forms, colours and materials
	Nice architecture of entrance area and waiting rooms
	More one bed rooms
Improvement of flexibility	Space available for horizontal extensions
	Extra load-bearing strength of construction for future vertical extension
	Use of flexible units that can be used elsewhere
	Concrete skeleton without load-bearing walls
	Compartmentalization to allow sublease
	Flexible use of space (e.g. desk sharing)
Improving of satisfaction	See image
	Nice location, well reachable and accessible, with an attractive outside view
	Nice and sufficient parking facilities
	Application of nice and green spaces (gardens, atrium)
	Mix of functions (flower shop, pub, cafeteria)
Risk reduction	Improving future value by flexibility and standardization of spaces

Source: Boelens (2009, forthcoming)

8. CONCLUDING REMARKS

The concept of added value of real estate is complex and includes different indicators. A great deal of information is required in order to truly focus on the added value of real estate, theoretically (for example: What precisely is the relationship between real estate and labour productivity?) and practically (How large are the buildings in the portfolio? How are they laid out? What are the annual costs, etc?). It costs time and money to gather information and keep it up to date. There must be an adequate return on this investment, which will be reflected in the extent to which it is actually used. Information gathering and updating must take account both of the need to focus on care-related and commercial objectives and the desirability of managing and utilizing the organization's limited resources efficiently ('need-to-know' versus 'nice-to-know'). It is advisable to periodically review the actual situation against the following checklist (Van Looveren, 2007, adapted):

1. Current and anticipated trends concerning the demand for healthcare, changing perceptions among the principal stakeholders, trends in political decision-making, technological developments (building and installations, research and treatment), demographic trends, etc.
2. Real estate objectives as part of corporate strategy and the contribution that real estate can make to the desired performance of the organization. The positioning of real estate policy on the previously discussed CREM thermometer can assist in this process.
3. Present and desired future characteristics of the location(s) where the healthcare institution examines, treats, cares for and accommodates its patients or clients and the desired location diversity.
4. Selection of those building functions that the organization wishes to retain in its real estate portfolio from a strategic-value perspective (in view of their contribution to the primary process) and those that it does not.
5. Desired diversity of healthcare products and accommodation concepts.
6. Desired mix of different types of tenure (purchase, rental, hybrid forms) with an eye to risk management and financial position.
7. Functional performance requirements for locations and buildings (accessibility, level of facilities, flexibility, perception).
8. Financial performance requirements based on commercial considerations (return versus costs).
9. Future value (marketability, compatibility with future expectations, requirements and constraints, potential for conversion to other functions).

Effective real estate management not only requires a clear vision during the development phase, but also constant monitoring and reassessment of real estate policy in the phase of use and management. By establishing a clear link between accommodation objectives and corporate objectives and periodically reviewing the match between available real estate and trends in demand organisations can pursue an efficient, effective and proactive real-estate strategy.

Follow up steps of this research will be used to a further improvement and empirical testing of the conceptual model that links real estate interventions to organizational performance. In May 2009 a group of people started to co-operate on "The Added Value of FM", in addition to the work of Jensen et al (2008), Lindholm et al (2006a/b), De Jonge et al (2009), Van der Zwart et al (2009) and other publications. Hopefully the group sessions and joint research will add value to our understanding of the complex concept of added value and value based real estate management in the health sector.

References

- Achterberg, J., K.H. Dekker en W.R. Pullen (2006), *Arbeidsproductiviteit en gebouw*. Een exploratieve studie in de verpleegzorg. Delft: Center for People and Buildings.
- Barber, C. (2001), *The 21st-Century Workplace*. In: Kaczmarczyk et al, *People and the Workplace*. GSA Office of Governmentwide Policy, Washington DC.
- Boelens, M. (2009), *De omslag naar strategisch vastgoedmanagement van ziekenhuizen*. Delft: MSc thesis Faculty of Architecture, Dpt. of Real Estate & Housing.
- Fritzsche, C., Hoepel, H., Kaper, L. en van Ommeren, A. (2005), *Huisvesting is strategisch goed*. Twijnstra Gudde Management Consultants, Amersfoort.
- van der Grinten, J. (2004), *Mind the gap: stappenplan identiteit en imago*. Amsterdam: Boom.
- Hasselt, C. van (2005), *Corporate Real Estate Management in de ziekenhuiszorg*, MSc thesis Faculty of Architecture, Delft University of Technology.
- Huisman, C., Voordt, Th. Van der, Westra, H. (2008), Kunt u ons Lange termijn termijn huisvestingsplan wat strategischer maken? *Facility Management Magazine* 22 nr. 167, February, 61-64.
- Jensen, P.A., Nielsen, K. and Nielsen, S.B. (2008): *Facilities Management Best Practice in the Nordic Countries – 36 cases*. Centre for Facilities Management – Realdania Research. Technical University of Denmark.
- de Jonge, H. (2002), De ontwikkeling van Corporate Real Estate Management, *Real Estate Magazine*, juni, 22, 8-12.
- de Jonge, H., Arkesteijn, M.H., den Heijer, A.C., Vande Putte, H.J.M., de Vries, J.C., van der Zwart, J. (2009), *Designing an Accommodation Strategy (DAS Frame)*. Delft: Faculty of Architecture, Delft University of Technology.
- Joroff, M.L., M. Louargand, S. Lambert, F. Becker (1993), *Strategic management of the fifth resource*, Report no. 49, Industrial Development Research Foundation.
- Kotler (2003), *Principes van marketing*. Academic Service.
- Lindholm, A.L., Gibler, K.M. and Leväinen, K.I. (2006), Modeling the value-adding attributes of real estate to the wealth maximization of the firm. *Journal of Real Estate Research* Vol. 28 no. 4, 445-475.
- Lindholm, A.L. and Leväinen, K. I., (2006), A Framework for identifying and measuring value added by corporate real estate, *Journal of Corporate Real Estate*, 8:1, 38-46.
- van Looveren, A., Pleunis, J. en Voordt, Th. van der (2007), Strategisch managen van de vastgoedportefeuille in de zorg, *FMT Gezondheidszorg* (7) no. 10, 9-11.
- van Loon, S., van der Voordt, D.J.M., en van Liebergen, M. (2006), Form follows identity: het vertalen van corporate image naar huisvestingseisen. *Real Estate Magazine* (9) 46, 46-49.
- van Riel, C.B.M., Balmer, J.M.T. (1997), Corporate Identity: the concept, its measurement and management. *European Journal of Marketing* (31) 5/6, 340-355.
- Stoelinga, P.A. (2007), De waarde van comfort. *TVVL Magazine* 5, 2007, 6-11.
- Tracey, M. Wiersema, M.T.F. (1995) *The Discipline of Market Leaders: Choose Your Customers, Narrow Your Focus, Dominate Your Market*, Perseus Books.
- de Vries, J.C. (2007), *Presteren door vastgoed*. Delft: Eburon. PhD thesis.
- de Vries, J.C. de Jonge, H. de, and Voordt, Th.J.M. van der (2008), Impact of real estate interventons on organisational performance. *Journal of Corporate Real Estate* Vol. 10 no. 3, 208-223.
- van der Zwart, J., Arkesteijn, M.H. and van der Voordt, Th. J.M. (2009), Ways to study Corporate Real Estate Management In Healthcare: an analytical framework. Proceedings of HaCIRIC 2009, 2nd Annual Conference of the Health and Care Infrastructure Research and Innovation Centre, Brighton, UK, 2-3 April 2009.