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## Measuring the Added Value of Workplace Change: Comparison between Theory and Practice

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### ABSTRACT

**Purpose:** Worldwide organisations have introduced more flexibility in place, time and ways of working. In order to be able to define the added value of workplace change, a clear performance measurement system is needed to measure organisational performance in connection to real estate before and after the change. This paper compares various performance measurement systems from the literature with current performance management in practice in search of opportunities for improvement and prioritization.

**Methodology:** In addition to a review of literature, three case studies were conducted, two in Thailand and one in the Netherlands. Special attention is paid to appraisal of change by the end users i.e. employee satisfaction and perceived productivity support .

**Findings:** Many performance criteria and KPIs from literature are used in practice. However, apart from the Balanced Scorecard no other performance measurement system from literature is literally applied. Regarding most issues, none of the organisations conducted a sound comparison of the impact of their real estate on organisational performance before and after the change. In one case only both ex ante and ex post data were collected about the appraisal of change by the end users. Employees' appraisals showed to be linked to the location of the building, the office concept, the experience value of the exterior and interior design, and technical equipment.

**Practical implications:** The proposed performance measures can be used as a reference frame for value adding management of facilities. Based on the findings a step-by-step procedure has been developed to facilitate the selection of prioritized key performance indicators.

**Research limitations:** The number of cases is limited. Additional case studies in depth are needed to get a wider picture of practice. Besides, still much work has to be done to operationalize all performance criteria.

**Originality/value:** This research connects the worlds of performance measurement and added value of workplace change in two different contexts

**Keywords:** Workplace change, performance measurement, adding value management, stakeholders

## 1. INTRODUCTION

Since the mid-nineties all over the world companies have implemented new ways of working supported by innovative workplace design (Becker, 1993; Aronoff and Kaplan, 1995; Worthington, 1997; Duffy and Powell, 1997; Van der Voordt, 2003; Becker, 2004). Drivers to change include both a lower need of floor space and cost reduction (focus on efficiency) and better collaboration, increased autonomy in how, where and when to work, improved productivity and creating an image of being progressive in order to attract and retain talented knowledge workers (focus on effectiveness) (Van der Voordt et al., 2012). In order to be able to define the added value of workplace change it has to be clear what added value actually means, which values are or should be involved, and how to measure the impact of workplace change on the organisation and its employees. This paper starts with current definitions of added value (section 2). Then it explores which performance criteria and indicators come to the fore in the literature (section 3) and which ones are being used in three workplace change practices (section 4). The comparison of possible and applied performance criteria aims to provide a reference frame for measuring the added value of workplace change. The paper ends with reflections on the findings (section 5) and conclusions and recommendations for further research and suggestions for improvement of measuring the added value of workplace change.

## 2. DEFINITIONS AND TYPES OF ADDED VALUE

Jensen et al. (2012) defined the added value of Facilities Management (FM) and Corporate Real Estate Management (CREM) as the trade-off between the benefits of FM and CREM interventions and the costs and risks to achieve these benefits. De Vries et al. (2008) defined the added value of corporate real estate as its contribution to organisational performance and the attainment of organisational goals from the perspective of various stakeholders. This definition links added value explicitly to better performance. Based on a review of the contributions by authors from different countries, different disciplines and different sectors (offices, universities, health care and industry), Jensen et al. (2012) detected six different types of added value:

- 1) Use value: quality in relation to the needs and preferences of the end users;
- 2) Customer value: trade-off between benefits and costs for the customers or consumers;
- 3) Economic, financial or exchange value: the economic trade-off between costs and benefits;
- 4) Social value: connecting people by supporting social interaction, identity and civic pride;
- 5) Environmental value: environmental impact of FM, Green FM;
- 6) Relationship value e.g. getting high-quality services or experiencing a special treatment.

Other researchers discuss different values as well, e.g. productivity, profitability and competitive advantage (De Vries et al., 2008) and sustainability (Den Heijer, 2011). The value types can be elaborated furthermore. For instance, competitive advantage might benefit from stimulating creativity and innovation and physical expressions of brand values (Khanna et al., 2013). Interviews with practitioners showed that in practice, too, various value types are included in FM and CREM decision making, dependent of the vision, mission and life cycle of the company and contextual factors such as the labour market and economics (Van der Voordt & Jensen, 2014). Organisations have to cope with both the pressure of cost reduction and efficiency in order to succeed in a highly competitive business environment, and the need for quality, speed of delivery, flexibility, creativity, productivity and distinctiveness.

### 3. PERFORMANCE MEASUREMENT ACCORDING TO THE LITERATURE

#### 3.1 Purpose of performance measurement

Performance measurement represents the yardsticks which gauge how well people have done and which motivate them to achieve higher targets (Zairi, 1994). It provides the inspiration to achieve superior levels of effectiveness and competitiveness. It focuses on the means and results or processes and outcomes (Zairi, 1994). Performance measurement can also be described as an important aid for making judgments and decisions. Performance measurement can help managers to answer five strategically important questions: 1) where have we been; 2) where are we now; 3) where do we want to go; 4) how are we going to get there; and 5) how will we know that we got there (Lebas, 1995). Sinclair and Zairi (1995) provided a list of seven topics to emphasize the importance and need for performance measurements. Performance measurement:

- enhances improvement
- can ensure that managers adopt a long-term perspective
- makes communication more precise ('say it in numbers')
- helps an organisation to allocate scarce resources to most attractive improvement activities
- is central to the operation of an effective and efficient planning, control, or evaluation system
- can affect the motivation of individuals by challenging but achievable targets and encourage right organisation behaviour
- can support management initiatives including Total Quality Management and managing change

Parker (2000) mentioned similar and additional reasons such as:

- identify success
- identify whether the organisation meets customer requirements
- understand their processes (to confirm what they know or to reveal what they do not know)
- identify where problems, bottlenecks and waste exists and where improvements are necessary
- ensure that decisions are based on facts, not supposition, emotion or intuition
- show if the improvements planned, actually happened

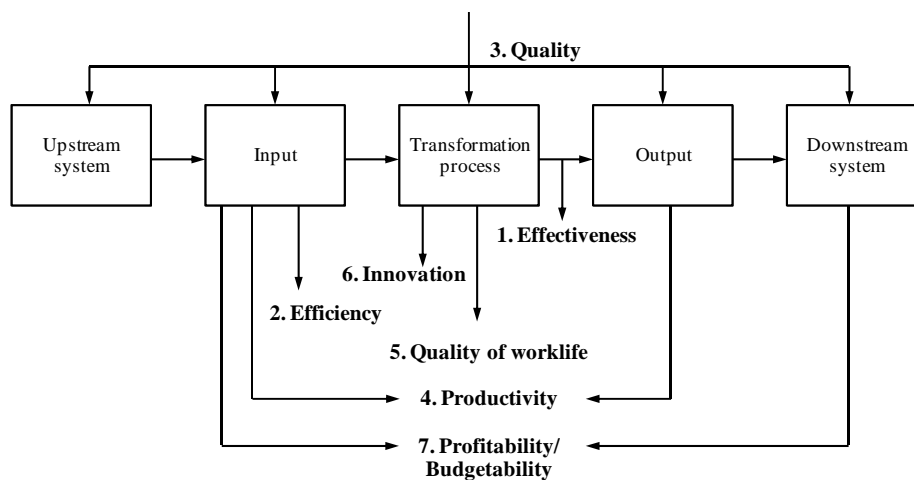
#### 2.2 Performance measurement frameworks and indicators

Many authors have reflected on performance measurement, performance areas and performance indicators and have tried to link performance to concepts such as quality, effectiveness and efficiency. This has resulted in a huge number of conceptual frameworks and measurement systems such as the performance measurement matrix of Keegan et al. (1989), the Balanced Scorecard (BSC) developed by Kaplan & Norton (1992), the Strategy Map developed by the same authors (Kaplan & Norton, 2004), the Performance Pyramid of Cross & Lynch (1992), the Performance Prism of Neely et al. (2001) and the Triple-P model developed by Tangen (2005). According to the well-known BSC organisational performance ought to be evaluated from four perspectives: 1) Financial: profitability, revenue, sales growth; 2) Customer: customer retention, customer satisfaction, market research; 3) Internal business processes: processes to meet or exceed customer expectation; and 4) Learning and growth: how to grow and meet new challenges.

Sink and Tuttle (1989) identified seven performance criteria that are interrelated (Figure 1):

- *Effectiveness*: the degree to which an organization accomplishes what it set out to accomplish, usually expressed as a ratio of actual output to expected output;
- *Efficiency*: a ratio of resources expected to be consumed to resources actually consumed;
- *Quality*: the assurance of quality at five checkpoints: 1) upstream systems, 2) inputs, 3) transformation value adding process, 4) outputs, 5) downstream systems;
- *Productivity*: relationships between outputs and resources consumed;
- *Quality of work life*: feelings of workforces on key factors such as safety, compensation, pay;
- *Innovation*, a key element in sustaining and improving performance; and
- *Profitability*, representing the relationships between revenue and cost.

Figure 1: Interrelationship between seven performance criteria (Sink and Tuttle, 1989)



Bradley (2002) classified performance measures in six perspectives of business performance according to the Balanced ScoreCard (BSC) concept:

1. Stakeholder perception (customer perspective);
2. Financial health (financial perspective);
3. Organisational development (internal business process perspective);
4. Productivity (learning and growth perspective);
5. Environmental responsibility (internal business process perspective); and
6. Cost efficiency (financial perspective).

His six perspectives can be linked to the various types of added value that have been presented by various authors, see Table 1. As such the performance criteria can also be viewed as value dimensions. For instance performance measures related to productivity such as health, safety and well-being can be considered as use value. Performance measures of environmental responsibility can be connected to environmental value.

Table 1: Comparison of performance criteria according to Bradley (2002) with various lists of added values

Bradley (2002)	Nourse and Roulac (1993)	De Jonge (1996)	Lindholm & Gibler (2005); Lindholm (2008)	Van Meel et al. (2010)	Den Heijer (2011)	Van der Zwart and Van der Voordt (2013)	Jensen et al. (2012)
1.Stakeholder perception (employee satisfaction)	Promoting HRM objectives	-	Increasing employee satisfaction	Attracting and retaining talented staff	Supporting user activities	Increasing user satisfaction	Satisfaction
					Increasing user satisfaction		
					Improving quality of place		
2.Financial health	Capturing real estate value creation of business	Increasing of value	Increasing the value of assets	-	Increasing real restate value	Improving finance position	-
3.Organisational development	Flexibility	Increasing of flexibility	Increasing flexibility	Increasing flexibility	Increasing flexibility	Improving flexibility	Adaptation
	Facilitating managerial process and knowledge work	Changing culture	-	Encouraging interaction	Supporting culture	Improving culture	Culture
				Supporting cultural change	Stimulating collaboration		
	Promoting marketing message Promoting sales & selling process	PR and marketing	Promoting marketing and sales	Expressing the brand	Supporting image	Supporting image	-
	Facilitating and controlling production, operation and, service delivery	Risk control	-	-	Controlling risk	Controlling risk	Reliability
	-	-	Increasing innovation	Stimulating creativity	Stimulating innovation	Increasing innovation	-
4.Productivity	-	Increasing productivity	Increasing productivity	Enhancing productivity	Supporting user activities	Improving productivity	Productivity
5.Environmental responsibility	-	-	-	Reducing environmental impact	Reducing the footprint	-	Environmental
6.Cost efficiency	Occupancy cost minimization	Cost reduction	Reducing costs	Reducing costs	Decreasing costs	Reducing costs	Cost

- = not mentioned

## 4. PERFORMANCE MEASUREMENT IN PRACTICE

### 4.1 Research methods

To improve our understanding of performance measurement regarding workplace change in different countries, two case studies were conducted, two in Thailand - Dhanarak Asset Development (DAD) and Philips Electronics Thailand (PTH) - and one in the Netherlands: Waterschap Rivierenland (WSRL). Criteria for case selection were actual implementation of workplace change, various business types (public and private sector), different cultural contexts, willingness-to-cooperate and availability of data. DAD and WSRL represent

two public organisations whereas PTH is a private organisation. Data on performance measurement were collected from company reports and interviews with the case organisation's representatives, focusing on performance measurement frameworks and criteria and performance measures/KPIs. These empirical data have been compared with the criteria from the six perspectives mentioned by Bradley (2002). His perspectives cover many aspects of organizational performance and most areas on the added value of CREM/FM. Other comparisons have been conducted as well, e.g. with the seven performance measurement criteria mentioned by Sink & Tuttle (1996), but due to limited space we focus on the comparison with Bradley's perspectives

The impact of workplace change on employees' appraisal was examined using the work environment diagnosis instrument (WODI). This questionnaire records employee satisfaction, perceived productivity support by the work environment, and prioritised aspects i.e. which aspects are perceived as most important by the employees (Maarleveld, et al., 2009). The findings of the WODI questionnaire were compared with the average percentages of satisfied employees on a number of issues in 96 cases in the Netherlands that were conducted by the Center for People and Buildings (CfPB) (Brunia, 2013), the so-called CfPB satisfaction indicator.

### 4.2 Research findings

#### a. Performance measurement

The case studies showed that apart from the Balanced Scorecard no other performance measurement system from literature is literally applied here. Regarding most issues, none of the organisations conducted a sound comparison of the impact of their real estate on organisational performance before and after the change. In only one case both ex ante and ex post data were collected about the appraisal of change by the end users. The three case studies also showed that performance measurement of an organisation is multi-dimensional and includes several performance criteria and performance measures beyond cost efficiency. All six perspectives presented by Bradley (2002) showed to have been applied in all three cases but with different interpretations and in different ways, see Table 2.

Table 2: CRE performance measures according to Bradley (2002) (left) and measures found in the case studies

<b>1. Stakeholder perception</b>	<b>Bradley (2002)</b>	<b>DAD-case</b>	<b>PTH-case</b>	<b>WSRL-case</b>
Employee satisfaction with work environment	Quality of indoor environment: lightning, air conditioning, temperature, noise level. Provision of safe environment Location success factors (access to employees, amount of local amenities) Ratio of office space to common areas Provision of amenities Amount of workplace reforms and space modifications	Employee satisfaction	Employee attitude survey (perceptions and attitudes related to employee satisfaction) Employee satisfaction survey conducted by Philips Real Estate	Employee satisfaction survey (WODI) User satisfaction survey (consumers)
Employee satisfaction with CRE services	Employee satisfaction with professional skills Employee satisfaction with information sharing	Employee satisfaction survey conducted by the author (WODI tool)	Employee satisfaction survey conducted by the author (WODI tool)	Employee satisfaction survey (WODI)
Customer satisfaction with facilities	Survey rating (e.g. customer/tenant survey of the facilities, building, property management and CRE services) Number of complaints Average call frequency and cost per square foot help desk Location success factors (proximity to transportation, access to customers, distance to other sites and businesses)	Satisfaction of the government complex building users	Rank in customer survey* Number of Complaints*	Customer satisfaction survey*
<b>2. Financial health</b>	<b>Bradley (2002)</b>	<b>DAD</b>	<b>PTH</b>	<b>WSRL</b>
Value of property, plant and equipment	Business return on real estate assets Real estate return on investment Real estate return on equity Sales or revenue per square foot (metre) Space (square feet or metres) per unit of revenue Return on property management	Income from commercially rented area Return on asset	NA	NA
<b>3. Organisational development</b>	<b>Bradley (2002)</b>	<b>DAD</b>	<b>PTH</b>	<b>WSRL</b>
Quality of facilities	Physical condition of facilities Suitability of premises and functional environment Number of building quality audits	Work done according to the development of building management and ICT standard	Risk management and business control (strategic, operational, compliance and financial risks)*	Risk Inventory and Evaluation (RI&E)
Accommodation usage	Square feet per employee Effective utilisation of space e.g. amount of teamwork space, vacancy rates, time wasted with interruptions due to open space layout	NA	NA	Square metre per desk (according to labour law)
CRE unit quality	Time used in project versus time budgeted for the project Money spent on project versus money budgeted on the project Amount of advice given to other business units	Delivering rentable area to other government agencies Percentage of allocating commercial area	% reduction in process cycle time* Number of engineering changes* Capacity utilization* Order response time* Process capability*	Design process descriptions and optimizing business processes*



Table 2 continued

<b>4. Productivity</b>	<b>Bradley (2002)</b>	<b>DAD</b>	<b>PTH</b>	<b>WSRL</b>
Employee productivity	Productivity (% of perceived productivity support from working environment) Absentee rates by buildings	Health & wellbeing in the workplace Productivity survey (WODI)	Health & wellbeing in the workplace through workplace innovation (WPI) Productivity survey (WODI)	Health & wellbeing through workplace design Productivity survey (WODI)
Strategic Involvement	CRE involved in corporate strategic planning CRE integrated with HR strategies CRE actively involved in firm-wide initiatives such as special asset use, consolidations, shared services	Master plan of the IT system Management of the information system IT solution in HRM	The implementation of the WPI Smart IT solutions for the Introduction of WPI	The implementation of the flex workplace
<b>5. Environmental responsibility</b>	<b>Bradley (2002)</b>	<b>DAD</b>	<b>PTH</b>	<b>WSRL</b>
Resource use	Energy consumption, Number of energy audits	Introduction of green building Construction materials and equipment meet local content	Green products* Energy efficiency improvement Collection and recycling of company's products* Amount of recycled materials in company's products*	Introduction of sustainable approach to the new building EU Energy label
Waste	Contaminated sites management, Amount of garbage	NA	NA	NA
<b>6. Cost efficiency</b>	<b>Bradley (2002)</b>	<b>DAD</b>	<b>PTH</b>	<b>WSRL</b>
Occupancy costs	Total occupancy cost per employee Occupancy cost as a % of total operating expense Occupancy cost as a % of operating revenue by building or business unit	Taxes (property and land)	Office rent (Baht/sq. m./month)**	Depreciation expense
Operating costs (building and FM)	Total operating expenditures versus budget including: general administration; capital expenditures; moves, adds, rearrangements; facility/properties services; other business services (mail, and copy centres, risk, and/or security) Facility management costs (environment, working conditions, quality)	Operating costs - Facility costs (buildings & equipment) - Overhead costs (employees and committee)* - Fees and services*	Utility (electricity & water) cost/unit Parking cost/month Overhead cost*	Operating costs - Salary costs* - Social charges* - Personnel costs of third party*

\* does not directly relate to real estate; NA = not applied i.e. not measured or no data available, \*\*40 Baht = 1 euro

#### b. Employees' appraisal of workplace change

Table 2 presents the percentages of satisfied respondents in the three case studies and the average percentage of satisfied respondents in 96 Dutch cases (Brunia, 2013). The findings showed that all three cases have rather low satisfaction percentages on archive and storage facilities and privacy. The DAD employees are much less satisfied with most of the aspects compared with the Dutch employees. Several aspects of the PTH workplace have a much lower satisfaction percentage than the average of 96 Dutch cases, such as content and complexity of work (59% versus 80% in the average Dutch cases) and opportunities to communicate (48% versus 71%). However, the satisfaction percentage of indoor climate is much higher in the PTH case (59%) in comparison to the Dutch cases (33%).

Table 3: % satisfied respondents in three cases and average % in 96 Dutch cases (Brunia, 2013)

	DAD	PTH before change	PTH after change	WSRL	CfPB (2013)
Organisation	25	60	66	72	67
Content and complexity of work	32	64	59	83	80
Sharing own ideas about working environment	24	31	41	45	44
Accessibility of the building	37	55	62	72	78
Architecture and appearance of the building	59	45	45	91	55
Subdivision of the whole building	33	48	38	80	46
Number, diversity, and functionality of spaces	30	19	55	65	44
Adjacency and locality of the spaces	33	38	55	76	53
Openness and transparency of environment	27	57	55	61	53
Functionality and comfort workspaces	37	52	62	70	56
Interior design appearance and ambiance	29	43	62	60	50
Privacy	28	14	41	29	37
Opportunities to concentrate	23	7	52	33	39
Opportunities to communicate	51	43	48	75	71
Archive and storage facilities	25	24	34	42	36
ICT and ICT support facilities	21	52	48	47	53
Facilities and facilities management	23	52	55	67	53
Indoor climate	23	57	59	48	33
Lighting	40	64	69	48	58
Acoustics	21	48	52	48	44
Facilities for remote working	14	67	62	65	48

The WSRL case shows a much higher satisfaction percentage regarding architecture and the appearance of the building (91% versus 55% on average in 96 Dutch cases), subdivision of the whole building (80% versus 46%), number, diversity, and functionality of spaces (65% versus 44%), and adjacency and locality of the spaces (76% versus 53%).

Regarding perceived productivity support by the work environment, the percentage of satisfied respondents with perceived support of individual productivity in the DAD case (30%) is slightly lower than in on average in 96 Dutch cases (40%), whereas more PTH and WSRL employees are satisfied on this topic (55% and 45%). Regarding prioritized aspects, striking differences came to the fore as well, e.g. 39% of the DAD employees ranked adjacency and locality of the spaces in their top 3 of most prioritized aspects versus 17% in the PTH case and 5% in the WSRL case.

## 5. REFLECTION

Remarkably hardly any measurement framework that is presented in the literature is being applied in practice in its original form. Probably these frameworks are not known by practitioners or maybe perceived as too complex and not practically applicable. However, all performance criteria that were mentioned by Sink and Tuttle (1989) and Bradley (2002) showed up to be included in all three cases, be it with different interpretations and in different ways. The different applications might be due to different organisational contexts (i.e. business type, objectives, structure) and different external contexts. In addition to cost efficiency, in all three cases other dimensions of performance measurement are included in the performance measurement systems as well. Most performance criteria found in the case studies are measured by using various performance measures such as operational cash flow (efficiency), quality management (quality) and economic profits/earnings (profitability).

Various questions within the Work Environment Diagnosis Instrument (WODI) refer to opportunities to communicate and to concentrate and to sharing own ideas about the working environment. As such an assessment of employee satisfaction before and after workplace change can be useful to evaluate support of knowledge sharing, which is of utmost importance in the current knowledge age. Data from WODI analyses could be compared with data from social network analysis or space syntax analysis (Kastelein, 2014) and lay-out metrics (Appel-Meulenbroek, 2014) to get a more complete picture.

The different percentages of satisfied employees and rankings of prioritized aspects per case can be used for benchmarking purposes. Organisations may compare their own percentages with an absolute standard (e.g. the aim to attain at least 80% satisfaction) or a relative standard (e.g. to perform better on satisfaction than the average of satisfied employees per aspect in other cases). However, better or worse performance compared to other cases is often difficult to explain, due to the impact of many influencing factors such as different organisational and employee characteristics, different national and organisational cultures, different workplace characteristics before and after the change, different work processes, different implementation processes and different internal and external conditions (Riratanaphong, 2014).

## 5. CONCLUSIONS AND PRACTICAL IMPLICATIONS

Efficient and effective management of corporate real estate and related facilities requires well considered decisions on how to align the facilities and services to the needs of the core business in order to add value to the organisation and to contribute to organisational performance. Evidence based decision making is only possible with valid and reliable data regarding the impact of real estate on organisational performance. The huge variety in performance measurement systems in the literature and the lack of data on the impact of facilities on organisational performance before and after workplace change shows that there is still a long way to go before a widely agreed, well defined, holistic and practically applicable performance measurement system is available to support decision makers and for benchmark purposes. Furthermore, further in-depth research is needed to explore explanations of cause-effect relationships between facilities and organisational performance before and after change and between various organisations.

In order to support organisations in how to select prioritized performance measures and KPIs out of a long list of possible KPIs, a step-by-step plan including six steps might be useful (Riratanaphong, 2014):

- 1) Inventory of KPIs that the organisation currently applies;
- 2) Clustering of all KPIs in two groups: organisational performance and corporate real estate performance.
- 3) Classification of all measures e.g. into the six categories of Bradley (2002).
- 4) Comparison of possible and currently applied measures and KPIs.
- 5) Reflection on similarities and dissimilarities in connection to the vision and mission of the organisation and its main objectives.
- 6) Prioritization of KPIs in connection to the main objectives and contextual variables such as economy and competitive advantage.

Questions that might be helpful to apply these steps are for instance: Which CRE characteristics align best to the mission and vision of the organisation and organisational objectives? Which CRE characteristics support the work processes optimally and which KPIs could be applied to measure these connections? Which CRE characteristics might influence productivity, profitability, competitive advantage and sustainability? Which areas are key? Similar questions can be raised regarding other facilities and services. Further research could be helpful to further explore and test this step-by-step plan.

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