ABSTRACT

Purpose: To test if Balance Score Card (BSC) methodology can be a simple and suitable method for mapping competence and maturity level for benchmarking purposes and to study whether its’ a connection between the quality of three service products and the competence and skills within the hospitals FM organisation.

Background:
The European hospital sector is constantly changing, and the demand for hospital services is rapidly increasing. The grow rate in the demand is far higher than what governmental budgets can cope with. Increased effectiveness in the hospital sector will contribute to reduce the gap between the demand and the supply side in hospital sector.

Approach:
To enlighten the importance of FM in hospital sector, the NordicFM network took in 2010 the initiative to a benchmarking project between 8 Scandinavian hospitals, with the objective to measure the product quality of three products; cleaning, food for patients and hospital logistics. In parallel with the NordicFM Benchmarking project, a follow up research on the FM organisation of the participating hospitals was carried out.

Results: The analysis shows fairly better results in Swedish hospitals than in the other Scandinavian countries. There is an indication that there is a correlation between the product quality and the skills and competencies of the FM organizations. The BSC method to collect information about the FM skills is found to be useful for benchmarking purposes in an early phase.

Practical implications: The research shows a practical and efficient way to collect information in an early phase in a benchmarking process.

Research limitations: The research is based on the subjective information given from the leader of the FM department. The data collection is too small to be able to generalize the findings to be true for the whole sector. Also the indication that there is a correlation between competence and service quality is to be expected but further research and more data must be collected in order to be valid.
Originality/value: This study presents data for a benchmarking process of 8 Scandinavian hospitals on the quality of three service products and gives an indication on the variety between the quality and the competence level against best practise.

Keywords: Facility Management, Benchmarking, Hospital sector, Balanced Scorecard, FM product quality

1 INTRODUCTION

The European FM model (EN 15221-1), illustrate the vital concept of how the demand side needs for service delivery connects to a service provider (internal or external) who delivers the services needed.

In the hospital sector, there is a long tradition for dividing the sector in a “clinical part” (core business) and a “non-clinical part” (support business). In the European FM context the “non-clinical part” organizations will have be found in the right hand side of the FM model (EN15221-1). The internal FM departments have the responsibility to deliver multiple services, highly integrated. To be as effective as possible in delivering hospital service, high product quality from FM departments integrated support service deliverables is an important critical success factor.

FM, as an own professional discipline, has through the last two decades developed from a practical discipline towards a recognized research field. Adding value for core business is a vital goal of the professional FM delivery. That is pointed out by European researchers in Jensen et al (2012) that presents the concept findings and perspective on the added value of facility management from the most important work of vital members of the EuroFM research network group from the recent years. Most of the literature review for this paper is drawn from this review.

For measuring the actual performance of the individual FM departments against a “best practice” score, the definition of a baseline for “best practice” is based on the findings from the literature (Jensen et al, 20012). The literature gives examples and addresses other important FM aspects such as:

- Vital properties that define FM as a profession in a European context.
- Examples of different “best practice” performance
- Examples on how FM as a profession discipline contributes to add value from core business.

Similar discussion and examples is found in the textbook of Atkin and Brooks (2009).

This paper presents two datasets. One comes from a Nordic benchmarking project of 8 hospitals, with the objective to benchmark the product quality of three specific service deliveries. The other dataset is an extended quality study done by the author, looking at the skills and maturity level of the same FM departments.

The two datasets are considered independent. In this paper we compare the two individual datasets, and address the following research questions:

1. What are the major differences between the participating hospitals in organisational skills and competencies documented by the questionnaire from Dataset A?
2. Is there any correlation between the NordicFM scoreboards (Dataset B) on product quality and the score drawn from the questionnaire on organisational skills and competencies (Dataset A)?
3. Is the use of balanced scoreboard a useful way to collect information in an early phase of a benchmarking process?

2 STATE OF THE ART

FM focuses on adding value for core business. Quite a few publications in FM research have focused on how to measure the added value. A major trend in the European hospital sector is the use of Diagnostic Related Grouping system (DRG) as an important component in the financing system. The basic concept of the DRG point is actually a direct value mapping.

There has also been carried out different work when it comes to value classification. One example of resource classification is the use of space. Norwegian Directorate of Health (Helsedirektoratet, 2009) has developed a space classification system that is normative for the Norwegian health care sector. The classification system divides the different generic spaces into the categories: normal care, intensive care; operation theatre and so on (Helsedirektoratet, 2009). The European standardization work has resulted in a new standard defining relevant FM processes (EN 15221-5). Several of the relevant processes for the European FM sector will be found in the standard, but the more specific services such as patient food and sterile goods is not part of the standard.

In Germany researchers have been working on identifying the FM processes in the hospital sector. Lennerts et al (2004) found 29 FM processes that is relevant for German hospitals. This is further developed by Diez (2009) that shows a model that seize to make a direct connection between the DRG points and the cost of some of the identified FM processes. Able et al (2006) in their paper asking: “How much FM needs a hospital?” as a relevant question researched in order to find best practice. Able et al (2006) mainly describes the ongoing OPIC research project where they formulated the overall thought-provoking question as “Does the patient or the doctor set the demand for FM?”

There is expected that there will be a connection between the quality of an FM product and the competence and maturity level in the FM organization. Valen and Olsson (2012) found this to be true in their study among more than 30 Norwegian municipalities. They looked at the technical condition and maintenance backlog of the building stock and the FM competence and maturity within the FM organization.

However, the main purpose of this paper is to see whether BSC methodology is a suitable method for collecting information about competence and maturity for a benchmarking purpose.

3 METHODOLOGY APPROACH

The extended study on skills and maturity level was based on in-depth interviews with a questionnaire with 60 questions. The questionnaire was developed based on the primary sources of literature. All the questions were formulated as imperatives, and the respondent answered the question at a five point scale:
Always (A) ; Frequently (F) ; Occasionally (O) ; Seldom (S) ; Never (N)

The respondents were the FM leaders at their respective FM department in the 8 hospitals. This dataset is referred to as “Dataset A”, collected by the author. The two first interviews were carried out in connection with the workshop on the NordicFM hospital project in Copenhagen, November 10th, 2011. The six other interviews were carried out as telephone interviews during the time period December 2011 to January 2012. The questionnaire was sent to the respondent up front of the interview, written in English language. The interviews were carried out in Scandinavian language and the questions were simultaneously translated into Scandinavian language when interviews were performed.

The 60 questions were grouped in the four focus areas; Customer, Financial, Operational, Interaction. For each answer on of the 60 questions, the respondent is given a score of 0, 1 or 2 points depending on how far the answer was from “Best Practice”.

In the main Nordic benchmarking project, a vast amount of data was collected and analysed by Ernst and Young (EY). This dataset is referred to as “Dataset B” (NordicFM, 2012).

Both Dataset A and Dataset B, are designed by using an analysis technique inspired by the Balanced Scorecard methodology (Kaplan and Norton, 1996). Behind the questions for the two datasets, a scoreboard was set up which rates the fixed answers on a predefined scale. The predefined scale is measuring against a set “Best Practice” scores found from the literature review. While Dataset A seizing to evaluate the skills and competence to the participating FM departments, Dataset B seizes to evaluate the product quality for 3 different service products.

**Methodology NordicFM main project (Dataset B)**

The Nordic Benchmarking project was checking the quality of three service deliveries: Cleaning, food for patients and hospital logistics. The quality measure was levelled against an indicator set developed by EY to capture and analyse the three products. The indicator set is protected with individual property rights and will not be published here. Only a brief description of how they collected the data are presented (NordicFM, 2012):

Each of the three products is checked through the following three dimensions

- Cost
- Service level
- User Satisfaction index

The cost data was drawn from the accountant system through a rigorous template structure. For the product “Material supply”, the cost analysis is lacking, due to the fact that the EY’s template structure for gathering cost data were not fully developed before the execution of the Benchmarking project. The User satisfaction index is based on a simple inquiry with 8 questions that were passed out to a selection of 100 patients and 100 medical staff in each of the participating hospital. Selections were carried out in the way that the inquiry was asked to the first 200 persons met in the corridor of each hospital on a specific date.
The service level score is a result of EY’s evaluation of a combination of qualitative and quantitative data drawn from structured interviews on key personnel from the FM organizations in each hospital in combination with facts from the cost analysis.

The weighting of the score between the three dimensions were 50 % for the cost and 25 % each for the service level and user satisfaction.

The indicator set was developed and improved of EY by a benchmarking process of 40 Swedish hospitals in 2009. The score from the Benchmarking of the 8 Scandinavian hospitals are compared with the Swedish average in the main report from the NordicFM benchmarking project (NordicFM, 2012).

**Questionnaire design (Dataset A)**

The Balances Scorecard methodology (Kaplan and Norton, 1996) is a concept with multi-dimensional analysis on organisations results. The methodology is developed based on the idea that to assess the organisation performance by looking at the financial figures will not be adequate in knowledge economics. Consequently, more facets are needed to enlighten the overall organizational performance. Facility Management is about producing services where the product quality (service level) in nature is hard to quantify. Multi-dimensional measurement e.g. customer satisfaction index, and different types of qualitative measurement for product quality is common in the FM business.

The use of Balanced Scorecard Methodology has some weaknesses in scientific work. One of the major challenges is to establish a baseline to measure the answers against. Other challenges are the weighting of the different partial scores to a grand total score. Finally it might be difficult to interpret the results and draw conclusions from the different scores. When using the scorecard in a benchmarking process, the major point is to find similarities and differences between the different participants. The overall “Best Practice” score will be of less importance (since the relative difference between the participants is what you are seeking). There is still a major risk that the scoreboard will be biased by the personal opinion of the developer of the scoreboard. However, as a benchmarking tool that can be rather useful since the actual score is of less important than measuring the relative difference against other practices.

Scoreboards are commonly developed through an iterative process aiming to develop a common understanding of “Best Practice”, and thus, which score to use. The scoreboard for Dataset A that is presented in this paper, is developed by the author alone. The original intention for developing the scoreboard was to develop and refine the questions and scores by discussing the questionnaire between the participants in the NordicFM benchmarking project, but from various reasons such discussions were not able to carry out. As a consequence, the question and scores from Dataset A, will be a product of author’s considerations alone. Some important consideration made by author, when developing the scoreboard is commented in the following paragraphs.

**The four dimensions**

The choice of the four dimensions will always be a matter of question since other “candidates” for focus areas could easily been chosen. However, the four dimensions is recommended by the work of Atkin and Brooks (2009) that has good experience with these dimensions. They argue for why these four dimensions may be good candidates for measuring FM
skills and maturity. To cite their own evaluation of the method, Atkin and Brooks (2009) found that “The four perspectives have shown themselves to be purposeful and aligned to both the facilities management strategy of organisations and their strategic business objectives”.

The selection of the specific four dimensions, also find support in other recent publications. EN 15221-2 “Guidance on how to prepare Facility Management agreements” has a “client centric” approach. Hence this will justify why one dimension should be “Customers”. In later part of the standard the controlling activity is stressed as a vital tool for “Financial control”.

The “Operational” dimension is defined by Atkin and Brooks (2009) to be as “how efficient and effective is the delivery of estates related and facilities services?”. The questions in this section focus on the tactical tools like benchmarking, market testing, risk analysis, procurement strategy and so on. All different tools that are recommended in recent FM reports and books. The last focus area “Interaction – how does the facilities management function continue to improve and assist the core business” was the main theme on the EuroFM conference in Vienna in 2011 called “Cracking the productivity nut”. The importance of this fourth dimension is then obvious (EuroFM, 2011).

The weighting
The score on each question is set from a base level based on the author’s apprehension of what is “Best Practice”. In some cases the answer is obvious. For example question 3.12:

“We have the competence needed to handle the demands in the Health and security legislation”

Health and security should always be dealt with in a proper way and hence the score on this question is 2 points for the answer “Always”, and 0 points for the 4 other alternatives.

In other cases the score on a single question, will be more controversial based on the different opinions among the author and the respondent, and heavily influences on different organisational models. The fixed score will pretty much be interpreted as a “one size fits all” thinking. This paper may be considered as action research aiming to works together with the different respondent to search for “Best Practice”. The questions and the scoreboard should be considered as a pilot study aiming to search for Best Practice, which make the score itself less important compared with the chosen questions and the subsequent discussions among the participants that may arise in the later phase of this research work. The above may be illustrated with the question 3.2

“We look at dedicated personnel in the customer’s organization as internal service providers, and give them credit for their work”

The given score for this question is “Always” = 2 points, “Frequently” = 1 point and 0 points for the three other alternatives. If your strategy is to have a well defined borderline between core/noncore processes, you will expect that leaving part of the process to the core business will conflict with your strategy and thus you are expecting the choice “Never” to give 2 point and “Seldom” to give 1 point.
During the interviews both point of views on what is “Best Practice” were represented. FM in hospitals consists of a broad spectrum of highly integrated processes. In the scoreboard the number of questions considering the different process and consideration will vary. The number of questions on each subject will impact on the final result. Finally when setting up the scoreboard, author stressed to place the scores in random order to avoid that some specific answers e.g. “Frequently” would give the highest score. This consideration made it less possible that the respondents answered consequentially “by chance” and ended up with a better score than respondents that strived to give their answers so “honest” as possible.

4 RESULTS

The respondents in this research are one representative from each of the FM department of the eight participating hospitals in the NordicFM hospital benchmarking project. The participating hospitals show great variety in size and areas of specialization. All the hospitals have an emergency function. Some key figures from the participating hospitals is presented in Table 1.

<table>
<thead>
<tr>
<th>Table 1: Key figures for the participating hospitals</th>
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<tbody>
<tr>
<td>Country</td>
</tr>
<tr>
<td>Hillerød Hospital</td>
</tr>
<tr>
<td>Rikshospitalet</td>
</tr>
<tr>
<td>St. Olavs Hospital</td>
</tr>
<tr>
<td>Helsingborgs lasarett</td>
</tr>
<tr>
<td>Länssjukehuset i Kalmar</td>
</tr>
<tr>
<td>Jönköpings län</td>
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<tr>
<td>Sørlandssykehuset</td>
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<tr>
<td>Bispbjerg Hospital</td>
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</tbody>
</table>

All the eight respondents were FM leaders from the FM department in the hospital. The departments have responsibility for most of the 30 processes as defined by Diez (2009) with exception for IT, and some minor supplementary processes. One of the respondent that was from Jönköping’s county did not have responsibility for the building operation and technical installations, and contacted one of his colleagues, to get the answers for the building related questions.

Results

The radar profile from the interview grouped in min-max-average score is presented in Figure 1. As we can see from the radar diagrams the greatest span between the score among the participants seems to be greater on the financial dimension then on the tree other dimensions, but the score on the operational dimension also seems to vary to a great extent. The overall lowest score is on the Interaction dimension.

The “Best practice score” is to a high extent drawn from Atkin and Brooks (2009), where strong focus was put on the financial following up through the procurement process. All the respondents in this research are in-house FM suppliers, and the use of sub-contractors is very limited. The spread along the finance dimension may be explained with variety of focus due
to the minor importance of good following up of sub-contractors (due to the limited impact on the overall performance of the FM supplier’s organization).

![Figure 1: Spread of results from the eight participating hospitals](image)

What is more surprisingly is the great spread in the dimension “Operation”. Traditionally the internal FM supplier’s organization has been developed from a day-to-day operational focus where Health and Security have had main priority. The gap between the actual score and “Best Practice” is kind of surprising. A major part of the total “Operational” score is the Health and Security aspects. The score points on Health and Security questions (3 of 15 questions have only used the score 2 points for always, and 0 points for the four other alternatives). If a respondent, choose the answer “often” on these three question this will have great negative impact on the total score along the “operational dimension”

The relatively lowest average score along the “Interaction” dimension were expected due to the traditional conservative split between clinical and non-clinical personnel in the hospital “world”.

The overall highest average score is on the customers focus. This finding is very promising for future work in the benchmarking process and the subsequent following up activities since customer focus is considered to be one major driver towards Best Practice in FM.

**Comparison with NordicFM main project (Dataset B)**

While the questionnaire is checking the FM supplier’s organizations towards “Best practice”, the NordicFM Benchmarking project is checking product quality. Both datasets have a fixed max score. Calculation of the relative difference from the highest possible score from the two datasets, gives the following result.
Table 2: Relative score from the eight participating hospitals, Dataset A and Dataset B

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<thead>
<tr>
<th></th>
<th>Hospital 8</th>
<th>Hospital 7</th>
<th>Hospital 6</th>
<th>Hospital 5</th>
<th>Hospital 4</th>
<th>Hospital 3</th>
<th>Hospital 2</th>
<th>Hospital 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dataset A</td>
<td>53%</td>
<td>63%</td>
<td>39%</td>
<td>58%</td>
<td>29%</td>
<td>49%</td>
<td>62%</td>
<td>64%</td>
</tr>
<tr>
<td>Dataset B</td>
<td>65%</td>
<td>55%</td>
<td>52%</td>
<td>66%</td>
<td>55%</td>
<td>58%</td>
<td>69%</td>
<td>73%</td>
</tr>
</tbody>
</table>

Figure 3: The relative distance from max score for the two independent dataset

One interesting finding from this graph is that the Swedish hospitals seem to achieve the best score for both Dataset A and for Dataset B. The scores from the graph also indicate that there might be a correlation between the two datasets. However the selection of data is too small for statistical analysis, and this indication should be further researched and tested with more data. However, there is an interesting indication that we can reflect on a bit further.

The Swedish hospitals were participating in the EY Benchmarking for the second time in 2010. In 2009 data from 43 Swedish hospitals were reported and analyzed by the same template structure by EY. The findings from the 2009 data were used to implement different improvements projects.

The FM marked in Swedish public sector is recognized to be more mature than in Denmark and Norway. FM as a concept may be more well recognized business area among the Swedish participants, and may explain why they score better on the questions about skills and maturity (Dataset A).

The indication of a possible higher score measured in both datasets for Sweden in comparison with the two other countries is a finding that should be more thoroughly investigated in following up research. The possible correlation between skills and competencies in the FM-organizations, measured by (Dataset A) and the score for the product quality delivered from the same organization (Dataset B) is also interesting further research.
5 PRACTICAL IMPLICATIONS

FM is defined as “integration of working processes”. The possible correspondence between the scoreboard from the questionnaire (Dataset A) and the EY score for product quality in the NordicFM project (Dataset B) should be more thoroughly investigated in future research. If a possible link exists between organizational behavior, and product quality, more or better FM products will be possible to achieve by training the different FM organizations in their skills and ways to organize their daily work.

6 CONCLUSION

Benchmarking is a vital part in the professional field of FM. The “ticket” for participating in a benchmarking club may be considered as expensive both in form of direct cost and internal workload.

This paper gives an example of practical use of a simple tool for benchmarking. Some interesting possible connections have been shown. The findings have the potential of being useful in the earliest phases of a benchmarking process for example in the search for focus areas in the benchmarking process.

The understanding of FM as an own discipline is still under development. Major part of the FM literature is about FM in office buildings. “Best Practice” of FM in hospital buildings might differ from FM in office buildings to a certain extent. In future work more efforts should be put on future development of the questionnaires and the scoreboard to support a more common understanding of “Best Practice” of FM in hospital buildings.

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