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Impact of real estate interventions on organisational performance

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Abstract

Background: Real estate is increasingly used as a source of improving the performance of organisations by an improved image, cost reductions, increased employee satisfaction and increased labour productivity. A clear conceptual framework and standardised Key Performance Indicators (KPIs) are needed to understand and monitor the effects of real estate interventions.
Purpose: This paper aims to explore the added value of real estate interventions to organisational performance, theoretically and empirically, including unforeseen positive and negative side-effects.
Methodology: The conceptual framework was based on an extensive literature survey and empirically used in a survey among 47 Institues of Higher Professional Education (IoHPEs) in the Netherlands and additional in-depth interviews at nine Institutes. The effects of real estate interventions were studied by conducting time series analyses of changing organisational performance using several KPIs.
Findings: The study has shown that real estate interventions actually improve organisational performance. However, the effects are not always as positive as expected, nor are they always clearly visible when using the present KPIs for organisational performance. In addition, some effects are temporary.
Practical implications: The conceptual framework and the suggested KPIs can be used to support managers in effectively steering on organisational performance by means of real estate interventions, formulating targets in a SMART way, setting priorities with regard to their organisation's main objectives, and monitoring the effects.
Originality: The conceptual framework integrates know-how from various studies and fields and was empirically used in educational settings.

Keywords: Added value, corporate performance, corporate real estate, real estate interventions, KPIs.
Classification: Study paper.

Introduction

In general, organisations invest in real estate because they expect the costs will be offset by improved corporate performance or lower running costs. By means of empirical studies (Nourse and Roulac, 1993; de Jonge *et al.*, 1996, Krumm, 1999), serious attempts have been made to determine the effects of real estate interventions. However, all studies into the impact of real estate on organisational performance are confronted with three major barriers. In the first place, there is not a standard definition of organisational performance that covers all relevant aspects of organisational performance. In the second place, the impact of real estate cannot be isolated from the impact of other variables such as Capital, Technology, Human Resources or ICT. Real estate

interventions are usually implemented together with changes in one or more other corporate assets, in a dynamic context with demography, economy, social issues, time spirit, policy and legislation. In addition, real estate may have a direct or indirect impact on performance. In the third place, it is difficult to quantify the effects of real estate interventions since appropriate standard KPIs are not used in business administration. As a consequence, it is not always possible to make comparisons between organisations. Since organisations predominantly aim for continuity and a positive balance between costs and benefits, financial results traditionally were – and still are – the main performance indicator. Organisations are judged by their bottom line. However, performance includes several other relevant issues. This study defines organisational performance as the fulfilment of objectives from the perspective of various stakeholders.

In combination with the input / output perspective on organisations, a conceptual framework was designed with assumed relations between real estate and corporate performance. This model was further explored by conducting a comprehensive study at various IoHPEs in the Netherlands. In addition, current KPIs were analysed and evaluated, which resulted in a new set of KPIs. In search of the effects that real estate interventions have on organisational performance, all cases were analysed by using the same set of KPIs.

TOWARDS A CONCEPTUAL FRAMEWORK

Real estate performance

People and organisations need real estate to accommodate their activities and to express who they are and what they stand for. Over time, accommodation needs change and real estate deteriorates. Corporate real estate management aims to prevent the resulting mismatch and to supply sufficient accommodation at the required location, time, quality level and cost. Corporate real estate management is defined as "the range of activities undertaken to attune corporate real estate to corporate performance as much as possible" (De Jonge, 2002; Dewulf *et al.*, 2000). This means that corporate real estate does not only have to meet the technical, functional and financial requirements of an organisation, but also has to contribute to the overall performance of that organisation. However, for benchmarking purposes, the performance of real estate portfolios is predominantly measured by input indicators such as operating costs, costs per square metre or maintenance cost (Arthur Andersen & Co., NACORE International and CCIM, 1993; Duckworth, 1993; Nourse, 1994 in Lindholm, 2006, Den Heijer and De Vries, 2004). This information is insufficient to make strategic decisions, since it merely focuses on efficiency and not on effectiveness. As a consequence, real estate is usually not properly used as a tool to improve organisational performance. The quality of the real estate portfolio is rarely an issue. Output indicators measuring the value that real estate adds to the primary processes and the organisational objectives are usually not referred to at all. Over the past decade, several authors analysed real estate interventions in scientific studies (Lindholm *et al.*, 2005; Rouse, 2004; Gensler, 2003, Van der Voordt, 2003). Some studies have shown that a more expensive building may also be a more effective or productive one (Den Heijer and De Vries, 2004; Lindholm, 2006, Price, 2006). By combining the results of these studies, nine distinct real estate strategies were traced, which may have an either direct or indirect impact on corporate performance (Figure 1). Direct effects include reduced costs as a result of desk sharing or cavity wall insulation. Indirect effects include less absenteeism from the workplace due to improved indoor air quality, or reduced costs in connection with staff turnover due to increased employee satisfaction by having a well designed building and an attractive interior design.

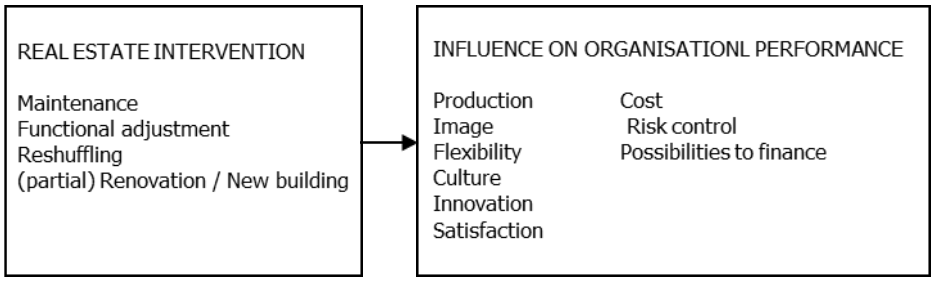

Figure 1: *Real estate interventions and possible effects on organisational performance*

Organisational performance

In management theory, an organisation is perceived to be a unit producing a desired output with a certain input. In addition to real estate, organisations deploy four other assets to achieve their objectives; Human Resources, Technology, Information, and Capital. Output is determined by the resources available and organisational characteristics such as the organisation's culture, structure, leadership or objectives. The task of management is to make appropriate choices while making use of insufficient assets. Nowadays, many more ratios are used in addition to profit to express organisational performance, such as organisational growth, turnover, or market share. Intangible factors, such as image or employee satisfaction, are increasingly considered relevant as organisations increasingly set social targets as well, while they continue to strive for continuity.
Tangen (2005) reviewed many academic and professional journals of the past 30 years for publications on organisational performance. He came to the conclusion that performance is a compound variable embodying competitive advantage or excellence, profitability and productivity. Organisational performance is therefore influenced by context variables such as legislation, market developments, social trends or demographic developments. The assessment of performance variables depends on the position and interests of the various stakeholders.

This study uses the three performance aspects referred to by Tangen and the above input/output perspective to build up a conceptual model (figure 2). In this context, *profitability* is defined as the difference between costs and benefits, *competitive advantage* as (developments in) market share, and *productivity* as the ratio of input/output. Productivity is the most difficult aspect to quantify, especially if the organisation concerned is a centre of expertise, a service provider or an educational institute. The hypothesis in this context is that changing the input (assets) has an impact on the output (performance). The input/output chain changes as a result of the organisation's external context, e.g. by local and global economy, market trends, demographic developments or legislation.

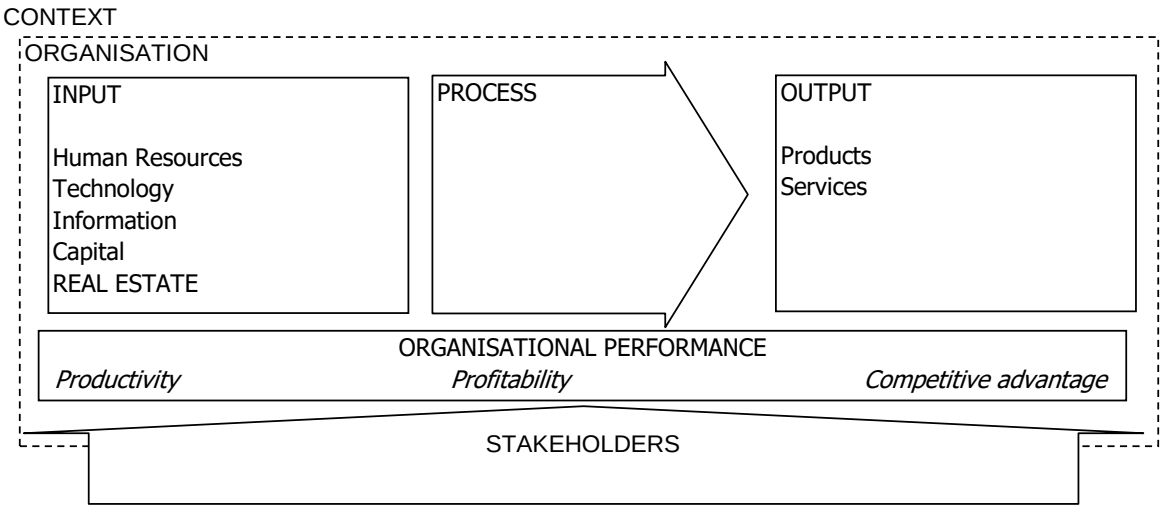

Figure 2: Theoretical model of organisations used in present study

The link between real estate performance and organisational performance

Combining Figure 1 and Figure 2 has resulted in the conceptual framework as shown in Figure 3. It shows that organisational characteristics and external context have an impact on the chain of input/process/output, and focuses on the impact of real estate interventions on organisational performance as perceived by various stakeholders. The conceptual framework shows the cause-and-effect relationships, but it does not provide quantitative values of the effects of interventions or insight into the interrelationship between interventions. In addition, the model is descriptive rather than predictive. Consequently, the model has been further explored by quantitatively monitoring the KPIs of IoHPEs in connection with real estate interventions.

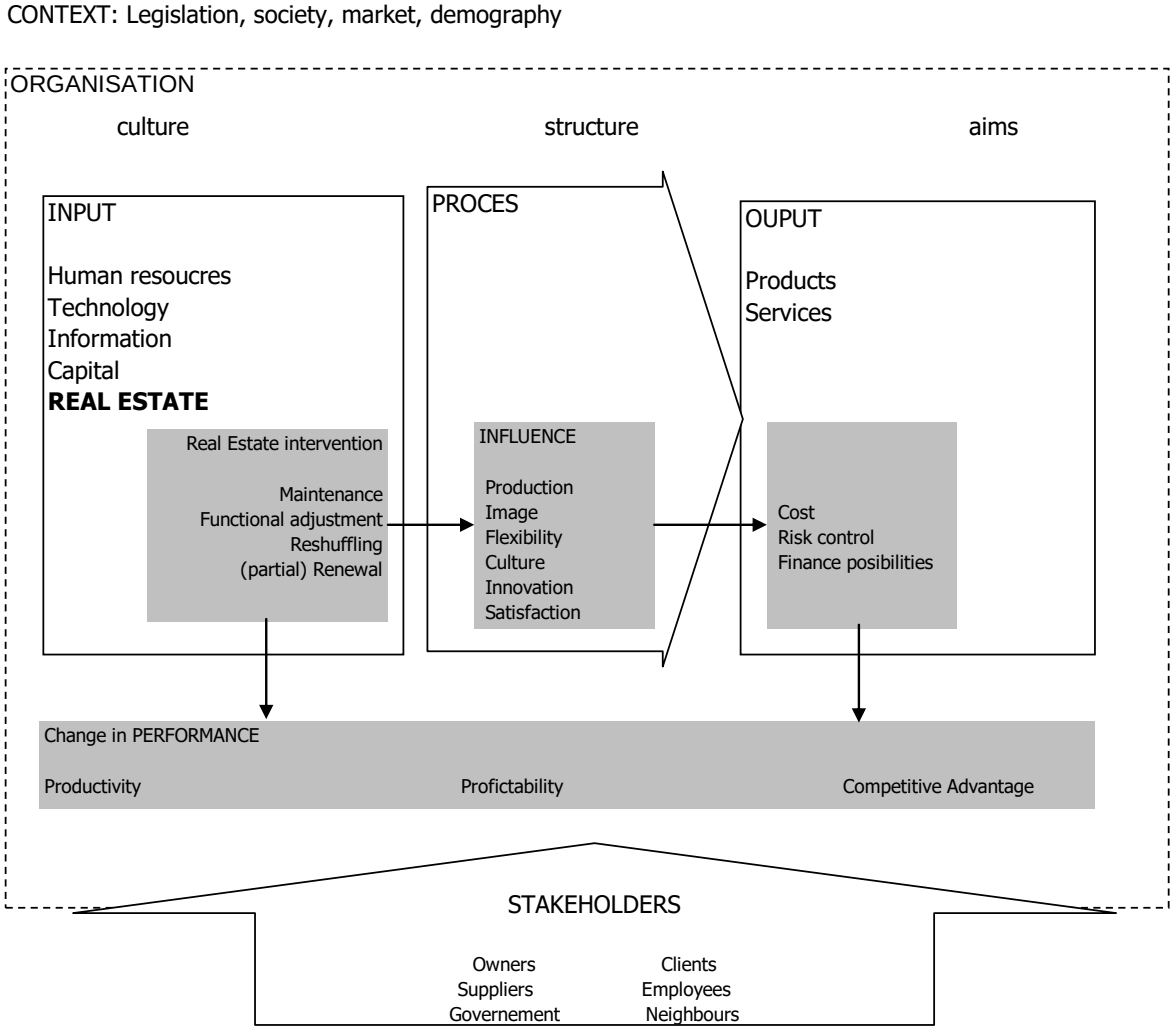

Figure 3: Conceptual framework to study effects of real estate interventions on organisational performance

I

N SEARCH OF EMPIRICAL EVIDENCE

Study objects: Institues of Higher Professional Education in the Netherlands

To minimise contextual multiplicity, organisations from the same sector – Institutes of Higher Professional Education (IoHPE) – were studied. The objectives of IoHPEs are more or less the same; to have an appropriate number of students graduate in various professional fields. Their market development is also essentially the same and they are all subject to the same regulatory requirements. A comprehensive survey was conducted among all 47 IoHPEs of the Netherlands (De Vries, 2004, 2007). table 1 shows several quantitative changes in the 1997-2002 period. Several trends may be derived from the outcome of the survey: (1) an increase in the number of students and (2) an even sharper increase in real estate costs, (3) a major decrease in the number of institutes, (4) a minor decrease in floor space available and (5) a decrease in the total number of buildings. Not only real estate objectives but also real estate management changed in the period under review.

	1997	**2002**	**Change**
Total number of students	191,135	221,021	+ 16%
Total number of institutes	29	17	- 41%
M² of floor space available	1,459,000	1,441,000	- 2%
Total number of buildings	246	204	- 18%
Real estate costs (€ 1,000)	114,093	152,319	+ 34%

table 1: Core data of Dutch IoHPEs (De Vries, 2004 and 2007).
There were 47 institutes in total, of which 17 responded to the questionnaire of the survey, representing 70% of the total number of students at all IoHPEs.

Study methods

The study started off by conducting a literature survey and collecting data on all 47 IoHPEs by reading annual reports, examining websites and sending out a questionnaire. Of all 47 institutes, 17 institutes responded to the questionnaire, representing 70% of the total number of students at all IoHPEs. The questionnaires were supplemented by in-depth interviews with real estate managers and corporate managers of nine institutes so as to collect qualitative data on the objectives of real estate interventions and the extent to which they are realised (Figure 4).

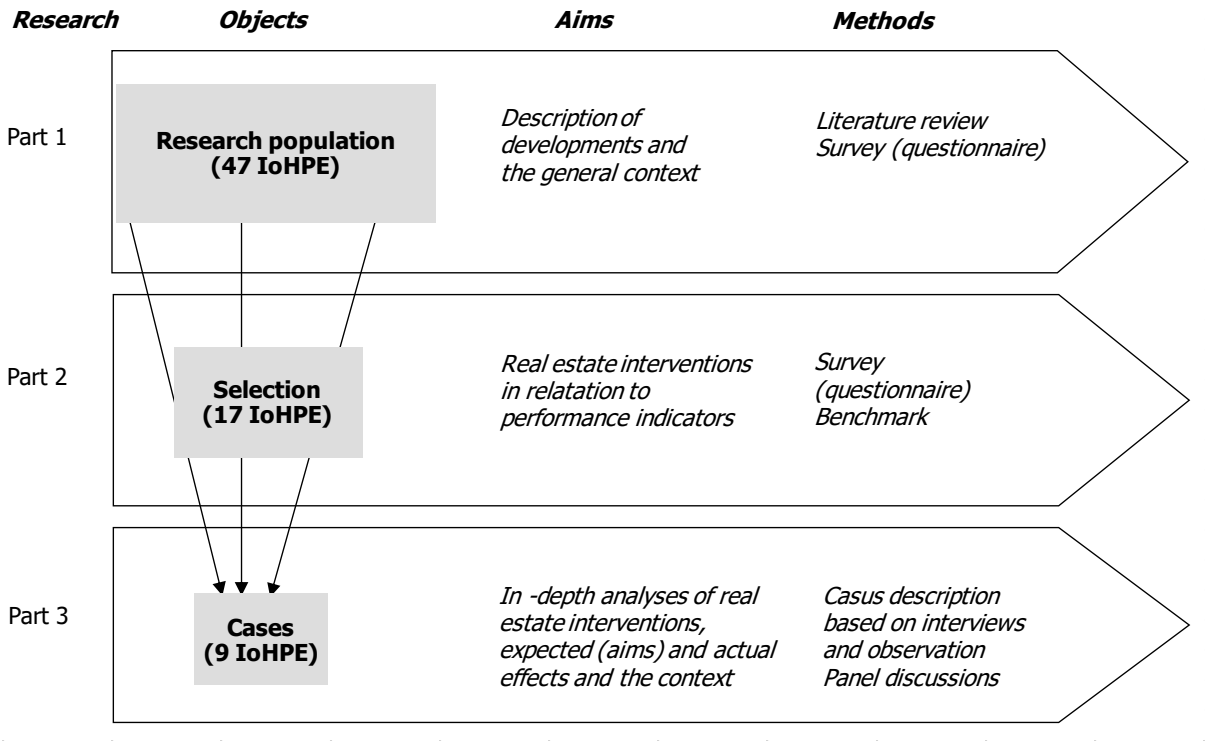

Figure 4: Overview of study stages

The first stage of the study focused on a description of the IoHPE sector and various context developments. In the second stage, changes in organisational performance – measured by using various KPIs – were linked to real estate interventions in search for patterns, but without making analyses or giving in-depth explanations. This "black box" approach was conducted for the 17 institutes that had responded to the questionnaire. In addition, use was made of public data (www.hbo-raad.nl, www.cfi.nl). Changes in context variables, organisational performance and real estate interventions in the 1997-2004 period were recorded. In the third stage of the study, nine IoHPEs were described and cross-case analysed in greater detail. This "in the box" approach involved making detailed descriptions of (changes in) all variables of the conceptual model. During a workshop, the study findings were discussed with IoHPE experts, including real estate managers that were interviewed before.

Study findings

The indicators used by the HPE sector (Table 2) differ from standard accountancy indictors and reflect the quantitative aggregated performance of the educational sector. Data are published annually in "*Hogescholen* management information" (HMI) from four perspectives: Finance, Employees, Students and Education. Real Estate is not a separate issue.

	IoHPE	Accountancy standard	Both
Finance			
solvency	X	X	X
liquidity ratio	X		
yield	X		
return on investment		X	
return on capital		X	
quick ratio		X	
acid test		X	
gains / turnover		X	
gains / share		X	
overheads / total costs	X	X	X
business costs	x	x	x
real estate costs	x		
Education			
junction with employment field	X		
satisfaction / graduates who would make the same choice	X		
Personnel			
costs	X		
number of personnel	X		
employees (age, salary)	X	X	X
absence due to ilness		X	
turnover		X	
temporary contract		X	
eductation budgets		X	
Students			
market share of enrolment	X	X	X
enrolment	X		
registered students	X		
graduates	X		
productivity			
Other			
energy use		X	
waste products		X	
emission		X	

Table 2: Indicators used by IoHPEs and standard accountancy indicators

FFigure 5 positions the indicators used in the conceptual model. Cost indicators are placed at the Input side, because in that stage management has to decide whether or not to deploy resources available. The total number of graduates is positioned at the Output side. Positioning "Enrolment" is more complex. IoHPEs regard students as clients, but enrolment is also an important indicator of "competitive advantage" and (indirectly) of the appeal of a particular IoHPE and its education (staff, curriculum and such like). Therefore "registered students" and "graduates" are considered output variables, whereas "Market share of enrolment" is considered a Performance indicator. IoHPEs do not use clear indicators of the quality of education. "Study efficiency", "Junction with employment field" and "Graduates that would make the same choice for education" may be used as indirect indictors of the quality of education. However, "Study efficiency" is not included in the conceptual model since it is not really a distinctive indicator. According to the decision-makers interviewed, the financial position of students and pressure from their parents and friends have a much larger impact on the time they spend on studying.

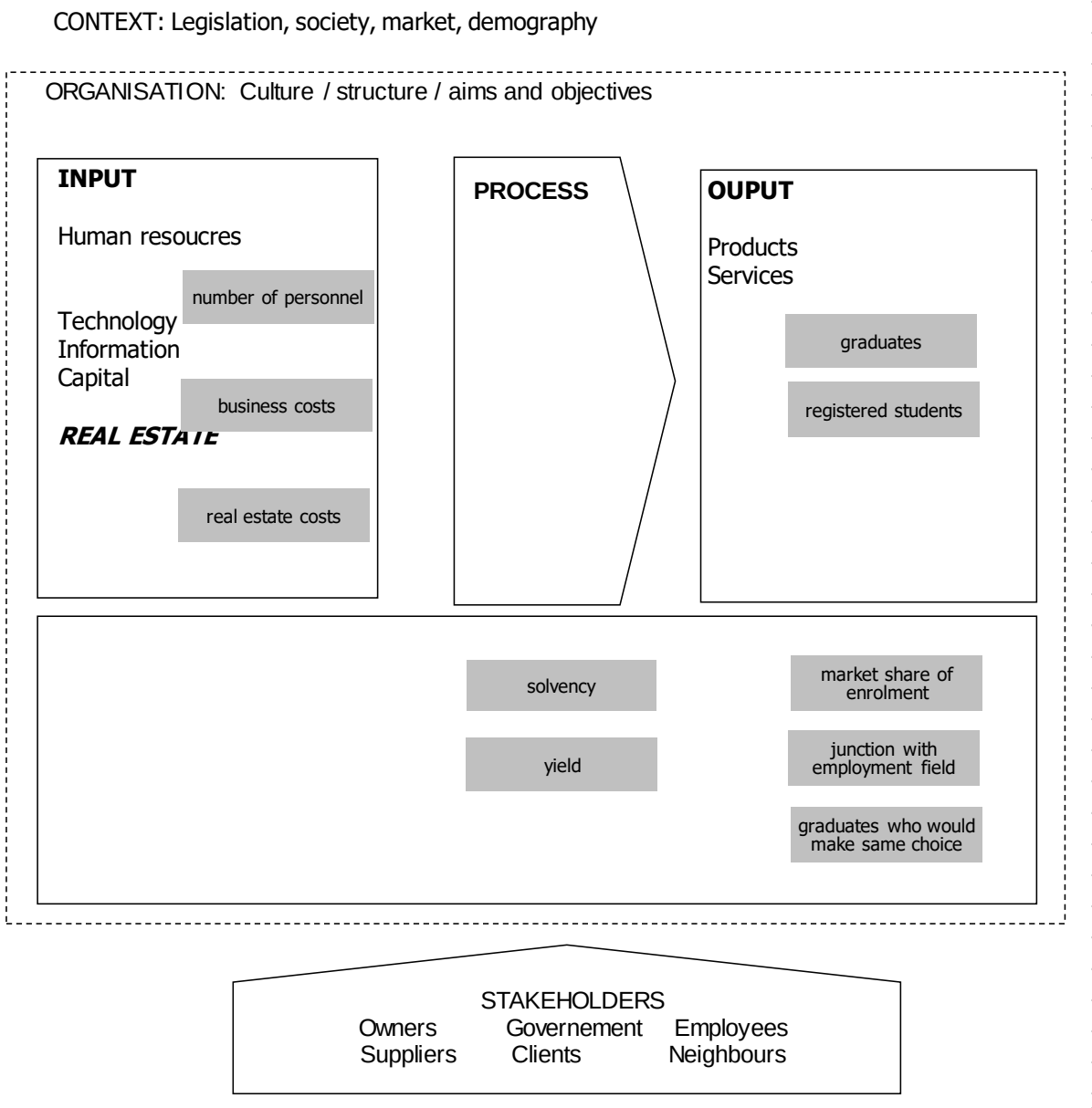

Figure 5: *IoHPE performance indicators in the conceptual model*

The effects of real estate interventions on organisational performance were studied by analysing the fluctuations in KPIs set out in time, type and size of real estate interventions over the same period (1997-2004). The real estate interventions were classified in (1) maintenance, (2) functional adjustments, (3) reshuffling of the portfolio with partial renovation, and (4) renovation (table 3). Two institutes substantially changed their real estate policy in said period. These IoHPEs were therefore considered as two different cases; <2000 en >2000.

Real estate interventions	number
Renovation	2
Reshuffling with partial renovation	3
Functional adjustment	4
Maintenance: Regular/ preventive	7
Necessary / corrective	4
Total	19

table 3: Real estate interventions at 17 IoHPEs, 1997-2002 (De Vries, 2004)

Black box analyses: No clear effects

Figure 6 shows the fluctuations in "market share of enrolment" in time. The fluctuations do not show a consistent picture of the impact that real estate has on student enrolment. The partial renovation of Hogeschool INHOLLAND (1) seems to have led to a short-term increase in student enrolment. But this increase already started before the new building came into use in 2000. The increase continued until 2001. In the following period, enrolment decreased, and in 2003 it was even lower than before the renovation. Functional adjustments of Fontys Hogescholen (2) seem to go hand in hand with increased enrolment. After two years, the increase slowed down, but the present level is still higher than before the adjustments. Partial renovation of Hogeschool Arnhem & Nijmegen (HAN, 3a, b en c) seems to coincide with increased enrolment. Enrolment increased for a period of one year after the first intervention. After the second intervention, we see a more continuous increase. Avans Hogeschool (4a en 4b) and HES Amsterdam (5) postponed maintaining their buildings while they were waiting for a renovation. In that period, enrolment also decreased, whereas in the same period Hogeschool INHOLLAND showed an increasing market share. The increasing market share of Saxion (6) may be explained by changes in its real estate policy, i.e. forming a real estate department and formulating a new real estate strategy. The dotted line of Hogeschool Windesheim (7) shows an increasing enrolment, which can probably be explained by the merger with VU Amsterdam, since there were no other changes at that time.
Similar time series analyses were carried out for other KPIs in the IoHPE sector. It appears that renovating and constructing new buildings coincide with a decreasing "solvency" and an increasing "market share of student enrolment". The same applies to clearly visible functional adjustments. The fluctuation appeared to be temporary.

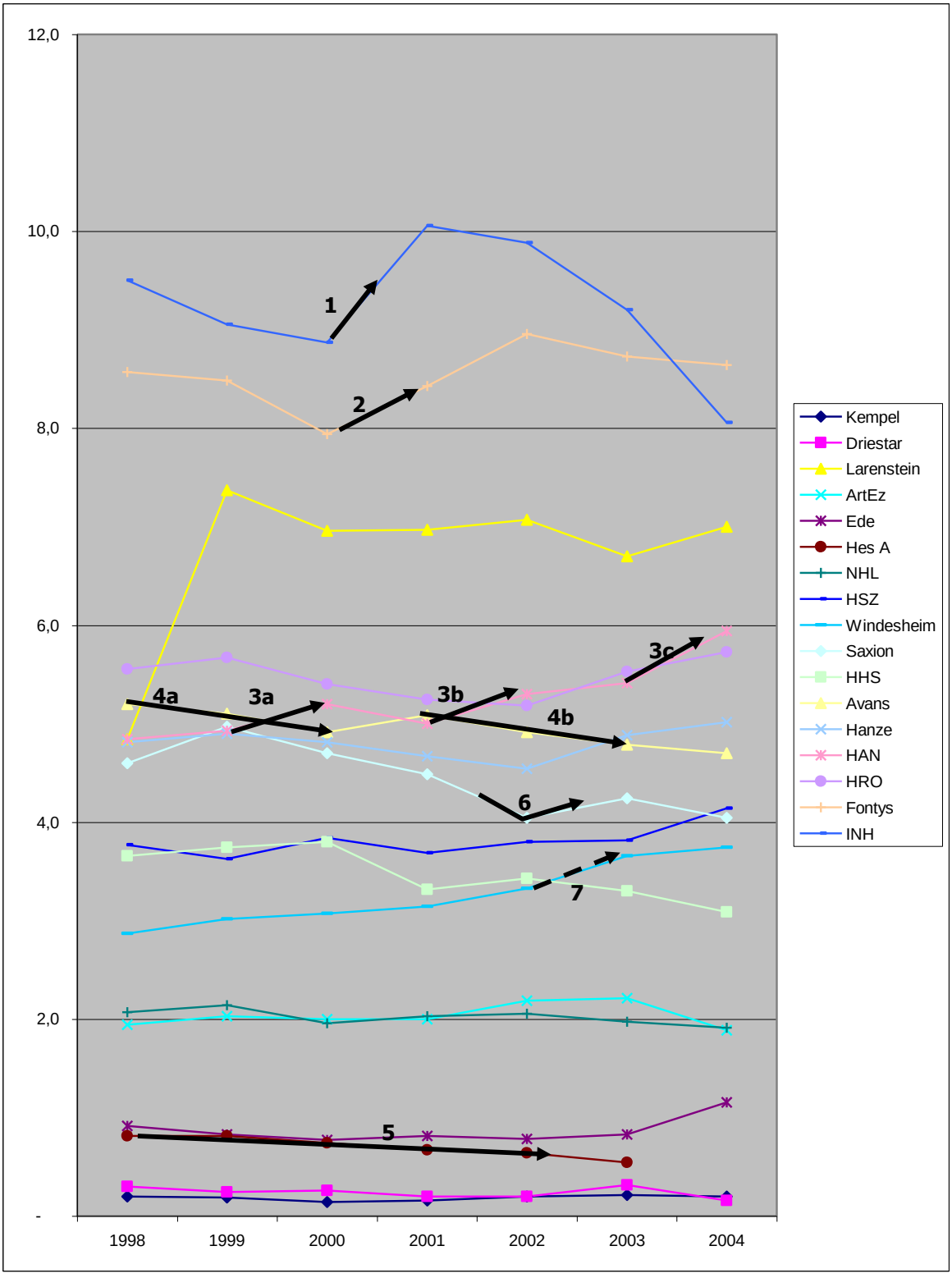

Figure 6: *Development of market share of enrolment (1997-2004)*

Table 4 shows the main study findings of this stage of the study. Again, there were no clear relationships between type and level of real estate interventions, on the one hand, and changes in organisational performance with regard to productivity, profitability and competitive change, on the other. Real estate interventions are not strongly linked to organisational objectives and changes in organisational performance are not caused exclusively by real estate interventions. In case of a complete renovation, positive effects are temporary. Not all objectives were achieved. These findings are summarised in table 5. The difference of the effects of comparable real estate interventions may be explained by the different starting points of the real estate portfolio, the inconsistency between real estate interventions and the policy of individual IoHPEs, as well as organisational culture.

	Productivity		Profitability		Competitive advantage	REAL ESTATE				
Development										
	enrollment / registerd students	registerd students / real estate costs	rentability (Yield)	solvency	Market share of enrolment	change in relation tot total portfolio				portfolio amount 1997
						%	typology	year	typology intervention	m2 bvo
Windesheim	i	d	d	c	i	1	little	-	M reg	81.553
Driestar	f	c	f	f	c	-	little	-	M reg	7.466
Ede	i	c	f	f	c	-	little	-	M reg	13.351
Artez	f	c	i	c	c	11	little	-	M reg	45.360
Larenstein	f	c	i	c	c	-	little	-	M cor	22.800
Avans	d	d	f	f	f	9	little	-	M cor	140.765
NHL	i	c	f	f	c	10	little	-	M cor	75.089
HES A	f	c	f	f	d	20	moyen	-	M cor	30.136
Saxion	d	d	i	f	d	8	little	1997 and after 2000	M / FA	112.055
HRO	i	d	i	c	f	30	moyen	after 2000	M / FA	155.413
Hanze	f	d	f	c	d	22	moyen	1998	P renewal	125.421
INH	d	i	d	f	f	45	moyen	2001	P renewal	158.230
HAN	i	d	i	c	i	60	large	-	P renewal	138.928
HSZ	d	d	i	c	c	100	large	1998	renewal	117.419
HHS	d	d	d	c	d	100	large	1997	renewal	114.811
Fontys	i	i	i	c	f	21	moyen	after 2000	FA	260.470
Kempel	f	c	f	f	c	37	moyen	-	FA	3.208

i = finally increasing
f = fluctuating
d = finally decreasing
c = constant
renewal = total renewal
P renewal = partial renewal
M cor = necessary maintenance
M reg = regular maintenance
FA = functional adjustment

Table 4: Development of KPIs combined with real estate interventions

enrollment ➔ enrolment
registerd ➔ registered
in relation tot ➔ in relation to
moyen ➔ average
finally increasing ➔ eventually increasing
finally decreasing ➔ eventually decreasing
renewal ➔ renovation [meerdere keren]
total renewal ➔ total renovation
partial renewal ➔ partial renovation

IoHPE domains	Indicator	Effects relating to real estate
Finance	Solvency	No clear change
	Yield	No visible effects
	Overheads / total costs	No visible effects
Staff	Number of employees	No visible effects
	Registered students per FTE	Increases following increase in the number of registered students
Students	Number of registered students	Slight increase
	Market share of enrolment	Temporary increase following visible intervention; decrease if maintenance is postponed
Education	Junction with employment field	No visible effects
	Graduates who would make the same choice	No visible effects

table 5: Changes in performance indicators of IoHPE during and after interventions relating to real estate

Opening the black box: a closer look into the mechanisms

As stated earlier, changes in "market share" and other performance indicators cannot exclusively be linked to real estate interventions since other measures may apply as well. For instance, measures regarding the financial management of an IoHPE would also result in solvency changes. Therefore, clear conclusions as to the effects of real estate interventions on organisational performance cannot be drawn as yet. We therefore tried to open the black box by conducting in-depth analyses of the type and scope of real estate interventions and all other measures taken by an organisation. As an example of the in-depth case studies, we will discuss the Avans Hogeschool case.

Avans hogeschool is the result of a merger between two regional IoHPEs, both with a history of earlier mergers. Students, curriculums and culture vary rather significantly between the various locations. At the time of the present study, the merger had only taken place at organisational top level and not with respect to administrative activities, real estate or real estate management.

	Type	**Sectors of education**	**Registered students**		**REAL ESTATE m² bs x 1,000**		**Portfolio**	
			1997	2004	1997	2004	Places of residence	Type
AVANS hogescholen	developing from regional to student orientated	all except farming	15,800	18,000	141	133	3	Decentralised, equally

table 6: Core data of Avans hogeschool (2004)

Real estate management was organised in a traditional way, with a strong focus on costs. The main real estate intervention in the study period was postponing maintenance while waiting for a complete renovation. In the period under review, the total number of students at Avans increased less than the national average and Avans'

"market share of enrolment" also decreased. Graduates were dissatisfied with their degree programme. A part of the graduates started a degree elsewhere afterwards. The loss of earnings following the decreased number of students made Avans' situation rather vulnerable. Employees were also dissatisfied because of the unsure situation with respect to the mergers. As a consequence, the deteriorating quality of Avans' obsolete accommodations, employees and students became increasingly critical and the image of the IoHPE as perceived by potential students worsened. And, on top of that, postponing maintenance did not result in a reduction of real estate costs. The objective of increasing profitability by cost savings was counteracted by the decline in student enrolment. Total income decreased and, consequently, profitability also decreased. In this case, real estate was an obstacle in realising organisational targets. Postponing maintenance to reduce running costs did not support the change in culture and employee satisfaction aimed for. The school's positive image strived for was not reflected in its educational accommodation.

In 2002, Avans started formulating a new vision on the accommodation of the future. A master plan was prepared to tackle the shortage of accommodation in the late 1990s, from a perspective of both quantity and quality. Nonetheless, a clear line, consistency and a clear vision were lacking. The plan was merely an aggregate of wishes. A new vision therefore arose on education and on the way in which to facilitate primary processes. Spearheads were improving employee professionalism, applying modern information and communication technology, innovation, and strategic alliances with other national and international organisations. The Avans management wanted to express these matters in new real estate so as to improve their competitive advantage. At the end of 2006, the building in Tilburg was entirely renovated and all buildings scattered across Breda were accommodated in a new main building (Van der Voordt and Van der Klooster, 2008)

DISCUSSION

The study findings have shown that a black box approach is insufficient to obtain a better understanding of the complex relationships between real estate interventions and organisational performance. Context variables and changing policies such as mergers may also lead to changes in market share and the number of registered students. The effects of a specific measure may be strengthened or negated by the effects of other interventions. The indicators used only show the consolidated results of all measures together. The relationships between particular real estate interventions and different aspects of organisational performance are even more complicated than was assumed earlier. In fact, opening the black box by conducting in-depth analyses of all interventions and all changes of organisational performance improved our understanding. The cases have clearly shown the impact of contextual changes, organisational behaviour and (incorrect) decision-making with regard to real estate interventions so as to achieve organisational objectives. Postponing real estate maintenance to improve financial performance actually resulted in a decrease in staff motivation, student satisfaction and attraction of students, which in its turn resulted in a decrease in income and a negative performance. Concentrating staff and activities does not necessarily create synergy. Excluding occupancy costs and benefits in decision-making may lead to unpleasant financial surprises. The impact of the appeal of a new building on student enrolment may be short lived. A complementary in-depth study may provide additional insights into the way in which organisational objectives can be achieved by bringing real estate decisions in line with organisational policy and organisational context.

Conclusion

The study data have brought about a better understanding of the way in which real estate interventions may lead to improved organisational performance, with a special focus on Dutch IoHPEs. As a consequence of the changing general context, real estate plays a more significant role in the management of IoHPEs. The collected data have shown that real estate decisions may have important consequences for an organisation. Competitive advantage of real estate can be connected to profitability and productivity in a positive or negative way. In combination with the level of financial resources and the scale of real estate portfolios, this may have a significant impact on the continuity of an organisation. Real estate interventions are to be tailor-made to suit organisations, their objectives and the people concerned. The role of real estate is expected to receive more consideration in the future, as well as its impact on costs, benefits and side-effects and, as such, on the continuity of organisations.

The conceptual model and the KPIs explored may be used to substantiate decisions on (priorities in) real estate interventions. Reliable and valid data have to be collected continuously to improve the body of knowledge of our profession. The data is to be made public so as to monitor trends, cause-and-effect relationships, interactions with organisational measures, changing contexts, real estate interventions, as well as for benchmarking purposes. In addition to quantitative data, there is also a need for qualitative data on organisational objectives, student perceptions and employee satisfaction.

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