SECTION TWO

ADDED VALUE OF FACILITIES MANAGEMENT

Added value of FM

Jensen, P A and van der Voordt, T J M
Added value of FM - how can FM create value in organisations?

2.1 Creating value in organisations

Introduction
Van der Voordt, T J M and Jensen, P A

Matzdorf, F and Greenwood, J
Student choice, league tables and university facilities
von Felten, D, Böhm, M and Coenen, C
Multiplier effects through FM Services – a survey-based analysis of added value in FM
Riratanaphong, C and Van der Voordt, T J M
Performance measurement of public facilities in Thailand: A case study of Dhanarak Asset Development

2.2 Campus retrofitting

Introduction
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Nenonen, S, Niemi, O, Savolainen, J, Kähkönen, K and Eriksson, R
Towards Future Learning Environments – co-creation and co-investing in Campus Retrofitting
Added value of FM – a critical review
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ABSTRACT
The purpose of this paper is to provide a state of the art of how the topic “Added value of FM” has been treated recently in research and practice. The paper is based on research papers from EFMC 2013 and 2014. The paper provides an overview and a critical review of this research. A main focus is to examine to which degree there is a cumulative knowledge building in this field. The paper also summarises findings about value adding management in practice and reflects on implications for research and practice.

The critical review shows that some of the papers have a strong foundation in former research on the added value of FM, while many other papers only to a limited degree reflect and build upon this earlier research. This together with a broad scope of themes means that the cumulative knowledge building is rather weak. Besides, only few of the papers contribute directly to knowledge on value adding management. A study about how practitioners cope with the added value of FM and CREM clearly demonstrates a strong interest in the topic among leading professionals but also a lack of common understanding and practical management tools.

KEYWORDS: Added value, state of the art, critical review, value adding management

1. INTRODUCTION
The purpose of this paper is to show how the topic “Added value of FM” has been treated in recent European research as well as in practice. The paper is part of the ongoing work in the EuroFM research group on “The Added Value of FM”, which was established in 2009. The group has produced a number of publications, including the book: “The Added Value of Facilities Management – Concepts, Findings and Perspectives” (Jensen et al., 2012b), which was launched at EFMC 2012 in Copenhagen.

In this paper we will investigate the research, which has been conducted on the topic since 2012. Both during the research symposium at EFMC 2013 in Prague and EFMC 2014 in Berlin there were a number of papers focusing on various aspects of added value of FM. The paper provides an overview and a critical review of this research. We will also summarise findings about value adding management in practice and reflect on implications for research and practice. The reviews and reflections on the selected papers have been elaborated in greater detail in a EuroFM report, which will be available in pdf form at EFMC 2015 in Glasgow.

2. OVERVIEW AND METHODOLOGY
The critical review covers 15 research papers from EFMC 2013 and 2014 listed in Table 1. The selection and the critical reviews were made in a sequential process starting with a screening of papers that seemed related to the topic of added value of FM based on title, abstract and keywords of all papers in the symposium publications from EFMC 2013 and EFMC 2014. We made a critical review of each paper by reading the full paper and evaluating it according to a common list of five criteria: theoretical foundation, methodology, empirical evidence, practical
relevance and contribution to knowledge development. We were particularly interested in identifying to which degree there is a cumulative knowledge building, so that new research builds on earlier results and contributes with new knowledge of theoretical and practical relevance. Annex A provides an overview of theories and methods applied in the papers, and Annex B shows the level of empirical evidence and the final “product” of each research.

Table 1. Selected papers for critical review

<table>
<thead>
<tr>
<th>No</th>
<th>Authors</th>
<th>Title</th>
<th>Country</th>
<th>Focus</th>
<th>Sector</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Appel-Meulenbroek, De Vries and Weggeman (2014)</td>
<td>Layout mechanisms that stimulate behaviour of employees</td>
<td>Netherlands</td>
<td>Innovation by Knowledge Sharing</td>
<td>Offices</td>
</tr>
<tr>
<td>3</td>
<td>De Been and Beijer (2013)</td>
<td>Effects of interventions in an innovative office on satisfaction, perceived productivity and health complaints</td>
<td>Netherlands</td>
<td>User satisfaction and perceived productivity</td>
<td>Offices</td>
</tr>
<tr>
<td>4</td>
<td>Beckers and Van der Voordt (2013)</td>
<td>Facilitating new ways of learning in Dutch Higher Education</td>
<td>Netherlands</td>
<td>New Ways of Working and Learning</td>
<td>Educational facilities</td>
</tr>
<tr>
<td>5</td>
<td>Kok, Mobach and Omta (2013)</td>
<td>Can FM contribute to study success?</td>
<td>Netherlands</td>
<td>Study success</td>
<td>Educational facilities</td>
</tr>
<tr>
<td>6</td>
<td>Daatselaar, Schaap and Mobach (2013)</td>
<td>Added value of FM in Institutes for intellectually disabled residents</td>
<td>Netherlands</td>
<td>Disorderly behaviour</td>
<td>Health care facilities</td>
</tr>
<tr>
<td>7</td>
<td>Groen (2014)</td>
<td>Contribution of FM to hospitality issues</td>
<td>Netherlands</td>
<td>Experience of hospitality</td>
<td>Health care facilities</td>
</tr>
<tr>
<td>8</td>
<td>Van Sprang, Pijs and Tonnaer (2014)</td>
<td>Capturing meal experiences in nursing homes: an exploratory study</td>
<td>Netherlands</td>
<td>Meal experience</td>
<td>Health care facilities</td>
</tr>
<tr>
<td>11</td>
<td>Redlein and Zobl (2013)</td>
<td>Facilities Management in Austria 2012 – Value Add?</td>
<td>Austria</td>
<td>Economic effective implementation of FM</td>
<td>In-House FM</td>
</tr>
<tr>
<td>12</td>
<td>Redlein and Zobl (2014)</td>
<td>Facility Management in West- and Eastern Europe</td>
<td>Austria and Romania</td>
<td>Cost savings</td>
<td>In-House FM</td>
</tr>
<tr>
<td>13</td>
<td>Ashworth (2013)</td>
<td>Added value of FM Know-how in the Building Whole Life Process</td>
<td>Switzerland and other countries</td>
<td>FM value creation</td>
<td>Not specified</td>
</tr>
<tr>
<td>14</td>
<td>Meerman, Lellek and Serbin (2014)</td>
<td>The path to excellence: integrating customer satisfaction in productivity measurement in FM.</td>
<td>Germany</td>
<td>Connection between productivity and satisfaction</td>
<td>Not specified</td>
</tr>
<tr>
<td>15</td>
<td>Katchamart and Then (2014)</td>
<td>Strategic FM-procurement: an issue of aligning services to business needs</td>
<td>Denmark, Hong Kong, Thailand, Netherlands</td>
<td>FM alignment to business</td>
<td>Not specified</td>
</tr>
</tbody>
</table>

We divided the papers in the following six themes:
1. Corporate Facilities (paper 1, 2 and 3)
2. Learning Facilities (paper 4 and 5)
3. Healthcare Facilities (paper 6, 7 and 8)
4. Temporary Housing Facilities (paper 9 and 10)
5. In-house FM on national level (paper 11 and 12)
6. General papers (paper 13, 14 and 15)

The main results of the critical review are presented in section 3. This is followed by section 4 on value adding management in practice, section 5 with implications for research and practice and section 6 with conclusion.

3 CRITICAL REVIEW

3.1 Corporate Facilities

Three papers deal with corporate facilities, all from the Netherlands. Paper 1 explores how FM can contribute to knowledge sharing as a means to improve the effectiveness of a R&D organisation. Paper 2 aims to show the practicality of added value concepts for FM in financial institutes. Paper 3 investigates staff satisfaction and perceived productivity in an almost new office building with desk sharing before and after a number of interventions.

Theoretical foundation: Paper 1 and 2 both have a foundation in earlier research on the added value of FM and CREM. Both papers refer to the general distinction between use value and exchange value. Paper 3 does not include a separate section on theory and is based on a limited number of references with none to research on the added value of FM.

Methodology and evidence: All three papers present very comprehensive studies and in-depth empirical studies. Paper 1 combines different types of quantitative research methods. Paper 2 combines various qualitative methods with a quantitative questionnaire survey, and paper 3 is based on two quantitative POE surveys in the same organisation and office building before and after interventions.

Practical relevance: All three studies have been conducted in collaboration with FM-organisations in the case companies and all have clear practical relevance.

Conclusion: The three papers provide strong and important contributions with new knowledge of practical relevance. Paper 1 and 2 build strongly on earlier FM research and provide interesting new insights. The evidence bases are quite good in all three papers in terms of amount of data from the case companies, but it is uncertain to which degree the empirical results can be generalized to other companies. The theoretical and methodological insights are of general interests.

3.2 Learning Facilities

There are two papers about learning facilities, both also from the Netherlands. Paper 4 investigates how facility managers in higher education institutions can align the learning facilities to the changing demand of modern education and paper 5 investigates the relationship between FM provision and the learning outcome of Dutch Universities of Applied Science.

Theoretical foundation: Paper 4 is not really connected to theoretical issues of the added value of FM but it clearly shows that educational performance depends on an appropriate match between new ways of learning, new learning spaces, digitalisation of learning and teaching and coping with the needs and interests of (new) students. Paper 5 has a strong basis in earlier added value research and focusses on relationships between inputs i.e. facility services and outcomes i.e. study success.

Methodology and evidence: Paper 4 is partly conceptual based on literature review, but it also includes an empirical study with a mix of qualitative methods, whereas paper 5 is based on an extensive questionnaire that was filled out by 1,752 teachers from 18 out of 39 Universities of Applied Sciences. By use of regression analysis the latter study provided empirical evidence for significant correlations between the perceived qualities of facility services and study success. A
limitation of this study is that no students were involved and no objective KPIs of input parameters have been applied.

Practical relevance: Paper 4 showed clear similarities between new ways of working and new ways of learning and contributes to a better understanding of both fields. Paper 5 used respondents that teach in practice and shows more light on their perceived qualities of facility services in connection to study success. A next step could be to be more precise about actual qualities and further exploration of why particular services have a positive impact and others have no or a negative impact.

Conclusion: The two papers confirm the relevance of facilities and services in higher education in order to cope with new ways of learning and to contribute to study success. Both papers build on earlier conceptual analyses of input and output parameters. The mechanisms for how spaces, facilities and services add value to higher education institutes need further exploration.

3.3 Healthcare Facilities
There are three papers about healthcare facilities, all from the Netherlands. Paper 6 investigates to what extent changes in organisation and space can contribute to the quality of life of intellectually disabled residents with a severe behavioural disorder. Paper 7 explores what aspects of a hospital stay are related most to hospitality according to patients. Paper 8 explores the experience construct and shows data from measuring the meal experiences of elderly clients living in nursing homes.

Theoretical foundation: Paper 6 is mostly based on literature on environmental psychology and evidence based design of healing environments. Papers 7 and 8 have some references to earlier research on the added value of FM. Both papers build on theory on hospitality experiences, but there is surprisingly little commonality in the literature they refer to and the theories they present. Methodology and evidence: Paper 6 is a fairly limited explorative study based on a mix of qualitative methods. Paper 7 and 8 are quite comprehensive studies applying a mix of qualitative and quantitative methods and covering several institutions. Both show the strength of such an approach.

Practical relevance: All three studies have been conducted in collaboration with FM organisations in the case institutions and all have clear practical relevance.

Conclusion: The three papers together show the impact of the specific context even within one sector like healthcare. Paper 6 concerns intellectual disabled residents, paper 7 concerns hospital patients and paper 8 concerns elderly people in nursing homes. These differences in contexts give different methodological challenges and different results. In paper 6 data had to be collected from staff and incident reports, while paper 7 and 8 are based on data from the end users. Research among elderly people in paper 8 also gives special challenges for data collection. The three papers provide important contributions both in relation to research methodology and new theoretical and practical knowledge on the added value of FM in healthcare facilities.

3.4 Temporary Housing Facilities
Two papers deal with temporary housing facilities, one from the Netherlands and one from Thailand. Paper 9 investigates the influence of FM on the behaviour of detainees in prison facilities and paper 10 presents the findings of a Post Occupancy Evaluation (POE) of the Choeng Doi dormitories of the Chanmai University in Thailand.

Theoretical foundation: Paper 9 is based on a literature review on the impact of the built environment on human behaviour and evidence about healing environments. Paper 10 refers to POE theory and literature on student housing and student development. Both papers do not explicitly discuss theoretical insights or empirical research about the added value of FM.
Methodology and evidence: With only four interviews paper 9 does not add much empirical evidence for the added value of natural view and self-cooking i.e. a positive impact on behaviour of detainees in prison facilities. However, the study is explorative and findings from literature are confirmed by the interviews which is promising. Paper 10 is quite well empirically funded by a survey with N = 152 and 30 additional interviews with students.

Practical relevance: Both papers show the potential added value of interventions in the built environment and supportive activities. Benefits are respectively a more positive behaviour of prisoners and improved student satisfaction. To be able to draw more generic conclusions and to develop guidelines that can be applied in other sectors as well, additional research is needed to compare the perceived performance of facilities with the actual performance measured by KPIs.

Conclusion: Paper 9 is limited in empirical evidence, whereas paper 10 clearly shows the relevance of POE and the benefits of supplementing a questionnaire survey with interviews. Both papers are pretty clear about the input parameters and the positive outcomes of interventions i.e. better behaviour and higher satisfaction levels, but do not pay any attention to the sacrifices and costs of the interventions.

3.5 In-house FM on national level
There are two papers on in-house FM on national level, both from Austria and by the same authors. Paper 11 investigates the implementation of FM in in-house organisations in Austria. Paper 12 explores the added value of having an in-house FM department. It is based on the same annual survey as paper 11, but this paper involves data from both Austria and Romania.

Theoretical Foundation: Both papers includes several references to recent international literature on added value of FM. Value added is understood as effects in terms of cost savings and increase of productivity on one side and cost drivers on the other side.

Methodology and Evidence: Both studies apply a mixed method research methodology with qualitative expert interviews and quantitative questionnaire survey. The questionnaire from earlier years is revised based on expert interviews. The respondents are randomly selected among Top 500 companies. The paper from 2014 includes statistical tests.

Practical Relevance: The research has in both papers been carried out with involvement of practitioners. The positive impact of having an own FM department based on statistical test is interesting input for a strategic discussion. However, the results are quite general and seem difficult to transform into practical application.

Conclusion: The two papers provide new insights on the importance of different areas of FM in relation to changes in cost and productivity and the effects of having an internal FM department.

3.6 General papers
The last three papers are not linked to a particular type of facility, but discuss the added value in connection to the whole life cycle (paper 13), relationships between different value parameters (paper 14) and aligning FM services to business needs (paper 15).

Theoretical foundation: All three papers build on former theories by linking added value to the whole building life cycle, searching for interconnections between different values i.e. productivity and customer satisfaction, and aligning FM to business needs. However, paper 15 does not really elaborate the concept of Added Value.

Methodology and evidence: The methods range from a mixed method approach including qualitative and quantitative research to interviews with focus groups and individual interviews in a number of cases.

Practical relevance: In paper 13 and 15 practitioners were included among the respondents. The papers did not include a section on “practical implications” but all papers deliver input to
improve the benefits and to reduce the costs of FM and to strengthen the degree of alignment of
FM to core business needs, be it in rather generic and abstract terms.

Conclusion: All three papers contribute to a conceptual understanding of the role of FM in
business success, partly on a generic level, partly focusing on particular values such as service
productivity and customer satisfaction. Their contribution to ways to measure the added value of
FM is limited.

3.7 General evaluation of papers 1-15

Regarding the theoretical foundation, all papers build on former theories and references. Due to
the huge variety in research subjects, the theoretical foundations show a huge variety, too. Only a
few papers refer in particular to theoretical frameworks on the added value of FM such as the
FM Value Map from Jensen (2010), or the value parameters that were used by Lindholm (2008),
Van der Zwart (2011), and Prevosth and Van der Voordt (2012). Other theories regard economic
type on the value chain, conceptual models of user satisfaction, (perceived) productivity, and
service quality, or concepts such as experience (of meal services, hospitality), and the impact of
facilities and services on human behaviour. None of the papers end up with well-argued
proposals for standardized ways or Key Performance Indicators (KPIs) to measure the added
value of FM. Most papers only discuss the benefits of particular choices regarding FM services
or spatial layouts i.e. its impact on user satisfaction, knowledge sharing, or efficient use of space,
whereas no paper discusses the sacrifices in terms of time, money, effort and risk to attain these
benefits. Hardly any paper discusses how to implement the FM interventions. In other words: all
papers focus mainly on the output and much less or not at all on the input.

Most papers measure perceived performance i.e. the impact of actual FM interventions or
perceived qualities of FM services on satisfaction and perceived productivity and not on
quantitative data regarding for instance the number of clients, number of complaints, costs or
profit. Paper 5 is an exception, which measures the impact of perceived FM qualities on study
success, which was measured on an aggregate institutional level as “the percentage of students
who successfully leave the University of Applied Sciences within five years after attending”. The
evidence for cause-effect relationships between input-throughput-output variables is still limited.
The throughput is underexposed as well. An exception is again paper 5, which discusses
knowledge transfer as an intermediary mechanism between facility services and educational
achievement.

All papers include in varying degree empirical evidence. Data collection methods usually include
interviews (individually or with focus groups) and (online) questionnaires with open and closed
questions, in combination with literature review, analysis of documents, observations and walk-
throughs. Most papers apply common data collection techniques such as 5- or 7-point Likert
scales or build on renowned methods such as SERQUAL. In paper 8 a special developed
measurement box was used to measure user satisfaction and respondents’ affective assessment.

The level of evidence shows a huge variety, ranging from only four open interviews to surveys
with a high N rising to N = 2,163 and response rates amounting to 75%. However, only a few
papers compare the setting before and after change. Most papers only show data that were
collected ex post, after a change, compare different settings that were not changed at all, or take a
snapshot in time to measure the relationship between an independent variable such as spatial lay-
out and a dependent variable such as knowledge sharing. An exception is paper 3, which
includes POE surveys twice in an almost new building, with some interventions between the first
and second POE.
In a few papers practitioners were involved in defining the research topics and/or as interviewees – individually or in focus groups - or respondents to a survey. Remarkably often an explicit subsection on practical implications is lacking. Whereas most papers contribute to a better conceptual understanding of adding value by FM and include empirical data to deliver evidence for the impact of FM on user satisfaction, perceived productivity, cost savings and business performance, not many papers end up with practical guidelines on how to measure and manage the added value of FM.

4. VALUE ADDING MANAGEMENT IN PRACTICE
As a follow up to the book from 2012 mentioned in the introduction the authors of this paper together with the third editor of the book, Christian Coenen, ZHAW, organised a workshop during EFMC 2013 in Prague on the topic: “How to manage and measure different value dimensions?”. The participants were asked at the beginning of the workshop to fill in a short questionnaire about their perception of the concept of “Added Value of FM”. The results confirmed that the concept of Added Value is interpreted in many ways and linked to a huge variety of different topics. This inspired us to investigate the perception and application of the added value of FM and CREM among practitioners further. Therefore, we conducted 10 interviews with experienced practitioners - 5 from Denmark and 5 from the Netherlands - based on a common interview guide (Van der Voordt and Jensen, 2014).

Regarding the definition of added value all respondents referred to both benefits and costs of FM/CREM interventions. Benefits were mainly linked to clients, customers and end users but also to shareholders and – less often - to society as a whole. All respondents included different types of added values, without a clear classification into for instance user value versus customer value, or economic value versus environmental value. Practitioners mainly steer on the impact of FM and CREM on the core business and organisational performance, and this is also essential in provider companies’ sales arguments.

Prioritized values were costs and satisfaction, followed by productivity. Remarkably, four out of ten outcome parameters that are included in the FM Value Map of Jensen (2010) - reliability and economic, social and spatial impact on the surroundings - were not spontaneously mentioned at all in response to the open question about prioritized values. These issues came only to the fore when we asked for comments on the list of possible added values that was shown after the open questions. Not all values showed up on the list – in particular possible impacts on the surroundings – did immediately ring a bell and raised different interpretations or misunderstanding. Sustainability was mainly perceived as a building characteristic. Most respondents made no clear distinction between impacts on the core business and impacts on the surroundings, and focussed more on a distinction between interventions regarding buildings and building related facilities and services versus choices regarding the location and the surroundings. Because practitioners use different terms, various responses could not be allocated clearly to one particular value.

5. IMPLICATIONS FOR RESEARCH AND PRACTICE
Based on the EFMC 2013 and 2014 papers, our meetings with academics and practitioners, and the responses to our interviews with practitioners, it can be concluded that added value and adding value by facilities and services are currently well-known and widely applied concepts in daily practice among leading practitioners in interactions between various stakeholders, and perceived as key issues in FM and CREM. Adding value by real estate, facilities and services and value adding management also attain a growing interest of researchers in the fields of FM and CREM, which is illustrated by the reviewed papers.
At the same time we can conclude that there is still a long way to go to design a clear, well-visualised and widely accepted framework of well-defined value parameters and connected performance indicators, and ways of value adding management on strategic, tactical and operational level. In our first book we traced more than 50 different definitions of added value, various lists of value parameters, and a huge number of performance measurement systems and KPIs (Jensen et al., 2012a). In order to improve value adding management and to be able to share insights, to benchmark and to compare research findings, a common taxonomy should be developed. Furthermore, clear operationalization is needed, not only in order to be able to measure the added value of different interventions in buildings, facilities and services, but in particular also to disentangle complex cause-effect relationships between input (type of change), throughput (implementation) and output (outcomes in terms of benefits, sacrifices and risks). This is exactly the theme of our second book on “Facilities Management and Corporate Real Estate Management as Value Drivers: How to manage and measure added value” (working title, expected 2016).

In addition to these main themes for further research, a number of other topics for research, education and practical development need more attention. We refer to our two joint journal papers (Jensen et al., 2012b; 2014), where we have reflected on the conclusions from various trend reports and on what we know and what we still need to know.

6 CONCLUSION
It is very encouraging that so much new research on the added value of FM as reviewed in this paper was presented at EFMC 2013 and 2014. It is even more positive that all the research papers provides new empirical evidence and many of the papers are based on quite comprehensive studies. The research represents a wide scope of different types of facilities and a varied scope of FM services, themes and activities. There is a surprising overweight of studies of different type of institutions like learning and healthcare facilities compared to corporate facilities, and there were no studies concerning municipalities or state agencies. There are papers about unusual types of facilities like institutions for intellectual disabled residents and prison facilities. Many studies concern FM in a broad sense but there are also papers concerned with more specific and not commonly researched aspects like hospitality and meal experiences. There is an overwhelming dominance of studies from the Netherlands (9 out of 15), which hopefully is an inspiration for researchers in other countries.

The papers are based on a sound mixture of different research methodologies. Out of the 15 papers there are 5 based on qualitative methods, 3 based on quantitative methods and the majority are based on mixed methods, including both qualitative and quantitative methods. Mixed research, where the quantitative results provides overview and identify the most important aspects, while the qualitative research identifies specific interventions, that can actual add value, seems to be particularly suitable for research on added value.

Several papers shows the importance of the specific context, which both makes it difficult to generalise results across different organisations and facilities and has important consequences for the choice of research methods. Another aspect of context is the economic situation at a specific time, where the financial crisis starting in 2008 has changed the focus to be more on cost reduction than before the crisis.

Some of the papers have a strong foundation in former research on the added value of FM, while many other papers only to a limited degree reflect and build upon this earlier research. This together with the broad scope of themes means that the cumulative knowledge building is rather weak. Besides, only few of the papers contribute directly to knowledge on value adding
management. Our study about how practitioners cope with value adding value management clearly demonstrates a strong interest in the topic among leading professionals, but also a lack of common understanding and practical management tools.

REFERENCES
The 15 reviewed papers are listed in Table 1 and are not included in the following list. The papers from EFMC 2013 are published in Alexander (2013) and the papers from EFMC 2014 are published in Alexander (2014).


### Annex A: Characteristics of 15 papers: subjects, theories ad methods

<table>
<thead>
<tr>
<th>No</th>
<th>Authors</th>
<th>Subject</th>
<th>Theory</th>
<th>Methods and evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Appel-Meulenbroek et al. (2014)</td>
<td>Layout mechanisms that stimulate behaviour of employees</td>
<td>Limited AV theory; knowledge sharing; layout mechanisms</td>
<td>Realistic evaluation; Space Syntax analysis; logbooks</td>
</tr>
<tr>
<td>2</td>
<td>Gerritse et al. (2014)</td>
<td>Exploration of added value concepts in FM practice of financial institutes</td>
<td>AV theory; FM Value Map; various AV parameters</td>
<td>Multiple case study; semi-structured interviews; survey</td>
</tr>
<tr>
<td>3</td>
<td>De Been et al. (2013)</td>
<td>Effects on satisfaction, perceived productivity and health</td>
<td>No theory; few references to literature on employee satisfaction, productivity and well-being</td>
<td>Two ex-post surveys (9 months + 2 years and 9 months after occupation)</td>
</tr>
<tr>
<td>4</td>
<td>Beckers et al. (2013)</td>
<td>New ways of learning in Dutch Higher Education</td>
<td>Theory on new ways of working and recent developments in learning and educational facilities</td>
<td>Literature review; interviews</td>
</tr>
<tr>
<td>5</td>
<td>Kok et al. (2013)</td>
<td>Contribution of FM to study success</td>
<td>Theory on added value of facility services in educational environments</td>
<td>Online survey</td>
</tr>
<tr>
<td>6</td>
<td>Daatselaar et al. (2013)</td>
<td>Added value of FM in Institutes for intellectually disabled residents</td>
<td>Theory on the impact of organisation and space on (aggressive) behaviour</td>
<td>Interviews; observations; incident reports</td>
</tr>
<tr>
<td>7</td>
<td>Groen (2014)</td>
<td>Contribution of FM to hospitality</td>
<td>Theory on hospitality and added value of FM in healthcare</td>
<td>Three surveys; interviews with patients</td>
</tr>
<tr>
<td>8</td>
<td>Van Sprang et al. (2014)</td>
<td>Capturing meal experiences in nursing homes</td>
<td>Theory on eating behaviour and meal experience of elderly people.</td>
<td>Survey with a specially developed measurement box</td>
</tr>
<tr>
<td>9</td>
<td>Kuijlenburet al. (2013)</td>
<td>The influence of FM on detainees</td>
<td>Maslow hierarchy of human needs + literature on the impact of the physical environment on behaviour etc.</td>
<td>Open interviews; walkthroughs</td>
</tr>
<tr>
<td>10</td>
<td>Waroonkun et al. (2014)</td>
<td>POE of main dormitories</td>
<td>POE-theory + theory D2on living and learning in an educational setting</td>
<td>Survey; interviews</td>
</tr>
<tr>
<td>11</td>
<td>Redlein et al. (2013)</td>
<td>FM in Austria</td>
<td>No theory; few references to literature on FM contribution to profitability and efficiency</td>
<td>Expert interviews; annual survey</td>
</tr>
<tr>
<td>12</td>
<td>Redlein et al. (2014)</td>
<td>Facility Management in West- and Eastern Europe</td>
<td>Theory on the added value of FM</td>
<td>Expert interviews; annual survey</td>
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<td>13</td>
<td>Ashworth (2013)</td>
<td>Added value of FM Know-how in the Building Whole Life Process</td>
<td>Theory on the Added Value of FM and Life Cycle value measurement</td>
<td>Expert interviews; survey with online questionnaire</td>
</tr>
<tr>
<td>14</td>
<td>Meerman et al. (2014)</td>
<td>Integrating customer satisfaction in productivity measurement</td>
<td>Theory on service productivity measurement and customer satisfaction</td>
<td>Two focus groups</td>
</tr>
<tr>
<td>15</td>
<td>Katchamart et al. (2014)</td>
<td>Strategic FM-procurement; aligning services to business needs</td>
<td>Theory on interconnections between FM procurement and business support, focusing on asset specificity.</td>
<td>7 case studies with semi-structured interviews demand and supply side</td>
</tr>
</tbody>
</table>

1) Note: because most researchers also included literature study and analysis of documents, this is not mentioned explicitly
## Annex B: Characteristics of 15 papers: response rates, practice involvement and output

<table>
<thead>
<tr>
<th>No</th>
<th>Authors</th>
<th>Response</th>
<th>Practice involvement</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Appel-Meulenbroek et al. (2014)</td>
<td>N = 138; response rate = 51%</td>
<td>Respondents = R&amp;D employees, no FM people</td>
<td>Conceptual model for layout metrics and KS meetings; correlations</td>
</tr>
<tr>
<td>2</td>
<td>Gerritse et al. (2014)</td>
<td>N survey = 2,163; response rate = 33%</td>
<td>Survey respondents = end users; interviewees include FM directors</td>
<td>Conceptual model for demonstrating added (exchange and use) value</td>
</tr>
<tr>
<td>3</td>
<td>De Been et al. (2013)</td>
<td>N1 = 377; F4 response rate = 75%; N2 = 389 respondents; response rate = 73%</td>
<td>FM involved in initiation and feedback</td>
<td>Satisfaction scores (2 x ex-post + comparison with benchmark)</td>
</tr>
<tr>
<td>4</td>
<td>Beckers et al. (2013)</td>
<td>N = 14</td>
<td>Interviewees were facility managers</td>
<td>New ways of learning framework + parallels between NWoW and NWoL</td>
</tr>
<tr>
<td>5</td>
<td>Kok et al. (2013)</td>
<td>N = 1,752; response rate = 13% - 2-45% per institute</td>
<td>Respondents = lecturers, no FM people, no students</td>
<td>Multiple regression analysis with beta factors showing levels of correlation</td>
</tr>
<tr>
<td>6</td>
<td>Daatselaar et al. (2013)</td>
<td>N interviews = 10; N patients = 2</td>
<td>Respondents = staff members, no FM people, no patients</td>
<td>Impact of organisation and space on mean number of incidents per month, per patient</td>
</tr>
<tr>
<td>7</td>
<td>Groen (2014)</td>
<td>N surveys = 960; responses = 30-76%; N = interviews = 8</td>
<td>Respondents = patients, no FM people</td>
<td>Appraisal scores on 7-point Likert scales + associations with 'hospitality'</td>
</tr>
<tr>
<td>8</td>
<td>Van Sprang et al. (2014)</td>
<td>N = 217</td>
<td>Respondents = patients; nursing home staff administered the surveys</td>
<td>Impact factors on meal experience and meal appraisal</td>
</tr>
<tr>
<td>9</td>
<td>Kuijilenburet al. (2013)</td>
<td>N interviews = 4; N institutions = 2</td>
<td>Respondents = penitentiary staff</td>
<td>Impact of natural view and self-cooking on detainees' behaviour</td>
</tr>
<tr>
<td>10</td>
<td>Waroonkun et al. (2014)</td>
<td>N survey = 152; interviews = 30</td>
<td>Respondents = students</td>
<td>Satisfaction scores on 5-point scales + correlation values of building efficiency</td>
</tr>
<tr>
<td>11</td>
<td>Redlein et al. (2013)</td>
<td>N = 82</td>
<td>Respondents = selected randomly among Top 500 companies</td>
<td>Insight in FM organisation, cost drives and cost savings</td>
</tr>
<tr>
<td>12</td>
<td>Redlein et al. (2014)</td>
<td>N Austria = 71; N Romania = 11</td>
<td>Respondents = selected randomly among Top 500 companies</td>
<td>Insight in FM organisation, cost drives and cost savings</td>
</tr>
<tr>
<td>13</td>
<td>Ashworth (2013)</td>
<td>N interviews = 10; N questionnaire = 62</td>
<td>Respondents = various stakeholders including FM people</td>
<td>Insight in the added value of FM and FM know-how</td>
</tr>
<tr>
<td>14</td>
<td>Meerman et al. (2014)</td>
<td>N1 = 12 BSc students (business); N2 = 4 academics (FM)</td>
<td>Respondents = business students and academics connected to FM</td>
<td>An extended Service Productivity Measurement Model that integrates customer satisfaction</td>
</tr>
<tr>
<td>15</td>
<td>Katchamart et al. (2014)</td>
<td>N = 7 companies or public authorities</td>
<td>Respondents represent companies or public authorities, not specified</td>
<td>Overview of 7 types of asset specificity that add value to the core business</td>
</tr>
</tbody>
</table>
Introduction
Creating value in organisations

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BACKGROUND
In the workshop on the Added value of FM on Monday 1 June, we presented a critical review of selected papers from EFMC 2013 and EFMC 2014. The review concluded that much progress has been made regarding the theoretical foundations of the added value concept and collecting empirical evidence. However, it was also found that the level of evidence ranged from surveys with a high N to a limited number of open interviews. Most papers focused on (perceived) performance instead of the trade-off between the benefits and the costs of FM interventions. Still much work has to be done to further explore cause-effect relationships between FM input and its outcomes in different settings. This session includes presentation of the following papers.

THREE PAPERS
Matzdorf and Greenwood discuss the impact of a universities ranking and high quality facilities on student’s choice where to study. Whereas former studies showed an unclear picture, the findings from a mixed method approach, including a survey at the University of York with 2,382 responses and 3,500 focus group comments, confirmed a strong influence of league tables on students’ choices. Top league universities tend to be selected with a focus on reputation. Personal preferences regarding the location and the cost play an important role as well. Whilst university facilities do not feature high on students’ selection criteria, there are expectations that high ranked institutions come with top class facilities. If not, facilities may act as a dissatisfier.

Von Felten, Böhm and Coenen present the findings of a quantitative national online survey with a total of more than 7500 participants of graduates of universities of applied sciences to explore the perceived potential of enhanced working productivity. This ‘use value’ was compared with the potential enhanced FM resources (exchange value). A workplace without disturbance and appropriate ICT hardware are perceived to contribute most. Remarkably, childcare also ranked high. The findings are used to develop a model for measuring the productivity enhancement through FM services and to define the dimensions of a demand gap and a supply gap in FM.

Riratanaphong and van der Voordt discuss the practice of performance measurement of public facilities in Thailand. The findings from a single case study are compared with data from 55 other public organisations in Thailand. The findings show that KPIs are linked to three main areas: adherence to policy, operating performance of the state enterprise, and organisational management. KPIs include both financial and non-financial indicators. Benchmarking of performance measurement results of government agencies are used to improve the country’s public performance management as a whole.

The findings and reflections upon the findings help to improve our understanding of the impact of facilities on organisational performance and how to add value to the organisation.
Student choice, league tables and university facilities

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ABSTRACT

Purpose This paper examines the three-way connection between league tables, student choice of university and university facilities, a topic area that has so far seen little research. In the decade since Price et al. (2003) highlighted the links between university facilities and students’ choice of institution, changes in technology and the rise of league tables render an update necessary.

Design/methodology/approach The empirical research focuses on one top league university with a 1960s campus, using a mixed-method approach, including results from the annual York University Student Union survey (results of a survey with 2,382 responses, and 3,500 focus group comments) and from research carried out by one of the authors (a survey with 331 responses and 144 comments from focus groups. Results from the Unite Student Experience Report 2012 (based on 1,236 responses) were also used.

Findings The influence of league tables on students’ choices was strongly confirmed. There are expectations that ‘premier league’ institutions come with top class facilities. Students whose expectations of their institution’s facilities are not met, may vent their disappointment via national satisfaction surveys (such as the National Student Survey in the UK).

Originality/value There has been little research about the connection between league tables, student choice of university and university facilities. This paper makes a start on a three-way connection and maps out the field for further research.

KEYWORDS University Facilities, University Estates, League Tables, Students, Higher Education

1 INTRODUCTION and background

The potential connections between university league tables, student choice of university and university facilities have so far seen little research. Price et al. (2003.) highlighted the relevance of facilities for students’ choice of some institutions. However, changes in technology and the rise of league tables in higher education over the past decade make an update overdue. The limited amount of information and research that is available either focuses on the impact of league tables on students’ choices or on the impact of facilities on universities’ business and student choice (see Figure 1). This paper asks whether there is a three-way connection and maps out the field for further research.

1.1 Student choice and university league tables

Over the past decades, “lists and rankings of everything from bestselling novels, to universities, to Madonna’s boyfriends, could reasonably be classified as a contemporary cultural ‘craze’ in the West” (Hearn 2010, p.429). So rankings or ‘league tables’ are no longer restricted to the football scene! Indeed, “university rankings are often described as ‘league tables,’ reflecting the published rankings used to place international football (i.e. soccer) teams in different leagues.” (Dill & Soo 2005, p.526). Gunn & Hill (2008) take this analogy even further, proposing “two ‘selecting’ divisions, typically choosing from a surplus of applicants, and two ‘recruiting’ divisions, typically working to avoid an applications shortfall against target numbers” (p.273). Clearly the ‘lower’ (“recruiting”) divisions have to work harder at attracting students.
The US first produced a university league table in 1983 via US News, and the past three decades have seen a steady increase in the number of league tables. Rankings are now used in many countries, including Canada, UK, China, Australia, Poland, Germany, Italy, Ireland and Spain (Roberts & Thompson 2007), and the size of their audience (ibid.) is strong evidence that league tables are here to stay. Roberts & Thompson (2007) point out that “this increased incidence of university ladders has undoubtedly been a factor in their increased use by prospective students”. Onsman (2008) states that prior to the league tables “all universities were equal, with the implicit understanding that some were more equal than others” – a sentiment borrowed from George Orwell’s Animal Farm. According to Calhoun (2006), ranking universities is the product of corporatisation and commercialisation of higher education institutions (HEIs) around the world.

As a form of benchmarking customer satisfaction, quality, levels of service provision, or even just popularity, league tables have become a ubiquitous feature of neoliberal consumerism – from hotels to schools and hospitals, restaurants to local authorities (Gun & Hill 2008). And whilst there is an abundance of criticism, accusing higher education league tables of flawed methodology, over-simplification, elitism and bias (e.g. Brown 2006, Chao 2014, Dill & Soo 2005, Hazelkorn 2014, Marginson 2006, Marginson 2011, OECD 2011, Portnov et al. 2010, Robinson 2014, Rostan & Vaira 2011), the one conclusion that almost all authors share, is that ‘league tables are here to stay’, not least due to the omnipresence of the internet and the tools linking to it, facilitating data gathering, easy feedback and opinion surveys.

In October 1992 The Times published the first ever university league table. By 1998/9 The Times had been joined by The Financial Times, The Sunday Times, The Daily Telegraph and an alternative independent web-based league table compiled by ‘Red Mole’ where students rated their university on such features as accommodation, sports facilities and quality of teaching. There are also world university league tables such as The THesp Thompson-Reuters World University Rankings and the QS World University Rankings as well as the Jiao Tong which was produced on behalf of the Chinese government.

1.2 Drivers for the current research
This paper is based on a research project which was commissioned by the University of York, a ‘top league’, research-led, campus-based institution in the north of England. The project sought information on how much influence league tables have on a student making their choice of university, and subsequently, how much effort the University needed to put into maintaining and/or improving its ranking. At the same time the project was trying to establish whether or not the facilities provided at the University of York, and specifically those provided by the Directorate of Commercial Services, had a bearing on either the league tables or on students’ choice of university. There was much debate at the University’s senior management group around the level of importance that should be placed on achieving a high league position, however, there was no real data supporting either the view that league ranking was important and needed investment, or the opposing opinion that it was irrelevant, with the institution’s reputation not depending on its league table position.

Whilst a high league position provides for a strong marketing message (Chen 2008, Gun & Hill 2008, Chao 2014), there is a price to pay, either in terms of hard cash (since implementing such a strategy requires significant investment), or perhaps further-reaching, by a change of strategy (Fahey 2007), or even a combination of the two. Fahey, at the time Deputy Vice Chancellor at the University of Monash, Australia (her paper is one of several that have been written by university staff) states that “rankings will actually force institutions to focus on league table criteria, which will inform... strategic goals, annual plans and resource allocation”. (Op.cit., p.4)
The problem for the University of York was that, for the two years prior to this research project, the University had ‘dropped’ in the league tables. As yet there does not appear to be a corresponding drop-off in applications to the University, but this might only be a matter of time, hence the need to understand more about the student perception of league tables in general. Moreover, the past decade has seen a tendency to see students as ‘customers’, an approach that was strongly reinforced by the steep increase in student fees within the UK over the past few years. Whilst a publication in 2002 could still claim that “prospective students seem not to be strongly influenced by the annual changes in the league table position of a given institution but are influenced more strongly by competition for places and the quality of the learning environment offered by the university” (Eccles 2002, abstract), does this still hold in 2014?

The picture is by no means clear. A number of researchers and experts in higher education studies maintain that league tables influence students’ decision where to study – but interestingly enough, not many offer any evidence to back up this claim. Al-Juboori et al. (2012) claim that “the number of visitors to the Rankings’ websites is in the order of millions per year and many candidate students use them as a guide for choosing to which (especially foreign) institutions to apply” (p.10, also Aguillo et al., 2010, p.244). Marope et al. (2014) assume that rankings provide simple/simplified information to fill the “need to make informed choices of universities, within a context of widely growing diversity of providers” (p.2). According to Dill & Soo (2005), many league tables appeal to the top end of the student market, to “students of high achievement and social class [...] interested in the ‘prestige’ rating of a university” (p.513). Buela-Casal et al. (2007) argue that the “main purpose is to give information to the consumer in order to help him to make higher education choices [...] Students are considered the more important consumers. Parents are other key collective since they pay expending of students’ education” (op.cit., p.350). Neither of these articles provides evidence for these claims.

Other researchers provide more evidence for their claims. According to Gunn & Hill (2008), student application rate changes between 2001-5 suggest a decreasing impact of rankings on application rates: initially the influence of rankings was very high (explains 96% of variance in application rate changes), but then dropped significantly, “suggesting that it was no longer a key factor in the students’ choice process” (p.288). Instead, they suggest that prospective students apply “divisionally rather than to a particular university” (ibid.), i.e. the attraction lies with a type of university rather than individual institutions. According to Marginson (2006 and 2011), “studies of student choice-making find that university status is far more important than teaching quality”. A Scottish study (Briggs & Wilson 2007) found that, even way back in 2003/4, league tables were already the fifth most important source of information that influenced undergraduate students’ choice of university. Griffith & Rask’s (2007) data show that students tended to choose colleges with higher rankings; this tendency was stronger within the top rankings. Chen (2008) provides an overview of factors influencing institutional choice, which shows that amongst undergraduates league table ranking is the third highest factor in importance when choosing a university, whereas for professional graduates, programme ranking is the most important factor, with institution ranking lower in importance (op.cit., p.16).

Others claim the opposite. Veloutsou et al. (2005) found that university league tables only came in 9th place in terms of their importance for students’ decision-making, whilst university open days (and of course this includes the influence of the physical environment) were ranked 2nd and university websites 3rd – however, this was a decade ago, and consumer online behaviour has changed significantly during this period! Rostan & Vaira state that “prospective students are, quite unexpectedly, far less interested in these rankings when choosing institutions and study courses. As a matter of fact, students search information different from that presented in league tables and choose accordingly to it” (Rostan & Vaira 2011, p.xiv). Phelps (2013) sees student recruitment as seemingly unrelated to his institution’s place in the rankings. Robinson (2013) emphasises that “there is surprisingly little evidence showing what effect rankings have on student choices. What most sociological research does reveal is that students are far more likely to base their higher education decisions on factors such as funding, proximity to an institution, and particular program offerings — just as was the case before rankings appeared” (p.15).

So the larger picture remains somewhat inconclusive. On the other hand, HE within the UK is very much in flux, especially since in recent years the National Student Survey (NSS) has gained a strong foothold and (despite accusations of faulty design and oversimplification) is increasingly used by institutions as a quality benchmark, influencing national league tables and resource allocation (Hazeldorn 2011, p. 163). Our own research at York seems to confirm that league tables are indeed taken seriously by the students – however, since this study was only a small pilot undertaken in one university, we would at this stage not want to generalise any conclusions.
1.3 Student choice and university facilities

Despite increased (and still increasing) competition within the HE sector and a general trend towards viewing university facilities as strategic assets (e.g. Price et al. 2003, Veloutsou 2004, Matzdorf 2010), the research landscape remains somewhat bare, as regards the influence of HE estates on student recruitment. In part, this can be explained by the difficulty for estates and facilities departments to gain access to students – often the ‘powers that be’ (usually the university’s Registry, which tends to be in charge of data gathering, as regards students) argue that students suffer from ‘survey overload’ and are reluctant to descend upon them with yet another survey. As far as potential students and applicants are concerned, access is even more difficult.

Price et al. (2003) is one of few papers asking the question “What is the impact of facilities on student choice?” within the UK. Their study surveyed a total of 8742 students across 9 English universities. Similar studies were carried out in the US in 1986 by the Carnegie Foundation for the Advancement of Teaching and in 2006 by APPA’s Center for Facilities Research (Reynolds & Cain 2006; APPA is the US Association of Higher Education Facilities Officers). The APPA study found that “an attractive campus and quality facilities do play a role in the student’s decision process, but they are not necessarily a deciding factor. However, the results suggest a significant number of respondents had rejected an institution because important facilities were missing, inadequate, or poorly maintained. It may be safe to say that having a quality built environment is a necessary but not sufficient condition to recruit and retain students” (op.cit., p.41). This confirms the Price et al. (2003) finding that university facilities can become a deciding factor if a student has received more than one offer of a university place and is looking for differences between specific universities. One of the observations reached through their research is that particularly among ‘new’ universities (post-1992) a ‘facilities-enhanced’ position had been adopted by some institutions as a means of standing out amongst rival institutions and attracting students, a strategy that pays off particularly via open-day visits. This reinforces the results from the Carnegie Foundation’s earlier studies (1986 and 1990) that campus visits are a major factor in students’ location decisions.

In addition, the APPA study found that students attached high importance to those facilities related to their “major” (their main subject of study) – over 70% of respondents confirmed this, and, even more importantly, 29.3% of respondents pointed out that “they had not chosen an institution because a facility was missing” (Reynolds & Cain 2006, p.23). One specific point are recreation facilities: “Many campuses are building recreation facilities. This survey indicates that the lack of recreation facilities is the fourth highest reason cited (8.5%) among students who rejected an institution because of missing facilities.” (Op.cit., p.24)

As Barnett & Temple put it in their 2006 report on future changes in HE: “The quality of an institution’s physical facilities will increasingly be seen as an important marketing asset and will accordingly attract more resources and management attention.” (Op.cit., p.4) So far, we have seen their prediction confirmed. Interestingly though, in their 22-page report, whilst there are various acknowledgements that university facilities can be/are part of the institution’s marketing plan, there is not a single mention of the words ‘league table(s)’ or ‘ranking(s)’!

Temple’s 2009 paper talks about “locational capital”, but does not relate it to attracting or recruiting students. Vidalakis et al. (2013) tested students’ perceptions of several university buildings and found “that the general consensus among students (60 per cent) is that students did not consider buildings as a strong determinant of their decision to apply to the specific university [...] no matter the building, students were neither encouraged nor discouraged to apply to this university because of the quality of facilities.” (Vidalakis et al. 2013, p.498)

In its 2012 and 2013 surveys of new students, First Impressions, York University’s student union (YUSU) found that after ‘academic reputation’, the main reason why students had chosen to study here was its location – this echoes Price et al. (2003), where location was a strong ‘pull’ factor for some HEIs, and makes it clear that students indeed pay attention to the environment they study in. The 2013 version of the new students’ survey for the first time also included “York is a campus-based university”, and since over a quarter of respondents rated this as a main decision factor, it emphasises the relevance of campus facilities.

So whilst there appears to be a facilities influence on students’ decision where to study, the evidence remains somewhat inconclusive. Given that all those studies that are looking for a link are actually coming from a facilities management angle, there is always the possibility that by their very nature these surveys draw special attention to university facilities, thereby raising an awareness in their respondents that was not originally there. Also, the actual surveys use current students, rather than prospective students, as subjects, so there is always the risk of ‘post-rationalisation’.
1.4 How do university facilities influence league tables?

The researchers’ ‘hunch’ was that there might be a link between the quality (or perceived quality) of HE facilities and their ranking in the league tables. Whilst we were quite aware that this would be difficult to draw out and make explicit, we still made the attempt. There are several obstacles that make this a difficult undertaking:

1) For a long time, league table producers have been accused of a lack of transparency with regard to the ranking criteria and their respective weightings. Whilst league tables are beginning to be slightly more transparent (see for example Hazelkorn’s (2014, p.18) breakdown of indicators and weightings for different league tables), there is still little evidence exactly how the physical and service structures of a university are absorbed into the rankings. Within the UK, the annual National Student Survey (NSS, see http://www.thestudentsurvey.com/content/nss2012_questionnaire_english.pdf), based on satisfaction scores of final-year students, is gradually being included into UK rankings – it is not entirely clear how this would impact on international league tables. Again, facilities are only indirectly included – mostly through the very broad questions on “learning resources” (which mention only resources related directly to learning, such as IT equipment, library services and specialist facilities such as laboratories) and “overall satisfaction” – there is no mention of the overall ‘student experience’, which might include the wider social environment, such as sports facilities, catering and accommodation. Discussions about including questions about the latter are ongoing (cf. the latest review by Griggs et al. 2014), and opinions are divided.

2) There is a dearth of evidence/research, as academics and HE managers focus mostly on the academic side or on administrative processes respectively, and FM research focuses on the FM side, with a regrettable lack of crossover. On the one hand this could be attributed to ‘silos mentality’ and vested interests of the different groups and departments involved, but on the other hand the complexity of interrelated factors makes it difficult to find the right approach, not to speak of funding for such multi-disciplinary research. Some of the papers and studies on competition within HE ‘casually’ mention investment in facilities as part of universities’ strategies to increase their profile and prestige. For example, Brewer et al. (2001) mention investment in student consumption benefits such as dormitories, eating facilities, or fibre optic computer networks as means to heighten attractiveness for high ability students. Hazelkorn in a very recent publication (2014) presents a list of actions taken by HEIs to enhance their rankings (op.cit., p.22, Table III), which includes three actions that (potentially) include/affect facilities:

- “Establish Centres-of-Excellence & Graduate Schools” (this often includes investment into prestigious or landmark buildings),
- “Develop/expand English-language facilities, international student facilities” (this affects facilities as well as services),
- “Realign resources to favour science/bio-science disciplines” (again, this involves the physical research environment as well as staffing levels and financing high-profile projects).

A fourth action, “Recruit/head-hunt international high-achieving/HiCi scholars” (ibid.) may or may not have a facilities aspect – it could involve single offices, car parking spaces and other facilities that individual institutions may offer to high-profile academics as prestigious ‘perks’, however without affecting students directly. Hazelkorn does not explicitly mention facilities implications – typical of research into this topic.

2 Design/methodology/approach

Our research focuses on the University of York, a top-league, research-led university with a 1960s out-of-town campus, located in the north of England. There is no evidence that this institution has so far had any particular emphasis on its facilities strategy in terms of attracting students (cf. Price et al. 2003).

Data was analysed mainly from three separate sources:

- Results from the Unite Student Experience Report 2012 (based on 1,236 responses)
- Results from the annual York University Student Union survey (results of a survey with 2,382 responses, and 3,500 focus group comments).
- Result from a mix of survey (331 responses) and focus groups (144 comments) carried out by one of the authors.

The survey consisted of a mostly quantitative questionnaire with one open field area and was designed to follow the standard Likert scale, to attempt to assess influence of various factors in student choice, and importance of different types of facilities.
Of the 331 responses, 76% came from UK home undergraduates, 12% overseas undergraduates and the remainder a fairly even split between UK and overseas postgraduates. The majority of the respondents (72%) were in their first year.

3 Findings/results
The researchers’ original ‘hunch’ that league tables influence students’ choices was strongly confirmed by both survey and focus groups (see Table 1).

Table 1: Influence of league tables on students’ choice of university

<table>
<thead>
<tr>
<th>My choice was strongly influenced by:</th>
<th>4. League tables</th>
</tr>
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<tbody>
<tr>
<td></td>
<td><img src="1984.png" alt="" /></td>
</tr>
<tr>
<td>Definitely agree</td>
<td>139 42%</td>
</tr>
<tr>
<td>Mostly agree</td>
<td>135 41%</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>41 12%</td>
</tr>
<tr>
<td>Mostly disagree</td>
<td>7 2%</td>
</tr>
<tr>
<td>Definitely disagree</td>
<td>9 3%</td>
</tr>
</tbody>
</table>

Whilst university facilities do not feature high on prospective students’ ‘mental checklists’, there are expectations that, for example, premier league institutions also come with top class facilities – this emerged in particular where such expectations were not met. So whilst university facilities can have a direct impact on students’ location choices, this is more often the case where specific subjects are concerned (e.g. sports science or specialist engineering disciplines that require dedicated specialist facilities), or where institutions market themselves as ‘modern’ and invest in facilities with a ‘wow factor’. The university researched here does not fall into these categories. Top league universities tend to be selected with a focus on reputation. However, there is an indirect impact via league tables, since students whose expectations of their institution’s facilities are not met, may vent their disappointment via satisfaction surveys (such as the National Student Survey in the UK). Plenty of anecdotal evidence hints to this, but more rigorous research would be needed to highlight this link.

These expectations were apparent in some of the focus group comments (“As York is a campus uni I expected the facilities to be here”, “I had an expectation that all the facilities such as bars would be present so I didn’t research this before I arrived”), and also in the 2011 “Student Experience Survey” carried out by the student union at the University of York (YUSU 2011). These surveys have been conducted annually since 2010, asking students for their satisfaction and importance ratings with university and student union provision in a range of areas, some of which are facilities-related: study spaces, sports facilities, social spaces, food outlets, accommodation and security services. In the 2011 survey study spaces and sports facilities had the lowest satisfaction ratings of all factors, with study spaces rated as highly important, which should have been “cause for concern as they are aspects where the respondents feel that the University is underperforming” (YUSU 2011, p.16). “Only 41% of students reported that they were happy with the sports facilities on campus, others described them as ‘disappointing’ and too expensive. Many were disappointed with the lack of a swimming pool with one individual going as far as to say ‘[I] might not have joined up had I realised.’ Others felt that the gym was too small and ‘massively overpriced, for being incredibly under-equipped’.” (Op.cit., p.15) Food outlets and retail outlets attracted dissatisfaction from around a quarter of respondents. Clearly there had been expectations, which the campus reality did not match. These findings are confirmed by other research, such as the UNITE Student Experience Report 2012 (UNITE 2012), which asked about the effects of increased UK tuition fees on students’ expectations – and found they had increased, too. Table 2 highlights this – but note that the majority of respondents seem to have a ‘realistic’ attitude as far as prices are concerned: they do not expect them to drop!
There is also some focus group evidence that flagship buildings and facilities make an impact on students during open days: “I was blown away by buildings such as the HUB, it was a decision clincher”, “The facilities did not influence me but I loved Heslington East and I made my choice based on that”, “I used the Open Day to deselect universities from my shortlist. I saw the HUB building on Heslington East and was impressed enough to choose York”, “The new sports facilities are great”.1 However, flagship buildings, the facilities and attractive setting of an institution are of no value if the decision to exclude that university has already been made. Another point that came out in focus group conversations was that individuals were prone to ‘ranking’ themselves and matching themselves against the university rankings: “I immediately disregarded the top 10 in the league tables as not attainable for me” – “I focused on the entry levels for universities ranked 10 to 20 in the league tables followed by modules and course content, finally I considered rents and affordability.”

4 Discussion and future research
The research at York drew out the way in which prospective students are now using the league tables to come up with a shortlist. This part of the selection process is a ‘desktop job’ where criteria such as league position are combined with personal preferences such as location and overall cost. If an institution does not make the personal ‘shortlist’, they will not make the ‘to view at open day’ list either.

The fact that students ‘rank’ themselves against the league position of universities is interesting: if York were to improve by just a few places and rejoin the ‘top 10’, then it would lose one particular share of the market (i.e. those students who do not rank themselves highly enough to apply) but gain another (i.e. more ‘high-flying’ students who aim for the ‘top ten’). To what extent this would however make a difference in terms of application numbers is almost impossible to quantify! Unfortunately, the opportunity to examine what has changed since the rise of league tables was limited to one institution. The research project was commissioned and funded by this institution and carried out by its Commercial Directorate, to find out more about the value of its facilities to its students, rather than as a sector-wide project. Access to students was limited, and it was not possible to randomise or select samples. A very tight time frame also limited the amount of analysis possible. Moreover, the questionnaire would need redesigning for wider applicability.

We would therefore not attempt to make generalisations for the whole HE sector, but rather set out to identify a research agenda for future explorations. However, in our view the results were worth reporting, to emphasize the

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1 Anecdotal evidence highlights the connection between high-class facilities, student expectations and institutional reputation. Two examples (well known within the UK higher education facilities management ‘scene’) are universities at Bath and Loughborough. Both of them have invested heavily in world-class sports facilities, hence have attracted some of the top governing bodies for a variety of sports, such as the English Cricket Board and the Amateur Swimming Association, both of which have located bases at Loughborough – this is well known nationally and internationally. This investment in facilities has had a significant impact on student recruitment and indeed the student experience. ‘Team Bath’ are well known for sporting supremacy, and both universities now sit above York in the overall league tables, with academic output now matching the sporting output.
importance of returning to the sector and establishing what, if anything, has changed students’ choices in the new era of greater technological mobility, greater competition, and, for the UK at least, higher fees.

Since the data were obtained within one university only, this research would need to be repeated on a wider scale in order to allow for comparisons and broader conclusions. Hence this study should be considered a pilot – but what came to light certainly asks for further inquiry! As two reviewers from outside UK academia pointed out, ‘league tables’ are an inaccurate term for the ranking of higher education institutions. However, at least in the UK, the sporting metaphor has become commonplace and would be understood and used by academic managers. Many directors of estates and facilities will agree that the rise to prominence of such tables has given the estate a place on vice-chancellors’ agendas that it did not previously have, at least in institutions that are not in the perceived ‘premier division’ of such tables. The Price et al. (2003) survey on the venue choices of over 8000 students confirmed the difference in all but the most reputationally endowed institutions.

The question whether ‘premier-league’ institutions can afford to ignore their ranking in university league tables is – pun intended! – academic. The direction of recent developments, with increased international competition and growing opportunities for students to voice their discontent with inadequate provision indicates that institutions have to be able to compete on all fronts, including infrastructure and services. Whilst it is impossible at this stage to pin down and quantify an influence of university facilities quality on league tables, indirect links such as satisfaction survey results, ‘tactical’ student feedback (‘if I mark them down on their sports facilities, they will hopefully improve them’) and the impact of open days seem to indicate that there could indeed be a connection that would warrant vice-chancellors’ attention.

Since open-day visits are often not an option for overseas students, this would raise the question whether those seeking to study outside their home country rely more on league table rankings, but it would also important to evaluate their use of online information sources, including virtual campus tours and the way university facilities are presented, emphasised, and featured on institutions’ websites – an area of research that we have not been able to even touch on. Any or all of these factors ask for further investigation. Quite likely, such research would be difficult to fund, as universities are competing against each other, so they are less likely to fund sector-wide research, especially if they are concerned about negative publicity.

Drawing not just researchers’ but also senior managers’ attention to this three-way connection between university facilities, league tables and student choice has been the purpose of this paper. The aim is to alert senior management thinking to league table ranking and university estates. Whilst we are aware that we have posed more questions than we can answer, stimulating the discussion is a first step in the right direction.

ACKNOWLEDGMENTS
We are very grateful to our anonymous reviewers for their constructive, positive and helpful comments, which we have taken on board and incorporated into the final version of the paper, as far as possible.

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Multiplier Effects through FM services: A survey-based analysis of added value in FM

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ABSTRACT
Purpose: The purpose of this paper is to answer the question of whether Facility Management (FM) is solely a cost factor or whether it has the potential to be a value driver in the core business; in other words, whether a company that invests less than one Euro into Facility Management services can increase its productivity by more than one Euro. If this is the case, we call it multiplier effect. Additionally, an insight into the demand-gap in FM will be given.

Design/methodology/approach: Part of the potential demand gap in FM was analysed using a quantitative national online survey with a total of more than 7500 participants of graduates of universities of applied sciences. In a second step, the “use value” was measured by the potential of enhanced working productivity. In a third step, the potential of the enhanced working productivity was compared with the potential enhanced FM resources (exchange value) to deliver the best quality of FM service.

Findings: A model for measuring the productivity enhancement through FM services is developed and the dimensions of a demand gap and a supply gap in FM are defined. One part of the potential demand gap in FM is quantified. Initial results indicate a huge potential demand gap in FM. Also, if the benefits of FM can be tapped, FM should be seen as a driver of productivity rather than a cost factor.

Originality/value: A great deal of research has been published about the need for FM to be more strategic and escape the commodity trap. However, it seems to be difficult to quantify the value of the actual impact FM might have for primary activities. An even more difficult task, apparently, is quantifying the productivity gains caused by FM. The present study responds to these research challenges by presenting an approach for how to identify a demand-gap in FM and demonstrate the measurements of potential productivity gains.

Keywords facility management, productivity, demand-gap, supply-gap, added value

1 INTRODUCTION
1.1 Background and definition of the problem
It is currently believed that only a small share of the FM market has been professionally developed, because of the following reasons (see figure 1):

a) The demand side (customers or clients) of FM services buys incorrectly, sub-optimally and/or does not buy FM services at all (internal/externally). We define this as the “FM-demand-gap”. The user knows which support services would be helpful, but the customer and/or the client are not aware of this or ignore it; providers may or may not know how the benefits of these FM services could be developed. The FM-demand-gap can be tapped through communication.

b) The providers have no or too little knowledge of how the FM potential can be tapped. We define this as the “FM-supply-gap”. Neither the provider, the client, the customer nor the users know how the potential of benefits with FM might be tapped. So we know e.g. that professional FM is often not present in small and medium-sized enterprises. The same applies to private households. At present there are in these areas little marketable FM products. Through innovation in technology and service the FM-supply-gap can be tapped.

The FM community talks about the value of FM and the fact that FM should raise the bar in order to be strategically relevant (Lindholm/Leväinen 2006, DeToni et al. 2007, De Vries et al. 2008, Jensen 2010, Kok et al. 2011, Alexander 2012, Jensen et al. 2012, Ware/Carder 2012, Jensen et al. 2014, Ware/Carder 2014). As Ware/Carder (2012, p. 6) noted in their RICS paper, “heads of FM are so often told to cut (or freeze) their budgets without reference to the causal chain of consequences to the workforce, to work processes and productivity, and to the bottom line itself. Without understanding the consequences of these budget cuts, FM has become a commodity rather than a professional skill in many organisations, to be procured at lowest cost. Worse still, the FM industry
does not yet have the sophistication to be able to analyse and report on the consequences of lowered standards and reduced (or lower-cost) resources.”

Since Michael Porter (1985) developed the value chain analysis as a comprehensive approach to the development of corporate strategies, services such as FM have been classified as support activities. Regarding to this theory, Osterloh/Frost state that companies should focus on their primary activities, because support activities do not contribute to a competitive advantage and could be standardized and would easily be imitated (Osterloh/Frost 2006, p. 37). This view may have led to the fact that FM services are regarded as cost factors, purchased as commodities, and are not perceived or provided as a driver for increasing productivity (Ware/Carder, 2012). If research could show that FM has the potential to contribute to an increased productivity, this would be a valid argument against short-sighted budget cuts and a strong argument to promote FM as a value co-creator for the primary activities.

1.2 Objectives of the study
In keeping with the above-mentioned considerations, the main objective of the present study is to answer the following question: “Is facility management only a cost factor, or does it have the potential to be a value driver in the company’s core business?” Put another way: “Can a company increase its productivity by more than one Euro with an investment of less than one Euro in to facility management services?” The study also offers insights into the demand-gap in FM.

2. Theoretical foundations
The European Committee for Standardisation (CEN) has defined FM as the “integration of processes within an organization to maintain and develop the agreed services which support and improve the effectiveness of its primary activities” (CEN, 2006, p. 5). Related to this definition and with respect to the service character of FM, Coenen and von Felten (2012, 2014) showed that facility management should be seen as a service management discipline in addition to its built environment and engineering focus. In practice, the effectiveness of the primary activities is often associated with productivity, which is defined here as the relation between output and input. Productivity for services was discussed by Grönroos and Ojasalo (2004, p. 421), who concluded that, “Regardless of the problems involved, the only theoretically correct and practically relevant approach to measuring service productivity seems to be to base productivity calculations on financial measures. In principle, the correct way of measuring service productivity as a function of cost effects of internal efficiency, revenue effects of external efficiency and cost and revenue effects of capacity efficiency is, therefore, the following measure: Service productivity = revenues from a given service/costs of producing this service. As a global productivity measure of the operations of a service provider, the following measure can be used: Service productivity = total revenues/total costs.”

Since Vargo and Lusch’s (2004, 2006) contributions to the service dominant logic (SDL), that stresses the importance of services compared to goods, the value of services can be characterized according to at least the two following criteria: (a) the customer is always a co-producer of value, and (b) the value of a service cannot be measured only at the price achieved in the market, but also perceived differently depending on the perspective of the customer. Therefore, it is recommended that, in addition to the paid price, defined as the exchange value, the use value should be distinguished as the individual value for a user. To increase the efficiency of the core business, FM has the possibility to (a) provide a higher value of use in relation to the used FM resources, and/or (b) increase the
productivity with a cost for FM services that is lower than the achieved productivity-growth of the core business (service productivity/value of exchange), thus creating a multiplier effect. In other words, whether a company that invests less than one Euro into Facility Management services can increase its productivity by more than one Euro. Researchers who follow the SDL approach conclude that, with FM services, values are created for different stakeholder groups as use value, social value, environmental value or relationship value (Coenen et al. 2012). The present paper focuses on the value of exchange, the value of use and the growth of productivity.

3. Study design

The study was a part of a nationally representative survey for the alumni of universities of applied sciences in Switzerland in 2011. A total of 7500 participants took part in an online survey about the **FM-demand-gap**. Of these, approximately 61 percent had a management function, 16 percent were in the upper management, 26 percent in the middle management and 20% in lower and other management. The participants worked in different economic sectors; the main sectors were manufacturing and production (18 percent) and finance and insurance services (14 percent).

<table>
<thead>
<tr>
<th>Age</th>
<th>&lt;25</th>
<th>26-30</th>
<th>31-35</th>
<th>36-40</th>
<th>41-45</th>
<th>46-50</th>
<th>51-55</th>
<th>56-60</th>
<th>&gt;60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>4 %</td>
<td>23 %</td>
<td>23 %</td>
<td>16 %</td>
<td>13 %</td>
<td>10 %</td>
<td>5 %</td>
<td>3 %</td>
<td>1 %</td>
</tr>
</tbody>
</table>

Approximately 4700 participants were willing to answer the additional multiplier questions (see table 3). Of these, approximately 63 percent had a management function, 16 percent were in upper management, 27 percent in middle management, and 20 percent in lower and other management. The participants worked in different economic sectors; the main sectors were manufacturing and production (19 percent) and finance and insurance services (13 percent).

<table>
<thead>
<tr>
<th>Age</th>
<th>&lt;25</th>
<th>26-30</th>
<th>31-35</th>
<th>36-40</th>
<th>41-45</th>
<th>46-50</th>
<th>51-55</th>
<th>56-60</th>
<th>&gt;60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>3 %</td>
<td>22 %</td>
<td>22 %</td>
<td>17 %</td>
<td>13 %</td>
<td>11 %</td>
<td>6 %</td>
<td>4 %</td>
<td>2 %</td>
</tr>
</tbody>
</table>

4. Study results

4.1 Is there a potential demand-gap of FM services?

As defined, the FM-demand-gap occurs when the user knows which support services would be helpful, but the customer and/or the client is not aware of this or ignores it and buys FM services sub-optimally, incorrectly or not at all. In the survey, users were asked about a selection of FM services. The question was: “How does the quality of your work change when the following services are offered in the best possible way?” The wording “the best possible way” reflects the use value mentioned by Vargo and Lusch (2004, 2006).

The four-point scale used in this survey consisted of the following scale points: “not at all”, “slightly better”, “better”, “much better” and “don’t know”. The sum of the answers “slightly better”, “better” and “much better” represents the potential FM-demand-gap. It is not yet clear whether the added use value would surpass the possible additional resources to enhance the service; only if so it will be a genuine FM-demand-gap, something what is a need from an economic point of view and not only a want from a user.

<table>
<thead>
<tr>
<th>Services</th>
<th>n</th>
<th>% of users with a gap of FM-services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workplace without disturbance</td>
<td>7162</td>
<td>81.4 %</td>
</tr>
<tr>
<td>ICT Services</td>
<td>7083</td>
<td>75.3 %</td>
</tr>
<tr>
<td>Meeting points</td>
<td>6767</td>
<td>70.4 %</td>
</tr>
<tr>
<td>Technical installations</td>
<td>6767</td>
<td>67.2 %</td>
</tr>
<tr>
<td>Office services</td>
<td>6987</td>
<td>65.2 %</td>
</tr>
</tbody>
</table>
Therefore, further questions were asked in order to be able to move from an additional use value to an additional exchange value and thus be able to elicit a possible growth of productivity.

4.2 What is the potential growth of productivity in work through enhanced FM services?
To measure the potential additional labour productivity through improved FM services, users were asked: “How much productive work time per week do you gain if the following services and facilities in your organisation are offered in the best possible way?” The scale contained the following options: “none”, “$< \frac{1}{2}$ h”, “$\frac{1}{2}$–1 h”, “1–2 h”, “2–3 h”, “$> 3$ h”. Thus, it was possible to calculate the potential growth of working productivity in hours per year. Since we had also surveyed the annual salaries of the individual participants, it was possible to calculate the annual salary costs in Euro (€). Table 4 shows the annual labour productivity potential per service per person in a descending order.

With an average productivity potential per year of € 3300 (median € 2100), the availability of “Workplace without disturbance” is rated as having the greatest potential. Here it is important to note that not every disturbance is a disturbance from work. That means being disturbed by someone for a work-related issue will increase the productivity of the “disturbing person” as he or she can solve his or her problem by approaching a colleague directly. “Workplace without disturbance” is followed by providing or enhancing “ICT Hardware” (mean € 2000, median € 1400). The participants see also an average productivity potential of € 1900 (mean € 1300) for “ICT Services”.

<table>
<thead>
<tr>
<th>Service</th>
<th>Potential</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catering</td>
<td>7010</td>
<td>62.5 %</td>
</tr>
<tr>
<td>Mobility services</td>
<td>6834</td>
<td>58.5 %</td>
</tr>
</tbody>
</table>
Table 4 Annual labor productivity potential per service per person – ranked

<table>
<thead>
<tr>
<th>FM service</th>
<th>n</th>
<th>Hours Mean</th>
<th>Hours Median</th>
<th>€ Mean</th>
<th>€ Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workplace without disturbance</td>
<td>4712</td>
<td>50</td>
<td>34</td>
<td>3300</td>
<td>2100</td>
</tr>
<tr>
<td>ICT hardware</td>
<td>4712</td>
<td>31</td>
<td>23</td>
<td>2000</td>
<td>1400</td>
</tr>
<tr>
<td>ICT services</td>
<td>4712</td>
<td>29</td>
<td>23</td>
<td>1900</td>
<td>1300</td>
</tr>
<tr>
<td>Document management</td>
<td>4712</td>
<td>22</td>
<td>23</td>
<td>1500</td>
<td>900</td>
</tr>
<tr>
<td>Mobility services</td>
<td>4712</td>
<td>20</td>
<td>0</td>
<td>1300</td>
<td>0</td>
</tr>
<tr>
<td>Office services</td>
<td>4712</td>
<td>19</td>
<td>0</td>
<td>1300</td>
<td>0</td>
</tr>
<tr>
<td>Meeting points</td>
<td>4712</td>
<td>19</td>
<td>0</td>
<td>1300</td>
<td>0</td>
</tr>
<tr>
<td>Workplace equipment/installation, storage</td>
<td>4712</td>
<td>18</td>
<td>0</td>
<td>1200</td>
<td>0</td>
</tr>
<tr>
<td>Workplace air, light, temperature</td>
<td>4712</td>
<td>17</td>
<td>0</td>
<td>1100</td>
<td>0</td>
</tr>
<tr>
<td>Catering</td>
<td>4712</td>
<td>16</td>
<td>0</td>
<td>1000</td>
<td>0</td>
</tr>
<tr>
<td>Technical installations</td>
<td>4712</td>
<td>13</td>
<td>0</td>
<td>800</td>
<td>0</td>
</tr>
<tr>
<td>Childcare</td>
<td>4712</td>
<td>10</td>
<td>0</td>
<td>700</td>
<td>0</td>
</tr>
<tr>
<td>Cleaning/disposal</td>
<td>4712</td>
<td>7</td>
<td>0</td>
<td>500</td>
<td>0</td>
</tr>
</tbody>
</table>

4.3 Does every FM service have the same potential?
Several services have a median of 0 (e.g. Mobility services) but a considerable arithmetic mean. This shows that a partially high potential is there, but only selectively, for less than 50% of the respondents. Therefore, a second analysis was conducted with those participants who saw a productivity potential in certain services only. Table 2 shows the new ranking after adjusting these zero values.

Table 5 Annual time and productivity potential per service per person – ranked (without “no service potential”)

<table>
<thead>
<tr>
<th>FM service</th>
<th>n</th>
<th>Hours Mean</th>
<th>Hours Median</th>
<th>€ Mean</th>
<th>€ Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childcare</td>
<td>697</td>
<td>70</td>
<td>68</td>
<td>4800</td>
<td>3800</td>
</tr>
<tr>
<td>Workplace without disturbance</td>
<td>3399</td>
<td>69</td>
<td>68</td>
<td>4500</td>
<td>3600</td>
</tr>
<tr>
<td>ICT hardware</td>
<td>2889</td>
<td>51</td>
<td>34</td>
<td>3300</td>
<td>2200</td>
</tr>
<tr>
<td>ICT services</td>
<td>2756</td>
<td>49</td>
<td>34</td>
<td>3200</td>
<td>2100</td>
</tr>
<tr>
<td>Mobility services</td>
<td>1898</td>
<td>49</td>
<td>34</td>
<td>3200</td>
<td>2100</td>
</tr>
<tr>
<td>Workplace air, light, temperature</td>
<td>1807</td>
<td>45</td>
<td>34</td>
<td>3100</td>
<td>1900</td>
</tr>
<tr>
<td>Office services</td>
<td>1995</td>
<td>44</td>
<td>34</td>
<td>2900</td>
<td>1900</td>
</tr>
<tr>
<td>Meeting points</td>
<td>2058</td>
<td>43</td>
<td>34</td>
<td>2900</td>
<td>1900</td>
</tr>
<tr>
<td>Document management</td>
<td>2439</td>
<td>42</td>
<td>34</td>
<td>2800</td>
<td>1900</td>
</tr>
<tr>
<td>Catering</td>
<td>1802</td>
<td>41</td>
<td>34</td>
<td>2700</td>
<td>1900</td>
</tr>
<tr>
<td>Workplace equipment/installation, storage</td>
<td>2180</td>
<td>40</td>
<td>34</td>
<td>2600</td>
<td>1800</td>
</tr>
</tbody>
</table>
Table 5 shows that the FM services have different rankings in terms of productivity potential. Currently, the most productivity potential is seen in “Childcare”, with a mean of € 4800 (median € 3800). Obviously, not all participants would profit from this FM service, but when the service is in place, these specific participants (N=697) would save a lot of time. “Workplace without disturbance” is now ranked in second place with an average productivity potential of € 4500, which is higher than before (€ 3300) and, with 3399 participants, is the most requested service to have potential. As before, “Workplace without disturbance” is followed by the FM service “ICT hardware” (mean € 3300, median € 2200).

4.4 Are there multiplier effects?
The above method has shown that all FM services show some productivity potential. Now the question emerges of whether these services can be enhanced and what are the costs of the improvement or providing of certain services. This would involve asking the individuals what their needs would be. At this stage of the research, the main goal is to provide some examples of the costs, compared to the productivity potential of certain services. As this research took place in Switzerland, the calculation is based on Swiss benchmarks.

4.4.1 Cleaning productivity potential
With an average productivity potential of € 1900 (N=1140) the FM service “Cleaning/disposal” has the lowest rank in this research. By way of comparison, the average cleaning cost per workplace and per year is identified as € 120. If, for example, the cleaning services would be doubled, the annual cleaning cost of € 240 per workplace would still be much lower than the productivity potential of € 1900.

4.4.2 Lower disturbance productivity potential
A second example is conducted using the FM service with the highest productivity potential – “Workplace without disturbance” – with € 4500. For a current overview of various factors influencing workplace productivity – including noise disturbance and privacy – we refer to Windlinger (2014). According to Sundstrom (1986) there are four mechanisms to improve the privacy in office spaces: physical boundaries, separate areas, norms and rules, and nonverbal signals and signs. For this example, physical boundaries and separate areas are calculated as measures to decrease disturbance at the office. The following graphic shows an example of two different office workplace types:

The average costs for an office workplace are estimated at € 4100 per year. The increase of the workspace for more distance to co-workers and additional acoustical barriers would total € 5500. The additional cost of increasing the workspace per employee and adding acoustical barriers would be € 1400 per year, compared to the annual labour...
productivity potential of €4500 per year; this represents an average net productivity potential of €3100 per workplace per year.

5. Conclusion, Limitations and Outlook

The results of this study show that there is a huge potential FM-demand-gap. The size of the potential depends on the FM service and affects 50 to 80 percent of the users. Our results further demonstrate that FM services not only have the capability to increase the productivity of the core business, but also to enhance the net productivity of a company. If the benefits of FM could be tapped, FM should (a) be seen as a driver of productivity and not only as a cost factor and (b) FM has the potential of a multiplier, i.e. if you invest 1 Euro in FM it is possible to buy a multiple gain in productivity. Thus, FM should no longer be considered solely as cost factor, but as a value generator in the sense of selling productivity.

The study shows the capability of FM services, but our task was not to analyse how this capability could be tapped. Since FM is a service, the customer/client/user is always a co-producer of FM and the value of use is subjective for each stakeholder. We assume that with procuring and providing FM as a commodity, the potential benefits are greatly under-exploited.

In a next step, data from this research will be investigated with the help of a multi-factor analysis. The planned in-depth analysis of the data promises further insights regarding areas such as differences between occupational groups, industries, job satisfaction and age. Based on these insights, managerial implications of how this potential can be tapped will be explored. From a single-nation researcher’s perspective, it would be desirable to expand this national study about the FM-demand-gap and the multiplier effects through FM services to different countries so that national data can be compared.

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Performance measurement of public facilities in Thailand: A case study of Dhanarak Asset Development

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ABSTRACT
This paper aims to present Key Performance Indicators (KPIs) that are used in public real estate management practice in Thailand, and to discuss similarities and dissimilarities between theory and practice. The findings from a single case study are compared with data from 55 other public organisations in Thailand. The case study has been conducted at Dhanarak Asset Development Company Limited in Bangkok. Research methods include interviews, walk-through observations, and document analysis. The findings show that KPIs are linked to three main areas: adherence to policy, operating performance of the state enterprise, and organisational management. KPIs include both financial and non-financial indicators. Findings on an operational level are reported to the upper organisational level. Benchmarking of performance measurement results of government agencies are used to improve the country’s public performance management as a whole. Overall the findings support the three principles that reflect a change in public asset management according to Kaganova and Undeland (2006), and the strategic framework for public performance measurement that was developed by Jääskeläinen and Laihonen (2014). The findings can be used as input to a step-by-step plan to define prioritised KPIs in connection to the organisational context and the corporate strategy. The findings and reflections upon the findings can help to understand the impact of public real estate management on organisational performance and how to add value to the organisation.

KEYWORDS Public Real Estate Management, Performance measurement, KPIs, Benchmarking, Thailand

1 INTRODUCTION: PUBLIC REAL ESTATE MANAGEMENT
Governments show an increasing concern to be involved into real estate development as an equity player, loan guarantor or developer, through the use of government-owned lands (Simons, 1992). An important governmental driver is to stimulate economic development in the community (Simons, 1992). This justification for government involvement is based on the public capital hypothesis i.e. investment in public lands and infrastructure is believed to be associated with job and income growth in the private sector (Tatom, 1991). Unlike an investor, a public real estate manager does not focus only on the financial interests of real estate (Van der Schaaf, 2002). By definition, Public Real Estate Management (PREM) is the management of a government’s real estate portfolio by aligning the portfolio and services to (1) the needs of the users, (2) the financial policy set by the Treasury and (3) the political goals that the government wants to achieve (Van der Schaaf, 2002). As one of the organisation’s resources, real estate needs to support the primary processes of the organisation and the needs of the various departments and agencies. In addition, real estate is perceived as a means to contribute to financial performance and to accomplish the organisation’s political goals. Kaganova and Undeland (2006) mentioned three principles that reflect a change in public asset management:

Recognising property as a productive asset has focused attention on systematically assessing the efficiency of real estate use and the financial performance of public property, including accounting for total costs of real estate ownership, operation, and life-cycle costing.
Because governments are usually not efficient property owners and/or managers, various countries adopted substantial privatisation of governmental real estate and a change in government’s role - from a “provider” of real property for end-users (such as families, business tenants, governmental organisations and educational institutes) to a “partner” that collaborates with the private sector.

The private sector asset management practice can be used as a reference area and source of benchmarking for public-asset management, for instance by systematic performance monitoring and valuation of assets, subdivision of the portfolios with defined utilisation and performance targets, and clear-cut legal relationships with users.

2 PERFORMANCE MEASUREMENT IN THE PUBLIC SECTOR
Nowadays new management techniques are applied as a part of the new public management (NPM; Hood, 1995) including strategic management, cost-centre management, business planning, marketing and quality management (Sanderson, 2001). Regarding to NPM practices, Jääskeläinen and Laihonen (2014) argued that decentralization of decision-making challenges traditional public management bureaucracies. The context-specific performance measurement at the operative level in individual service units provides more detailed information, and creates a link between operational goals and measurement practices. However, specific measures are usually too complicated to be used by top management. Therefore, Jääskeläinen and Laihonen (2014) proposed to make a distinction between different levels of performance measurement and to consider how to report the data from lower levels such as a single business unit or a group of units to the higher levels such as a department or a whole city organisation.

Additionally, Jääskeläinen and Laihonen (2014) pointed out that customer-orientation and the requirement for responsiveness turn the whole public business logic upside down by focusing on service operations instead of organisational functions. They developed a strategy framework which recognises four different performance measurement approaches (Figure 1):

1) **Standardisation approach** – Central management dictates measurement guidelines e.g. a measurement framework, measurement dimensions and measures for different departments.

2) **Benchmarking approach** – Lateral comparison and information utilisation and aggregation of the results as in the standardisation approach.

3) **Contingency-based approach** – Measurement frameworks and tools are customised for a specific context.

4) **Service process-oriented approach** – A break from the traditional hierarchical organisational structures to capture the performance of service chains, measured with tailored measures. Jääskeläinen and Laihonen further stated that the above approaches are analytical stereotypes. A combination of these approaches is most likely to provide a suitable basis for performance measurement in public sector organisations.
3 THE DAD CASE: CHARACTERISTICS AND RESEARCH METHODS

Until now PREM is not a well-known concept in Thailand. A PhD thesis on performance measurement of workplace change by the first author (Riratanaphong, 2014) offered the opportunity to investigate whether the above mentioned objectives and principles are reflected in current PREM-practice in Thailand, which Key Performance Indicators are used to measure the performance of public facilities, and how performance measurement can be improved. To get a better understanding of public performance measurement, a single case has been selected in order to be able to collect reliable and valid data in depth. The DAD-case was selected because it is the only public sector organisation in Thailand that has a role in managing and maintaining the government’s real estate.

Dhanarak Asset Development company limited (DAD) is a state-owned enterprise established in 2004 as a unit of the Thai Ministry of Finance. It was set up to initiate, construct and operate the new Bangkok government building-complex Changwattana and other government assets according to the governmental policy. The company’s mission covers two main areas: 1) to manage government assets according to government policies and 2) to develop the government building-complex as a new dimension of government housing. The main organisational objectives are to achieve economies of scale and to provide value for money to the client. The organisational structure of the DAD organisation consists of five departments: 1) policy, 2) administration, 3) business development and marketing, 4) finance, and 5) operations.

The government has set up a committee of which the members are appointed by the government. The task of this committee is to assign personnel to a risk management committee and an audit committee. The audit committee works in connection with TRIS corporation limited, a performance evaluation consulting company, to evaluate an organisation’s performance.

The DAD organisation is accommodated in the new Bangkok government building-complex Changwattana. The DAD occupies 3 separate offices in two buildings of zone B. The office in the main building is occupied by the policy, administration, business development & marketing and finance department. The other building is occupied by the operation department that controls building service engineering of the Government Complex. Figure 2 shows the exterior of the building, whereas figure 3 shows two interior spaces of the Government Complex buildings.
Figure 2 The Dhanarak Asset Development building (left) and The Bangkok Government Complex (right)

Figure 3 Main hall of the Government Complex buildings (left) and the commercially rented area (right)

In total, The Changwattana complex provides office spaces to 40 public organisations of Thailand. The complex consists of three main zones: A (40 acres), B (78 acres), and C (60 acres). The complex building users include employees of the public organisations, visitors and renters of the commercially rented areas. Amenities include banks, post office, hospitals, shops, restaurants, food outlets and open meeting spaces that are provided throughout the complex.

Data on performance measurement within the DAD case were collected from company reports and documents from the human resource manager. Semi-structured interviews about DAD’s performance measurement were conducted with the chief marketing officer, senior specialist and public relations manager. Documents used for the analysis include the company’s annual report, the roles and responsibilities handbook, and the code of conduct handbook. Observations were conducted by a walk-through the Government Complex and the DAD workplace and by recording where and when certain behaviour occurred.

The data from the DAD-case have been compared with data from 55 other public organisations in Thailand. These 55 public organisations were selected because they apply the same performance measurement system as the DAD organisation.

4 RESEARCH findings

4.1 Performance measurement system, performance indicators and data

The performance measurement of all state enterprises in Thailand is directed by the State Enterprise Policy Office (SEPO), which plays an important role in regulating and supporting state enterprises’ good corporate governance and competitiveness. The development of the performance agreement between a state enterprise and SEPO comprises three key steps.
4.1.1 Step 1: Identifying Performance Criteria
The current performance measurement system specifies performance criteria for assessing state enterprises’ operational efficiency in three key areas: 1) Adherence to policy; 2) Operating performance of the state enterprise; and 3) Organisational management (see Table 1).

4.1.2 Step 2: Defining Criterion Weights
The weighting of performance criteria is related to operational performance. DAD is a state enterprise that aims to provide public facilities that consider operational aspects, especially service quality. Details of the weights per criterion are: 1) Adherence to policy 20% (±10); 2) Operating performance of the state enterprise 50% (±10); 3) Organisational management 30%

4.1.3 Step 3: Defining Performance Targets for Each Criterion Value
For each criterion, performance targets are classified by SEPO into five levels. Level 1 is considerably lower than the set target in the annual enterprise plan. Level 2 is slightly higher than level 1, but still lower than the target. Level 3 is the set target in the annual enterprise plan. Level 4 is slightly higher than the set target, and level 5 exceeds the set target. Only state enterprises with outstanding management can achieve a Level 5 target. When determining annual performance targets, government representatives use past performance as the basis for benchmarking against the private sector (see Table 2 and 3). In the DAD case, the benchmarking against the private sector is carried out in 2 categories: commercial and office spaces for rent, in order to encourage state enterprises to improve their operational performance and to be on a par with the private sector. Even though improvement of state enterprise standards may not be achieved in one year, by setting the targets higher each year, the personnel can be encouraged to operate more efficiently. Table 1 presents the agreed performance measurement criteria and the results for the DAD case in the three main areas. Each area includes subcategories of performance indicators.

4.2 Comparison with data from 55 other public organisations
Figure 4 shows performance measurement data of 56 public organisations in Thailand (including the DAD case) that was gathered by the State Enterprise Policy Office (SEPO) in 2009 and which were published in 2010. The total performance measurement scores of public organisations (ranging from 0 to 5) were approved and compared between nine different sectors: 1) communication (3 organisations), 2) public utility (5 organisations), 3) industry (5 organisations), 4) energy (5 organisations), 5) transportation (11 organisations), 6) finance (9 organisations), 7) commerce & service (5 organisations), 8) agriculture & land resource (7 organisations), 9) society & technology (6 organisations). The DAD case is in the commerce & service category.

The performance measurement results of organisations in the commerce & service category show to be quite modest in comparison to the other categories and include very low scores of 1.41 and 2.24 respectively (56th and 53rd rank). The DAD case has a slightly higher score of 2.79 (42nd rank). Public organisations in the energy category achieve the highest scores of 4.23, 4.68, 4.71 and 4.86. Most public organisations in the financial category also perform well with scores ranging from 3.92 to 4.78.
Table 1 Results from performance measurement in 2009 (DAD, 2009)

<table>
<thead>
<tr>
<th>Performance criteria</th>
<th>Results (0-5) (points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Adherence to policy</td>
<td></td>
</tr>
<tr>
<td>1.1 Work done according to assigned plan from government</td>
<td></td>
</tr>
<tr>
<td>- Percent of work done: Dhanarak Nontaburi housing as 2009 plan</td>
<td>3.92</td>
</tr>
<tr>
<td>- Percentage of handed over unit of Dhanarak housing in Phuket, Chiang mai and Suphanburi</td>
<td>1.00</td>
</tr>
<tr>
<td>- Success level of Zone C building construction project</td>
<td>5.00</td>
</tr>
<tr>
<td>1.2 Ability in managing investment plan</td>
<td>3.42</td>
</tr>
<tr>
<td>2. Operating performance of the state enterprise</td>
<td></td>
</tr>
<tr>
<td>2.1 Income from commercially rented area</td>
<td>3.65</td>
</tr>
<tr>
<td>2.2 Earnings (loss) before interest, taxes, depreciation and amortization (EBITDA)</td>
<td>4.97</td>
</tr>
<tr>
<td>2.3 Return On Asset (ROA)</td>
<td>5.00</td>
</tr>
<tr>
<td>2.4 Work done on delivering rentable area to other government agencies</td>
<td>3.48</td>
</tr>
<tr>
<td>2.5 Percentage of allocating commercial area</td>
<td>1.00</td>
</tr>
<tr>
<td>2.6 Satisfaction of the Government Complex building users in 2009</td>
<td>3.61</td>
</tr>
<tr>
<td>2.7 Work done according to the development of building management standard in 2009</td>
<td>5.00</td>
</tr>
<tr>
<td>2.8 Work done according to the development of ICT in 2009</td>
<td>3.50</td>
</tr>
<tr>
<td>3. Organisational management</td>
<td></td>
</tr>
<tr>
<td>3.1 Management roles of board of directors</td>
<td>2.98</td>
</tr>
<tr>
<td>3.2 Risk management</td>
<td>1.80</td>
</tr>
<tr>
<td>3.3 Internal control</td>
<td>2.94</td>
</tr>
<tr>
<td>3.4 Internal audit</td>
<td>2.62</td>
</tr>
<tr>
<td>3.5 IT management</td>
<td>1.92</td>
</tr>
<tr>
<td>3.6 Human resource management</td>
<td>2.66</td>
</tr>
<tr>
<td><strong>TOTAL PERFORMANCE SCORE</strong></td>
<td><strong>2.79</strong></td>
</tr>
</tbody>
</table>

4.3 Comparison with competitors from the private sector

Table 2 shows benchmarking data of the Government Complex and competitors in a commercial space rent market in nearby locations. The Government Complex has a lower square metre area of commercial space rent compared with IT Square, Central Plaza Changwattana, Central Plaza Rattanatibet, The Mall Ngamwongwan, and Siam macro. The Government Complex offers a more flexible contract ranging from 1 to 60 months with a rather low rental rate compared with other competitors in the market. The lower rental rate of the Government Complex’s commercial space compared to the competitors may attract customers, whereas the lower occupancy rate may affect the creditability of the business.
Figure 4 Total performance scores of 56 public organisations, all measured in the same way by the State Enterprise Policy Office (2010)

Table 3 shows benchmarking data between the Government Complex and a competitor in an office market. The findings show that the Government Complex has a much larger office space to let with a lower rental rate in comparison with Central Pattana. Although the ROA of the Government Complex (0.31%) is much higher than the set target (0.08%), the much lower percentage compared with the competitor (1.32%) reflects the area for improvement in terms of the ability to convert investment into profit.

Table 2 Benchmarking with competitors in a commercial space rent market (DAD, 2009)

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Available lettable floor space</th>
<th>Rental rate* (Baht/sq.m. /month)</th>
<th>Electricit y (Baht/unit)</th>
<th>Water (Baht/unit)</th>
<th>Contract (Month)</th>
<th>Deposit** (Months)</th>
<th>Occupancy rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Government Complex</td>
<td>26,055</td>
<td>360 – 1,300</td>
<td>4.5</td>
<td>25</td>
<td>1 – 60</td>
<td>3</td>
<td>25 – 50 %</td>
</tr>
<tr>
<td>The Avenue</td>
<td>21,173</td>
<td>700-2,000</td>
<td>4</td>
<td>18</td>
<td>36</td>
<td>6</td>
<td>98%</td>
</tr>
<tr>
<td>Major Hollywood</td>
<td>N/A</td>
<td>670 - 900</td>
<td>5</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>98%</td>
</tr>
<tr>
<td>IT Square</td>
<td>120,000</td>
<td>650 – 1,200</td>
<td>N/A</td>
<td>N/A</td>
<td>24</td>
<td>3</td>
<td>70%</td>
</tr>
<tr>
<td>Central Plaza Changwattana</td>
<td>300,000</td>
<td>1,100 – 2,500</td>
<td>N/A</td>
<td>N/A</td>
<td>36</td>
<td>6</td>
<td>80%</td>
</tr>
<tr>
<td>Central Plaza Rattanatibet</td>
<td>105,000</td>
<td>800 – 1,000</td>
<td>N/A</td>
<td>N/A</td>
<td>12</td>
<td>4</td>
<td>95%</td>
</tr>
<tr>
<td>The Mall Ngamwongwan</td>
<td>45,000</td>
<td>1,000 – 2,000</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>95%</td>
</tr>
<tr>
<td>Siam macro</td>
<td>60,000</td>
<td>1,500</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>100%</td>
</tr>
<tr>
<td>Big C Changwattana</td>
<td>20,000</td>
<td>600 – 1,200</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>98%</td>
</tr>
<tr>
<td>Tesco Lotus Changwatana</td>
<td>20,000</td>
<td>1,000 – 1,500</td>
<td>Included in the rent</td>
<td>Included in the rent</td>
<td>1</td>
<td>2,000 (Baht)</td>
<td>100%</td>
</tr>
<tr>
<td>Carrefour Changwatana</td>
<td>20,000</td>
<td>1,200 – 1,500</td>
<td>Included in the rent</td>
<td>Included in the rent</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Rental rate of a commercial space rent market is varied depending on the location of the space that has a high/low potential to attract customers.
**Deposit refers to a sum payable as a first instalment or as a pledge for a contract. 40.65 Bath = 1 Euro

Table 3 Benchmarking against a competitor in an office market (DAD, 2009)

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Benchmarking (office space for rent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Available floor space to let (square metre)</td>
</tr>
<tr>
<td>The Government Complex</td>
<td>484,000</td>
</tr>
<tr>
<td>Central Pattana</td>
<td>144,280</td>
</tr>
</tbody>
</table>

Notes – information at the end of 2008

4.4 Findings from the interviews

The Bangkok Government Complex has implemented the centralization concept by sharing resources and facilities of the complex to the occupied agencies. The involved public agencies such as the administrative court, the office of justice affairs, and the supreme court provide a one stop service to the citizen. However, there are some public agencies that decided not to move into the complex as previously agreed because of a psychological reason: they prefer to be accommodated in a single tenant building. In addition, some of the public agencies’ current accommodations were renovated from old palaces that provide more cultural value to the occupied organisations than the Government Complex (McMillan, 2006).

The problems with the allocation of office spaces and other resources had an impact on the energy consumption of the complex, which relies heavily on the integrated system of energy conservation. This system is based on the assumption that all offices are occupied. The low occupancy rate of the public agencies and as such a lower number of end users than was planned also caused shop owners to hesitate to rent spaces in the commercial areas. Due to its role of operating the Government Complex, the DAD organisation had to convince other agencies to be accommodated in the building complex. As a result, the completion of the Government Complex was delayed.

5 DISCUSSION

5.1 Public real estate management

With regard to the first principle of public asset management (Kaganova and Undeland, 2006), the DAD case showed to have an important role in developing Thailand’s public real estate as a productive asset. The mission of the DAD case does not only include the operational management of the government buildings, but also steering on efficient investments in governmental real estate. This is measured by KPIs such as “percentage of work done according to Dhanarak Nontaburi housing plan”, and “percentage of handed over unit of the Dhanarak housing in Phuket, Chiang mai and Suphanburi”. These KPIs are aligned with the government’s policy and are also important for the DAD’s financial performance. The second principle of public asset management i.e. a changing role from a provider of real property to a partner with the private sector (Kaganova and Undeland, 2006), is represented by the hotel management of the Centra Government Complex Hotel & Convention Centre that is operated by Central Plaza hotel public company limited. The third principle - benchmarking against the private sector – is being applied in current Thai PREM-practice as well: the DAD organisation compares its own performance with data from the office market and the commercial space rent market.

5.2 Public real estate performance measurement

Remarkably, the performance measurement system and procedures in the DAD case do not make a clear distinction between organisational performance and real estate performance. Regarding some particular performance areas, some interesting findings come to the fore as well.

5.2.1 User satisfaction

The performance measurement of public organisations in Thailand is being monitored by TRIS Corporation limited. Although KPIs such as satisfaction of the Government Complex building users and land income from commercially rented area are included in the DAD audit system, employee satisfaction with the work environment and HRM related issues such as health and safety are not included in the evaluation by TRIS. Most of HRM related KPIs focus on the social work environment and not on physical assets. According to the literature, employee satisfaction with
the physical work environment is directly related to job satisfaction and indirectly related to organisational commitment and turnover (Carlopio and Gardner, 1992) and should be included in the DAD KPIs. In a case from the private sector, Philips Thailand, employee satisfaction with the work environment was regarded as an important KPI that was assessed both by the organisation in Thailand and by Philips Real Estate of the mother company in The Netherlands (Riratanaphong, 2014). The preference for being accommodated in a single or multi-tenant building and satisfaction with shared facilities should be included in a user survey as well.

5.2.2 Sustainability
DAD has put quite much concern to the environmental impact as is shown in KPIs such as percentage of complaints from public regarding environmental impact.

5.2.3 Occupancy level
The percentage of commercially rented area was lower than previously expected, due to the delayed delivering of the rentable area to government agencies. This has a direct impact on the financial performance. Therefore KPIs such as the rate of customer retention are important as well. The organisation needs to compensate for every customer that gets lost by finding new customers. The customer retention rate gives an indication of how loyal the customers are and how well the organisation’s customer service performs.

5.3 Benchmarking
The central government of Thailand regulates the same performance measurement system for all public organisations despite the fact that these organisations have different objectives, sizes and enterprise values. These differences may result in different performance measurement results. For instance organisations in the energy sector and in the financial sector are much larger than the organisations in the commerce & service category such as DAD and 4 other organisations. Large organisations usually take advantage of more resources and funding received from the government that may affect the operating performance of the state enterprise.

Some public organisations are registered companies in the Thailand stock exchange market and have a communal objective of achieving profitability. Registered companies can acquire more funding from public investment than non-registered organisations. In addition, registered companies have to be more concerned about the overall operating performance because the company data is exposed to public.

The DAD case was set up in 2004 and is a much younger organisation than some other public organisations. More experienced organisations are likely to perform better regarding performance areas such as the management roles of the board of directors, internal control and risk management, because these organisations had to cope with former economic crises such as the one of 1998 and are more keen to managing change.

5.4 Comparison between theory and practice
The findings show that performance measurement results from operational units are reported to the upper organisational levels. This is in line with the bottom-up measurement approach mentioned by Jääskeläinen and Laihonen (2014). For example, work done according to the development of building management standard and satisfaction of the Government Complex building users are measured by the Building Control units. The performance measurement results of these units are reported to the Building Control section, and are included in the Operation department’s performance measurement results. These results are examined together with performance measurement results from other departments and are finally included in the operating performance of the DAD organisation.

The DAD case performance measurement system also represents the four measurement approaches that are shown in the strategy framework for public performance measurement (Jääskeläinen and Laihonen, 2014). The DAD performance measurement has been regulated by a measurement framework, criteria and measures that are set up by the central administration for different departments. This aligns with the standardisation approach (Figure 1). Performance measures such as the percentage of allocating commercial area are customised to the specific context of the DAD case, which fits with the contingency-based approach. Regarding the benchmarking approach, the DAD organisation uses past performance as the basis for benchmarking with the private sector (table 2 and 3). The service processes are measured by performance measures such as the percentage of complaints from public regarding the environmental impact, satisfaction of the government complex building users, introduction of green building and construction materials and equipment that meet local content. These measures focus on customer values and correspond to a service process-oriented approach.

6 CONCLUSIONS AND RECOMMENDATIONS
The DAD performance measurement system has been directed centrally by the State Enterprise Policy Office (SEPO). It fits with the principles of public asset management (Kaganova and Undeland, 2006) such as adopting the role of real estate developer and the systematic way of performance monitoring using benchmarking with similar data from the private sector. The performance measurement system also corresponds to the four approaches from the strategic framework for public performance measurement (Jääskeläinen and Laihonen, 2014) i.e. standardization, benchmarking, a contingency-based approach and a services process-oriented approach. Although the operating results are monitored by TRIS annually, some KPIs should be developed furthermore, such as employee satisfaction with the physical work environment and rate of customer retention. Furthermore, benchmarking with other organisations would make more sense when taking into account the size of the organisations, enterprise values and time of establishment of the business, in order to avoid a comparison of “apples and pears”.

The impact of performance measurement of public facilities could be improved by a shift from operational performance measurement to strategic performance management through a sound discussion about the alignment between organisational goals and real estate objectives and a careful prioritising of Key Performance Indicators that fit with these goals and objectives.

In order to be able to select prioritized KPIs, various key questions have to be answered by the organisation. Regarding the organisation, key questions are for instance: what is the mission and vision of the organisation and what are its main objectives? What is the current and desired organisational culture? What are the main business processes and what are the aimed products and services? What are the main interests of employees and customers? Regarding real estate, important questions are for example: which real estate characteristics do support or hinder the mission, vision and strategy of the organisation and its main objectives? Can real estate help to support the organisational culture or to brand their values? Which physical characteristics fit with the customers’ and employees? The answers to these questions might be used to explore focused actions and ways to use scarce resources as efficiently and effectively as possible.

REFERENCES


Introduction

Campus Retrofitting

Tips and Hints towards Future Learning Environments

Suvi Nenonen

Universities play a key role in making European Union the most competitive knowledge-based economy in the world. This means that the ways of learning and teaching should be changing in parallel. European universities have an important role in the production of new knowledge and transmitting it through education and training. Modernizing the universities and their evolving role means that we have to make sure that also the learning environments meet today’s and more importantly tomorrow’s needs. Universities have an important role in the innovation ecosystem development. Therefore we need to rethink how campus resources – like spatial, social and virtual infrastructures - are strategically best managed. Small scale campus retrofitting demonstrations concerning future learning and working environments in universities have been the effective way to test new, unknown solutions and concepts. Additionally they are a way to collect evidence to proof the concepts. The purpose of this session is to present diverse demonstrations of campus retrofitting projects. The main questions discussed in this session are:

- How to co-design new learning environments and solutions?
- How to realize the solutions?
- How to measure the effectiveness of solutions?

In Finland campus property owner company have used investments to renovation as a tool to develop new solutions for the needs of future learning to the existing facilities in universities in close collaboration with the clients. This is done in collaboration with research institutions. The successful experiences of retrofitting demonstrations encouraged the campus property owner company to establish a campus retrofitting process. They decided to invest to collaborative demonstrations about 900,000 € annually. This sum is about 5% of annual budget for renovation of their campus portfolio. We suggest that all property owners have an equal possibility to use their budget in the similar manner. Traditionally the renovation budget is used to return the facilities to the same level than they used to be – campus retrofitting demonstrations focus on developing the facilities for responding to the needs of future.

The campus retrofitting process includes the following elements: Active user participation and co-creation process; Commitment and engagement to co-investing among stakeholders and Follow-up measurements and evaluation by diverse methods (e.g. using sensors, interval camera and user feedback) to ensure the success of demonstrations.

Additionally the similar cases have been conducted in Nordic Countries. Demonstrations are analyzed and compared with each other in order to establish a consistent campus-retrofitting model and to set the criteria for effective demonstrations. There are diverse demonstrations connected to processes of retrofitting, solutions of retrofitting as well as demonstrations about measurement the effectiveness of solutions. The examples of processes demonstrations are methods of user involvement, e.g. Charrette. The solutions are connected on multifunctional lecture theatres, pop up places in universities, living labs and diverse concepts of innovation platforms e.g. DTU Skylab, a creative community for innovation and entrepreneurship at DTU Lyngby Campus in Denmark, Living lab of energy positive house in NTNU campus Norway and Learning hubs in Aalto University in Aalto University campus in Finland. The demonstrations present also new ways of learning, working and researching in Universities.

The research results are an outcome of unique industry led research and development project in Finland. The session provides overview how to renew practices and processes in order to respond to the needs of future learning and working. The scalable retrofitting practices are not campus context dependent. It might be possible to apply the retrofitting practices also in more typical urban development.