

Anna-Liisa Lindholm and Suvi Nenonen. 2006. A conceptual framework of CREM performance measurement tools. *Journal of Corporate Real Estate*, volume 8, number 3, pages 108-119.

© 2006 Emerald Group Publishing

Reprinted with permission.



# A conceptual framework of CREM performance measurement tools

Anna-Liisa Lindholm

*Institute of Real Estate Studies, Helsinki University of Technology, Finland, and*

Suvi Nenonen

*CEM Facility Service Research Group,  
Laboratory of Construction Economics and Management,  
Helsinki University of Technology, Finland*

## Abstract

**Purpose** – To provide a review and classification of tools, techniques and methodologies, which are and could be used for measuring and identifying the success of corporate real estate and workplace management.

**Design/methodology/approach** – Review of previously published works on performance measurement and measurement models and empirical interviews with 26 corporate real estate executives to examine what are common approaches to measuring performance.

**Findings** – Provides information about the corporate real estate performance measuring methods and practices.

**Research limitations/implications** – The conceptual framework is not an exhaustive list of methods and techniques. It is more like a first analytical review and classification of different kinds of methods, which could be developed over time.

**Practical implications** – A useful source of information and impartial analysis of methods for corporate real estate and workplace managers seeking ways to demonstrate their value to the core business of their firm.

**Originality/value** – Corporate real estate and workplace managers need better ways and tools to illustrate to the corporate leaders how they add value. This paper provides a review of such tools and offers practical help and guidance for using this kind of tools.

**Keywords** Real estate, Performance measurement (quality), Management techniques

**Paper type** Research paper

## Introduction

A fool is a man who knows the price of everything, and the value of nothing.

This statement made by Oscar Wilde describes felicitously also the main problems related to the corporate real estate performance measurement. Traditionally, corporate real estate managers have tended to measure performance from an operational efficiency perspective – factors such as operating costs, costs per square foot and maintenance cost (Arthur Andersen & Co., NACORE International and CCIM, 1993; Duckworth, 1993; Nourse, 1994; Bdeir, 2003). The success of corporate real estate management (CREM) has been judged via comparison to previous years' results by using various lagging indicators. These measures and indicators work well when the only purpose is to control costs and property is seen just as a cost of doing business rather than a value adding opportunity. When the corporate real estate manager needs to show and demonstrate the strategic potential of their real estate, more



---

comprehensive and developed measures and methods are needed. Corporate real estate managers need to be able to easily illustrate and explain how property decisions affect the core business of the firm and how the workplace supports the work processes. Otherwise, real estate will continue to be classified just as a cost that should be minimized rather than optimized.

The performance and performance measurement of a business unit, such as CREM, is a complicated phenomenon. From the firm's owner and management perspectives, performance is, after all, measured by the realization of an firm's vision – first and foremost business success (i.e. profitability and productivity). Although maintaining profitability and productivity growth are the most important long-term success factors, they are not in themselves sufficiently adequate for managing business. Performance is always a phenomenon that consists of several different factors. In the business world, growing attention has recently been paid to the success factors – factors, which are derived from the firm's strategy and affect an organization's future performance. From the performance measurement point of view, performance is seen as a measurement object's ability to achieve desired results and the measuring of the success factors is called as the strategic performance measurement.

In the context of CREM, performance could be seen as the ability of CREM to support the organizational objectives, strategies, and at the end: business success. To determine whether CREM is achieving its strategic goals, relevant performance measures are needed to compute. In order to demonstrate how CREM contributes to the core business of the organization, these performance measures should derive from the firm's strategy and the organizational success factors (Ghalayini and Noble, 1996; Keegan *et al.*, 1989). Strategic performance measurement is then the process whereby the strategy of an organization is translated into concrete objectives and achievement of those objectives is evaluated. However, the choice of strategy for reaching the vision of the firm is likely to be closely tied to the nature of the organization. Every organization is individual in respect to the strategies for implementing its ultimate goals. This creates a challenge for identifying the generic added value of CREM, as performance is very difficult to measure across a range of differently structured and focused organizations. Consequently, there is not one right CREM measure or even a method, which suits to all organizations.

However, it is possible to identify different kinds of measures and measuring methods for different kinds of organizational objectives and success factors. Therefore, the main idea of this paper is to present a practical "toolbox" a collection of different kinds of CREM performance measurement methods, amongst which corporate real estate and workplace managers are able to pick up the most suitable for their business environments and situations at hand. The objective of this paper is to review and analyze existing performance measurement tools, techniques and practices, and to provide a classification of the tools, which could be used for measuring and identifying the success of corporate real estate and workplace management.

The research is conducted by reviewing of previously published works on performance measurement and measurement models and by performing empirical interviews with 26 corporate real estate executives to examine what are the common approaches to measuring performance. The interviewed corporate real estate executives represented a variety of industries (including transportation, broadcasting, banking, and data management) in the USA, UK, The Netherlands, and Finland.

In addition, to the interviews the various workshops with the Finnish corporate real estate managers were set up. These workshops helped the researchers in analyzing identified tools and developing the conceptual framework.

The conceptual framework of measuring tools presented in this paper together with the analysis of the using purpose and the challenges of the tools provides a relevant source of information for corporate real estate and workplace managers. This kind of framework and impartial analysis of the tools offer corporate real estate practitioners better ways to illustrate to the corporate leaders their success in adding value for the whole organization.

### **Corporate real estate management performance measurement practices**

Based on the interviews with the corporate real estate managers and directors it seems that the strategic performance measurement in the context of CREM is more popular than the previous research had indicated. More than a half of the interviewed organizations stated that they have CREM performance measures, which are derived from the firm's strategy and/or objectives. However, the measurement practices vary a lot amongst the interviewed firms. Some of the organizations had only a few real estate measures, which they report time-to-time to the top level of the organization, whilst some of the organizations had quite comprehensive CREM performance measurement systems. Typically, these measurement systems, which were more like a set of individual measures, has been developed over the years as new measures were added to the system. The systemically constructed measurement systems were in many cases based on a performance measurement framework, such as the balanced scorecard (BSC).

The main problem with the strategic performance measurement seems to be the lack of comprehensive CREM measures, which could provide the overall picture of the CREM processes and outcomes. This has led to the situation where the organizations are using various CREM measures, each of them indicating one aspect of CREM (e.g. financial, technical, organizational). This in turn, has not satisfied the strategic level of the organization, which prefers fewer and broader measures. Even though CREM organizations and researchers are aware of the lack of measures and are continuously finding better solutions, it seems almost impossible to find one or two right CREM measures, which could indicate the CREM performance comprehensively.

In addition to the strategic performance measurement, it was clear from the interviews that the CREM performance measurement also concentrated on other purposes as well. Probably due to the pure supportive role of CREM in the business environment, organizations are using plenty of measures in CREM, which are not considered as strategic. The results of these measures are not reported to the top level of the organizations, but they are seen as important tools for evaluating, controlling and improving internal processes. In many cases these measures are related to the workplace management processes or projects. For example, after the major workplace change projects organizations need to evaluate how the change has succeeded or what are the benefits of the change. Typically the evaluation or measuring is performed by following structured techniques and methodologies, which are developed for these kinds of situations, such as the post occupancy evaluation (POE) or the building-in-use (BIU).

To make a clear distinction between the strategic performance measurement systems and these important, but not so strategic systems and techniques, described in the previous paragraph, we call the latter systems as the tactical tools. In the following

---

sections we will discuss and describe these strategic performance systems and tactical tools in more detail. After presenting a short theoretical background of the most commonly used systems and tools, we will illustrate how these measurement tools can be applied into CREM organizations and what kind of individual measures could be used in these tools.

### **A conceptual framework of measuring tools and techniques**

As stated in the previous section, for measuring CREM performance comprehensively and balanced, different kinds of strategic measurement systems and tactical techniques and methodologies are needed. These “tools” have some common features and also differences. The main differences are relating, for example, to the purpose of the use or the object of the measurement. Strategic measurement systems are constructed and developed for the continuous controlling of the processes or outcomes, and often the results of these systems are reported to the top level of the organization. Tactical tools are more internal tools, which are used, for example, for analyzing the current situation or identifying the developing areas. Tactical tools are mainly used more in project situations, as the need arises, not so permanently as the strategic measurement systems. These tools can also be classified based on the end object of the measurement. Some tools are developed for measuring the CREM processes, whilst some are meant for measuring the outcome of CREM processes – the physical real estate or the workplace. Table I summarizes the strategic measurement systems and tactical tools presented in the following sections. These tools are presented by their purpose of use, by the object of the measurement and by the user of the result of the measurement.

In addition to the strategic measurement systems and tactical tools, organizations are using different kind of techniques for collecting the data for the tools. These data collection techniques are used, for example, in the development phase of the strategic measurement system. With the tactical tools, data collection techniques are an essential part of the tools. Data collection techniques can also be used solely, when the need for measuring is not so comprehensive that tools are needed. The most commonly used data collection techniques in the area of corporate real estate and workplace management are interviews, questionnaires and observations.

#### *Strategic measurement systems*

The measurement of performance has been usually discussed in literature from the perspective of strategic or holistic measurement. Strategic measurement is described as a method to communicate the strategy of organization for the stakeholders in order to operationalize it. This means that the chosen method has been developed based on the needs of the organization. According to Kankkunen (2005, p. 17) one can even recognize the strategy of an organization from the well-designed measurement system.

Probably the most well-known and used strategic measurement system is the BSC developed by Robert Kaplan and David Norton in 1992. Recognizing some of the weaknesses and vagueness of previous management approaches, the BSC approach provides a clear prescription as to what companies should measure in order to “balance” the financial perspective. According to Kaplan and Norton (1996), the BSC is a management system (not only a measurement system) that enables organizations to clarify their vision and strategy and translate them into action. It provides feedback around both the internal business processes and external outcomes in order to continuously improve strategic

**Table I.**  
Summary of strategic  
measurement systems  
and tactical tools used in  
CREM

	For continuous follow-up	Purpose of the use For identifying the development areas	CREM processes	Object of the measurement CREM results (physical real estate/space)	The user of the result Core business	CREM unit
Strategic measurement system	✓		✓	✓	✓	✓
BSC	✓					
Performance pyramid	✓		✓	✓	✓	✓
PMSSI	✓		✓		✓	✓
Navigatior	✓		✓		✓	✓
Intagible assets monitor	✓		✓		✓	✓
Tractical tools						
Benchmarking	✓		✓	✓		✓
POE		✓	✓	✓		✓
Building-in-use		✓		✓		✓
Performance map™		✓		✓	✓	✓
MicroscanFM©		✓		✓		✓
Apgar's method		✓		✓		✓

---

performance and results. When fully deployed, the BSC transforms strategic planning from an academic exercise into the nerve center of an enterprise.

The BSC suggests that we view the organization from four perspectives, and to develop metrics, collect data and analyze it relative to each of these perspectives:

- (1) the learning and growth perspective;
- (2) the business process perspective;
- (3) the customer perspective; and
- (4) the financial perspective.

The goal in this system is to indicate the results of the organization's performance. The BSC approach is the most known and adapted measurement system also in the corporate real estate management. The interviews in our study indicated that every fourth organization is based on the BSC framework. However, the reason for the familiarity is also based on the fact that a core business organization is using the BSC method – the result indicates more the publicity of the method in general both in the companies and in the public sector.

There are two typical ways of using the BSC in corporate real estate management. On one hand, the goals and the measurements of CREM performance are a part of the total strategy of the organization and the individual CREM measures are a part of a company-wide BSC. On the other hand CREM has established its own BCS system, which is based on the real estate strategy. Despite the way the BSC is constructed, it seems that the individual CREM measures are mainly the same. Based on interview results we have collected the most popular CREM measures used in CREM BSC systems (Table II).

Besides BSC there are other interesting strategic measurement systems as well. Some of them are: performance pyramid (Lynch and Cross, 1991), performance measurement system for service industries (PMSSI) (Fitzgerald *et al.*, 1991), navigator (Edvisson and Malone, 1997) and intangible assets monitor (Sveiby, 1997). The basic idea of these systems is more or less similar than in the BSC framework. Performance pyramid and PMSSI views an organization from various perspectives, whereas BSC, navigator and intangible assets monitor are concentrated more on measuring the intangible capital and, therefore, they are more suitable to knowledge-intensive organizations. Despite the similarities with the BSC, these other systems are not as popular and widely used. Based on our research, it seems that none of these systems are used in CREM performance measurement. However, if someone wants to adapt some of these systems into CREM measurement, it could be done in a similar way than with the BSC, and the individual CREM measures could be the same, too.

#### *Tactical tools*

Comparison of performance is indicated by using methods and tools of benchmarking. Benchmarking can be defined as the process of setting “benchmarks,” which means identifying accurate historical data against which a data set can be compared now and in the future. It is continuous measurement of a process, product, or service compared to those of the toughest competitor, to those considered industry leaders, or to similar activities in the organization in order to find and implement ways to improve it (Watson, 1993, p. 3). Benchmarking is one of the foundations of both total quality management and continuous quality improvement. Internal benchmarking occurs

The financial perspective	Financial result Return on assets Value of properties (book-or market-values) Amount of sold properties Vacancy rate Amount of leased properties versus owned properties Amount of rented properties
The business process perspective	Vacancy rate Square feet per employee Occupancy costs Operative costs (maintenance-, energy, etc. costs) Transaction costs Return on assets Gaining the sustainability objectives (amount of waste, energy consumption, etc.) Effectives of projects or investments (budgeting, scheduling, targets)
The learning and growth perspective	Business units' satisfaction for CREM performance Professionalism and expertise of CREM staff Competences of the staff Average age Level of education Reward systems and motivation Atmosphere of the community Training and development days Absenteeism Turnaround
The customer perspective	Amount of R&D-activities Customer satisfaction (satisfaction for workplace and facilities among internal and external customers) Cost-quality ratio Customer satisfaction for services Cost-quality ratio of facilities services Satisfaction for CREM department (hospitality, quick reactions, results, information, etc.)

**Table II.**  
BSC components for corporate real estate management

when similar processes within the same organization are compared. Other types of benchmarking are external benchmarking and functional benchmarking.

Benchmarking is one of the most popular ways to use CREM performance measures. Based on our research almost all the CREM organizations perform internal or external benchmarking. The most typical performance indicators used in CREM benchmarking are data obtained by measuring expenses of real estate particulars against certain metrics, such as occupancy cost per employee, occupancy cost per square feet, ratio of gross floor area, etc. Benchmarking is also done over the country borders. For example, in Nordic countries there is an intention to begin a "Nordic benchmarking process" in order to produce more evidence and data for companies.

POE involves systematic evaluation of opinion about buildings in use, from the perspective of the people who use them. It assesses how well buildings match the needs of the users, and identifies ways to improve building design, performance and fitness for purpose. Users of buildings are all people with an interest in a building – including



---

staff, managers, customers or clients, visitors, owners, design and maintenance teams, and particular interest groups such as the disabled. POE differs significantly from conventional surveys and market research. It uses the direct, unmediated experiences of building users as the basis for evaluating how a building works for its intended use.

POE can be used for many purposes, including fine-tuning of new buildings, developing new facilities and managing “problem” buildings. Organizations also find it valuable when establishing maintenance, replacement, purchasing or supply policies; preparing for refurbishment; or selecting accommodation for purchase or rent. Among our research organizations POE were used mainly in public organizations (municipalities, local authorities). In these organizations real estate portfolio was evaluated systematically by POE-method. The results were used for planning the real estate strategy specially from the lifecycle perspective. The received data served also as a guideline for development both in tactical and operational level. Continuous commissioning improves the performance.

BIU concentrates on evaluating the work environments from the perspective of users – their need and experiences about workplaces. Although it is acknowledged that BIU is clearly dedicated to improve the operation of existing buildings by readily understood and actionable measures and that it is based on the judgment of real occupants, it is pointed out that its attributes are also essential for a planning tool in the design phase. The appearance of an easy-to-understand tool for well-founded decision making satisfied the objective to develop an accepted and useable design tool. As the categories used in the BIU-framework are tested in many surveys understandable for the occupants of buildings, and the results of BIU are sufficiently presentable for decision-makers, they will be accepted by the participants for the design team as well (Vischer, 1996).

BIU is a survey under, if possible, all occupants of the building under investigation. The structure and content of the BIU-framework and the weighting of the comfort dimensions is deduced from occupants’ perception studies and not from theoretical reasoning or the abilities available in the architectural domain. It is based on 30 ratings for different aspects of comfort perception, determined on a scale from 1 to 5. The rating are grouped and analyzed in the following seven key dimensions: air quality, noise control, spatial comfort, thermal comfort, lighting comfort, privacy, and building noise control. In our research organizations this method was not used as such.

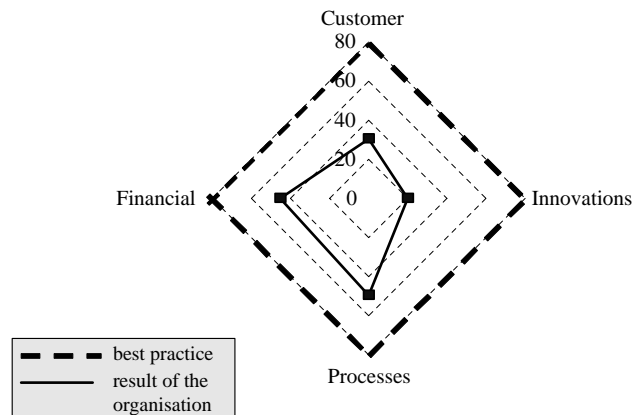
Performance Map™ models the relationships between organizational values and metrics for measuring workplace performance. The framework of the map guides the process for planning workplace changes and measuring their impacts. The process starts with understanding the core values of the organization; the values that go to the heart and soul of what the organization is about and what it is trying to achieve. The following step is to identify goals that address each of these values, and then define actionable strategies designed to meet those goals. From here, metrics are determined that can be used to evaluate the effectiveness of the strategies in achieving the organization’s goals. Mirroring the narrow corporate focus on financial performance, CRE and workplace planners typically rely on a mixture of architectural and financial measures, such as m<sup>2</sup>/person or occupancy costs per person or m<sup>2</sup>. These do not capture other impacts of the workplace on associate productivity, processes, customer satisfaction, and organizational learning. To capture performance measurements holistically, the Performance Map™ borrows from the four “perspectives” of the BSC each organization must work through the process of linking their values and goals to workplace strategies and develop their own unique map for creating and evaluating (Ouye, 2003).

In our research organizations this tool was unknown but Ouye (2003) describes few examples in his paper: case company wanted to assess the impact of a new corporate campus on group productivity. It was measured by identifying and comparing critical work behaviours before and after the campus move. Work behaviours are systematically observed and recorded eight times per day for a week, noting specific types of behaviours such as solo work, phone use, impromptu meetings, and scheduled meetings. The pre-move study showed that interactions took up a far more significant portion of the workday than originally thought and places to meet were hard to find. As a result, meetings took place everywhere, frequently interrupting people trying to concentrate on “solo” work. It was difficult for people to find who they wanted to meet because six-foot high partition walls hid others from view. To address these problems the new campus was designed to increase the visibility of associates and increase the number and variety of smaller meeting rooms.

MicroScanFM© is a unique diagnostic tool developed by Atkin and Brooks (2000) for measuring the performance of facilities management. It is based on the ideologies behind the BSC framework and benchmarking. The tool offers possibilities to analyze facilities management performance from different perspectives and helps the organization to identify the development targets.

The tool is based on the set of questions (80-100), each of them indicating the condition of one of the four perspectives (customer, financial, innovation, processes). The questionnaire is sent to one or multiple persons and based on the results of the tool it is possible to indicate the balance between different perspectives and provide at a glance an overview for the areas, which needs to be developed (Figure 1).

Based on the idea of MicroScanFM© we developed and tested in our research a “value-added tool” which could be used for identifying how the CREM organization is creating added value for the core business of the occupier organization. This tool was based on the set of questions each of them indicating the condition of one of the seven added value perspectives or strategies: increase value of assets, promote marketing and sale, increase innovations, increase employee satisfaction, increase productivity,



**Figure 1.**  
Presentation of results  
with MicroScanFM

**Source:** Atkin and Brooks (2000)

---

increase flexibility, reduce costs (Lindholm and Leväinen, 2006). The results of the tool helped the real estate managers to position existing practices in sufficient way.

Apgar (1995) has developed a simple tool that enables boards of directors and executives of large companies, government agencies, and other holders to quickly assess the quantity, cost and quality of their organizations' real estate portfolios and individual facilities. This tool is known technically as "a system and method for evaluating real estate," the Apgar real estate score (ARES) evaluates an organization's real estate and facilities portfolio along five critical factors. Each factor is measured on a scale from 0 to 2. The resulting composite ARES ranges from 0 to 10. Empirical evidence shows that scores of six or lower indicate immediate opportunities for improving real estate costs and/or utilization. The ARES is determined by applying measures that analyze the quantity, cost, and quality of corporate real estate portfolios and facilities. These measures, culled from a master list of over 150 originally developed in the Apgar consulting practice, are grouped according to the five real estate factors: amount, price, grade, area, and risk. Data to populate the measures come from the organization's real estate "users" or "tenants" (those who occupy the facilities) and from external data providers. Using these measures, each factor is assigned a rating from 0 (poor) to 2 (excellent). The ratings for each of the five factors are added to develop a composite real estate score, on a scale of 0-10. A composite score of six or lower typically indicates that management should focus quickly and decisively on specific real estate issues for improvement. This approach was not largely used among our research sample.

#### *Operational techniques*

Data gathering methods differ from strategic measurement systems and tactical tools by their characteristics: they are for supporting both strategic and tactical activities and they can be used in both levels. The data gathering methods have different purposes for use: they are for getting information for the measurement system or tool, as well as gathering data how to develop both strategic and tactical processes and tools. They can be used independently, too.

The most common data gathering method in real estate sector are interviews, observation and surveys. Interviews are conducted one-on-one or with a small group (the smaller the better so that everyone has a chance to contribute fully). Interviews can be used throughout the data gathering process, but they are perhaps most useful during the performance analysis stage, when the intention is to determine what the real performance deficiency is. Although the process is time consuming, it is useful because one can gather specific information and ask follow-up questions to get more detail on items of particular interest. Direct observation of work performance or built and used environment is an excellent means of gathering data. Observations are usually done in conjunction with another data gathering method that is used to fill in the gaps and answer questions. Surveys are used when one wants to gather data from a large number of people and when it is impractical to meet them all face-to-face. Surveys can be both formal (where the results are subject to statistical reliability and validity) and informal (where results are anecdotal).

#### **Conclusions**

The measurement of performance is, and will be, important. However, the common understanding between the core business and corporate real estate still lacks both

the quantity of relevant data and the common understanding how to prove the value-adding elements. The lack of such information is a challenge for CREM in order to make their input to corporation's core business visible and to develop their own processes. Results about use of listed tools indicated that there is a need to encourage the real estate managers to use variety of different tools. BSC and POE were used mostly. Additionally there were few methods which were still completely unknown.

The common understanding between different actors around corporate real estate has been the driver for developing the toolbox. The first phase, which is presented in this paper, was to gather different systems and methods together. The following idea is to get more real life cases for further investigation around the setting: how do the different systems and tools support and what kind of set of systems, tools and methods is appropriate for different kind of organizations?

The challenge to work with measurement systems is not only in providing information for the management of the core business but also to get more reliable data for developing the CREM in close connection with, for example, human resource-and ICT-managements. Human resource and workplace resources are in connection with each other. Linkage with ICT management develops the best possible brick- and bit work environment for the success of core business. The work is not anymore taking place in traditional office building but in increasing amount in virtual work environment. The future challenge is to bring together and balance both the physical and virtual work environment in order to support core business. The new actions and principles have to be quantified, researched and developed for best practices. The presented toolbox is one method to work for this direction.

## References

- Apgar, M. (1995), "Managing real estate to build value", *Harvard Business Review*, November-December.
- Arthur Andersen & Co., NACORE International and CCIM (1993), *Real Estate in the Corporation: The Bottom Line from Senior Management*, Arthur Andersen & Co., Chicago, IL.
- Atkin, B. and Brooks, A. (2000), *Total Facilities Management*, Blackwell Science Ltd, London.
- Bdeir, Z. (2003), "Strategic performance in corporate real estate", MSc thesis in Real Estate Development, Massachusetts Institute of Technology, Boston, MA.
- Duckworth, S.L. (1993), "Realizing the strategic dimensions of corporate real property through improved planning and control systems", *Journal of Real Estate Research*, Vol. 8 No. 4, pp. 459-509.
- Edvisson, L. and Malone, M.S. (1997), *Intellectual Capital: Realizing your Company's True Value by Finding its Hidden Brainpower*, Harper Business, New York, NY.
- Fitzgerald, L., Johnston, R., Brignall, S., Silverstro, R. and Voss, C. (1991), *Performance Measurement in Service Business*, CIMA, London.
- Ghalayini, A.M. and Noble, J.S. (1996), "The changing basis of performance measurement", *International Journal of Operations & Production Management*, Vol. 16 No. 8, pp. 63-80.
- Kankkunen, K., Matikainen, E. and Lehtinen, L. (2005), *Mittareilla Menestykseen*, Talentum, Helsinki.
- Kaplan, R.S. and Norton, D.P. (1996), *The Balanced Scorecard: Translating Strategy into Action*, Harvard Business School Press, Boston, MA.
- Keegan, D.P., Eiler, R.G. and Jones, C.R. (1989), "Are your performance measures obsolete?", *Management Accounting*, Vol. 70 No. 12, pp. 45-50.
- 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*, Vol. 8 No. 1, pp. 38-46.

- Lynch, R.L. and Cross, K.F. (1991), *Measure Up! Yardsticks for Continuous Improvement*, Blackwell Publishers, Cambridge, MA.
- Nourse, H. (1994), "Measuring business real property performance", *Journal of Real Estate Research*, Vol. 9 No. 4, pp. 431-44.
- Ouye, J. (2003), "Measuring workplace performance: using the Performance Map™", paper presented at the World Workplace 2003, Yokohama.
- Sveiby, K-E. (1997), *New Organizational Wealth: Managing and Measuring Knowledge-based Assets*, Berrett Koehler Publishers Inc., San Francisco, CA.
- Vischer, J.C. (1996), *Workplace Strategies*, Kluwer Academic Publishers, Dordrecht.
- Watson, G. (1993), *Strategic Benchmarking: How to Rate your Company's Performance against the World's Best*, Wiley, New York, NY.

### Further reading

- Barrett, P. and Baldry, D. (2003), *Facilities Management: Towards Best Practice*, 2nd ed., Blackwell Science Ltd, Gosport.
- Camp, R. (1995), *Business Process Benchmarking: Finding and Implementing Best Practices*, American Society for Quality, Wisconsin, WI.
- Cooper, I. (2001), "Post-occupancy evaluation – where are you?", *Building Research & Information*, Vol. 29 No. 2, pp. 158-63.
- Eley, J. (2001), "How do post-occupancy evaluation and the facilities manager meet?", *Building Research & Information*, Vol. 29 No. 2, pp. 164-7.
- Lubieniecki, E. and Desrocher, N. (2003), "The case for simple comparison: a simple performance scorecard for effectiveness and efficiency", *Journal of Corporate Real Estate*, Vol. 6 No. 1, pp. 39-52.
- Ornstein, ym (2001), "Occupancy evaluation of offices in the financial sector", *Facilities*, Vol. 19 Nos 11/12, pp. 404-12.
- Varcoe, B. (1996), "Business-driven facilities benchmarking", *Facilities*, Vol. 14 Nos 3/4, pp. 42-8.
- Wauters, B. (2005), "The added value of facilities management: benchmarking work processes", *Facilities*, Vol. 23 Nos 3/4, pp. 142-51.
- Wilson, C. *et al.*, (2003), "Results using balanced scorecard in the public sector", *Journal of Corporate Real Estate*, Vol. 6 No. 1, pp. 53-63.

### About the authors

Anna-Liisa Lindholm is a Doctor of Technology candidate at Helsinki University of Technology (TKK) in the area of Corporate Real Estate Management. She earned her Master of Science in Technology from TKK in 2004 and Licentiate of Technology (first doctoral degree) in 2005. Anna-Liisa Lindholm is the corresponding author and can be contacted at: [anna-liisa.lindholm@tkk.fi](mailto:anna-liisa.lindholm@tkk.fi)



Suvi Nenonen has years of international research and teaching experience in the fields of workplace and facilities management. She is an active member of European Facilities Management networks (EuroFM and Nordic FM). She earned her Doctor of Philosophy at Helsinki University of Technology in 2005. E-mail: [suvi.nenonen@tkk.fi](mailto:suvi.nenonen@tkk.fi)