A Method to Benchmark Cleaning Services in Swiss Hospitals

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Abstract

Background: In Switzerland, hospitals are now forced to improve their cost transparency to deal with a tightening financial environment. Decision makers demand benchmark data in order to detect efficiency potential. As part of the supporting services, cleaning services are also affected by that. However, up until now there has been no benchmarking opportunity for cleaning services in hospitals.

Purpose: This paper is about the research being applied to develop a benchmark methodology for cleaning services in hospitals.

Methodology: Mixed methods design within a traditional qualitative research design, underpinned by the pragmatism paradigm and a primarily inductive approach. The inquiry strategy was a mixed methods case study. Case study entity is seven hospital FM departments where the bounded system of cleaning services was focused on. Data collection methods include document research, semi-structured expert discussions, and a quantitative questionnaire. Data was primarily analysed thematically. Results: 21 clearly defined base numbers leading to informative 12 key figures (KPI's) were developed according to practitioners' needs. Additionally, a detailed catalogue of weighted cleaning tasks was established in order to put the key figures into perspective.

Conclusion: The research led to a rigorous method to benchmark cleaning services in Swiss hospitals. However the findings are mostly limited to quantitative figures and do not include qualitative attributes of cleaning services. Nevertheless the results are currently being implemented in practice where a first set of hospitals benchmark their cleaning services with figures of the year 2014.

Keywords: Benchmark, Cleaning, Cost, Hospital, Transparency

Introduction & Background

This paper presents a substantial further development of the benchmarking platform for Facility Management services in Swiss hospitals introduced in 2012. That started with the development of

a benchmarking method for hospital catering, as presented by Hofer, Honegger and Züger (2013). The outlook in that paper mentioned that the benchmarking method would be adapted to other FM services, such as cleaning. That has been achieved and this paper presents this development, which is based on the same background as already described by Honegger, Hofer and Züger (2013).

On the OECD list of total health expenditures, expressed as a percentage of the GDP, Switzerland ranks high, not far behind the leading United States (OECD, 2011). But unlike the US, where healthcare costs are economically driven, the Swiss hospitals benefited from a highly unrestrictive financial situation as they were paid for their services retrospectively, mostly at whatever price they charged (Fetter, 1991). Due to the implementation of the SwissDRG system, which requires the reimbursement of hospital costs in advance through a diagnosis-related group system, this comfortable situation changed. This change was announced in order to streamline hospitals' financing systems (Brügger, 2010), affecting the provision of all hospital services and processes. The change is design to compel hospitals to act more economically than before (Oggier, 2012). Hence, a main and highly proclaimed benefit of the newly-introduced SwissDRG system is that it forces hospitals and health care providers in general to focus on higher process transparency as a precondition for being cost-oriented (Balmer, 2011; Cording, 2007; Hurlebaus, 2004; Mathauer & Wittenbecher, 2012; Oggier, 2012; SwissDRG, 2011).

This drive for transparency not only affects hospitals' core hospital functions of treatment and care, but also their support processes. These support processes can be put under the umbrella of facility management (FM), which is defined as the "integration of processes within an organisation to maintain and develop the agreed services which support and improve the effectiveness of its primary activities" (CEN, 2006, p. 5). The role and relevance of FM is critical as 25-40% (Abel & Lennerts, 2006; Jensen, 2008) of hospitals total costs are incurred by the various support processes.

Cleaning services are one of these support processes and self-evidently crucial for hospitals. Looking at research activities, a lot of attention is being paid to the topics concerning hospital hygiene and cleanliness in order to prevent and control hospital-associated infections (such as those mentioned by Dancer, 2009; Hopman et al., 2015; Mitchell, Dancer, Shaban, & Graves, 2013; Mitchell, Wilson, Dancer, & McGregor, 2013). This work is mostly to be found in clinical literature and explicit links to cleaning as part of FM are rare (May & Pitt, 2012). However, as Homan (2012) points out, achieving and keeping up required levels of hygiene and cleanliness requires hospitals to professionally address day-to-day operational challenges in terms of cleaning. And this is one of FM's core duties. In order to do that, facility / cleaning managers need to be equipped with detailed information about their cleaning processes. This includes comparable data across hospitals in order to measure and discuss process effectiveness and efficiency with peers.

Such data was difficult to obtain in Swiss hospitals. For historical reasons Swiss hospitals are set up very individually; for example, accounting structures for hospital cleaning vary from hospital to hospital. Such non-transparency can be a reason for non-efficient supporting processes (Balmer, 2011; Gudat, 2006; von Eiff, 2012). In other words, tools which assist hospitals in improving their cost transparency and also enable them to make comparisons are now required in order to face the challenges of an increasingly restrictive financial environment. This demand forms the research gap addressed by this study. Specifically, a method was needed to establish clear cleaning costs and soft facts in order to enhance cost transparency and, based on this, to develop a benchmarking

system for Swiss hospital cleaning for the benefit of decision makers, as was the case for hospital catering (Hofer et al., 2013).

Following information put cleaning service in Swiss hospitals into a context and assist in interpreting the after mentioned results. Regarding there is no market overview available stating the current level of outsourcing of cleaning services in Swiss hospitals. Earlier figures indicate that less than 15% of hospitals outsource their whole range of cleaning services to an external provider (Hofer & Rohrer, 2011). A higher percentage does outsource special cleaning tasks such as periodically glass cleaning (Hofer & Rohrer, 2011). This situation impacts the supply chain of cleaning services as hospitals own regulations and wage guidelines influence the staff wages. And it is in hospitals own interest to negotiate financial beneficial relationships with providers of cleaning material. Hence hospitals cleaning managers do have a relatively high autonomy in how to provide and report their services due to the in-house dominated service providing schemes. Another distinctive aspect in the Swiss hospital market is that there is not only a comparably low rate of outsourced services but also no considerable Private Finance Initiative (PFI) activities such as in the United Kingdom.

A theoretical thread shaping this research is the concept of benchmarking. A significant contribution to its conceptual position was developed by Camp (1989) who proposed a path-breaking ten step methodology to both develop and apply benchmarking for the benefit of a company's success and therewith paved the path for benchmarking being one of the most applied business tools worldwide (Searles, Mann, & Kohl, 2013), especially to address tightening financial environment as this is the case for Swiss hospitals.

Development of a Benchmarking Method
Methodology
Research Questions and Aim

Based on the situation described above, the leading research questions were:

- How can the existing sources of process and cost information be used as a basis for benchmarking cleaning activities across hospitals in Switzerland?
- Which key figures (KPI's) are required by FM professionals to benchmark cleaning services in hospitals?

Hence the aim of this study was to investigate the current process and cost structures of cleaning activities in Swiss hospitals in order to provide defined key figures for benchmarking activities. As there was no scientific foundation available to benchmark cleaning services, the researchers and practitioners involved decided to focus on quantitative measurable data and procedures of cleaning services that clearly lie within the remit of the practitioners concerned (cleaning managers) and also directly benefit them in form of needed argumentation aids. HAI data or other customer service measures were not included at this stage of the benchmark development, because there are currently no sufficiently set standards of measurement in Switzerland that allow proper benchmarking of such aspects.

Research Design
To achieve the aim mentioned above, a mixed methods approach within a predominantly qualitative research design was chosen. This was underpinned by the pragmatism paradigm and a primarily inductive approach.

Strategy of Enquiry: Case Study Design
The inquiry strategy was a mixed methods case study. Seven hospitals FM departments where the bounded system of cleaning services was focused on served as the case study entity. There are various definitions of case studies; for this study the following definition is relevant: "Case study research in business uses empirical evidence from one or more organisations where an attempt is made to study the subject matter in context. Multiple sources of evidence are used, although most of the evidence comes from interviews and documents" (Myers, 2011, p. 76). The findings of this research are derived from a single case study, on the subject *hospital cleaning services* in seven hospitals. Based on the nature of the research questions, existing data sources in these settings were discussed to allow conclusions to be drawn from the comparisons. Hence, a comparative analysis within the case study strategy was applied.

Case Access / Sampling
The seven hospitals were accessed through existing connections. A purposive, non-probability sampling technique was applied. Cleaning activities which are typical in Swiss hospitals were represented, including both hospitals with in-house and outsourced cleaning services. Table 1 provides an overview of the key parameters of the seven hospitals:

Table 1: Key Parameters of Sample Hospitals (all acute-care)

Hospital	1	2	3	4	5	6	7
Number of beds	377	264	607	479	156	210	829
Inpatients	18'406	66'799	36'406	20'005	47'347	14'676	34'441
Inpatients days	106'744	72'586	25'653	126'405	53'151	65'503	265'818
Number of staff (FTE)	1'235.40	927.00	3'418.70	1'886.00	680.00	1'293.70	ns
Number of staff (headcount)	1'940	1'268	4'361	753	1'005	1'958	3'429

This sample includes acute-care hospitals of different sizes which provide a good representation of Swiss hospital population.

Data Collection and Analysis
In line with the predominant qualitative research design and the case study definition given above, the data was collected using a mixed method approach for qualitative studies (Saunders, Lewis, & Thornhill, 2007), including semi-structured expert discussions to collect process structures and benchmark requirements from practitioners (with the hospitals cleaning managers) and a quantitative questionnaire to collect numerical data (mainly accounting data). The semi-structured expert discussions provided the vast amount of data, leading to this study's predominant qualitative research design. This proceeding allowed data sources to be combined to provide a comprehensive understanding of the seven contexts. Informed consent was obtained for all the data collection methods used.

The data collected on process and accounting structures was analysed and compared. For this purpose a coding strategy was applied. Codes represent a thematic structure that serves to compare

and describe settings (Flick, 2009). The codes used were derived from accounting structures and process steps. Using these codes, existing process and cost information were examined and a data framework was established to capture and evaluate reasonable benchmarking figures for hospital cleaning services.

Findings

The findings of the data analysis enabled to establish a benchmarking method for Swiss hospital cleaning services.

Defined Key Figures

Clearly defined key figures, which are calculated from clearly defined base numbers to avoid inaccurate comparisons, are essential for benchmarking activities. Usable base figures were obtained from the data on existing sources of process and cost information (such as inventory control systems, payroll accounting, human resource statistics). Key figures were chosen and developed in line with the requirements of the cleaning managers representing the participating hospitals (extracted from the semi-structures expert discussions). These key figures provide decision makers with argumentation aids based on improved process and cost transparency.

An example of how these figures were defined is given by the key figure "Total Cleaning Cost", as shown in Table 2.

Table 2: Example Key Figure Definition

Name of key figure	Total Cleaning Cost
Formula (use of base numbers)	Personnel Cost + Material Cost + Cost Purchased Cleaning – Cleaning Revenue
Definitions	Personnel Cost = Cost of staff working exclusively for the cleaning department (includes social benefits). Material Cost = Cost of materials used for the cleaning itself (not including cleaning material used by other hospital staff) Cost Purchased Cleaning = Cost for cleaning services provided by external providers Cleaning Revenue = Revenue obtained for cleaning services provided to external clients

One of the challenges in defining the key figures was the heterogeneous systems used in the hospitals. Every definition needed more than one draft until it was understood in the same way by the hospitals participating, especially *"cleaning area in square metres"*. There are norms classifying hospital space, but most hospitals do not label their space according to these. So there was no common ground to use and a feasible definition to state that base number had to be developed. Finding accurate wordings for the definitions which left the least possible room for misinterpretation just as challenging as it was when developing the catering benchmark.

The chosen methodology enabled the development of 21 clearly defined base numbers leading to 12 informative key figures. Topic areas included cost data (e.g. cost of staff data (e.g. ratio of skilled to unskilled employees) and floor space being cleaned. Most of the key figures display relative data, which allows benchmarking of cleaning data across hospitals of different sizes. Additionally, a detailed catalogue of weighted cleaning tasks was established in order to put these figures into perspective.

Catalogue of Weighted Cleaning Tasks
Cleaning costs need to be put into the perspective of cleaning tasks being carried out. To do so, a catalogue of weighted cleaning tasks was developed. This tool enables an overview of the tasks carried out by cleaning services. A total of 234 tasks were defined. The tasks differ in terms of resources used to carry them out. For example, cleaning patient rooms is more relevant than cleaning parking space. Considering this, the tasks are given a weighting. Thereby a total of almost 10,000 points, acting as weights, were distributed and attached to the tasks. Decisive factors in determining the weights of the tasks were their resources in terms of relevance, cost and time/frequency. This weighting is a result of intensive expert discussion and other experts might have distributed the points slightly differently. However this is insignificant to the catalogues purpose, because the catalogue is part of the cleaning benchmark and each participating hospital is required to go through it, marking the tasks being carried out by the cleaning department. This standardised procedure leads to a hospital specific number of tasks with a total weight expressed in points, called "*task points*". This procedure enables statements across hospitals to total cleaning costs in relation to the task points scored. Figure 2 shows an extract of this catalogue, displaying its concept based on numbered tasks divided in task areas which consist of single tasks.

Table 3: Extract of weighted cleaning catalogue

Area	Task	Weight	Done = 1 Not Done = 0
Outdoor area	Clean areal lighting	3	
Outdoor area	Clean areal signage	1	
Outdoor area	Clean outdoor parking area	3	
…	…	…	
Dumping and supply	Clean waste trolleys (periodically inside & outside)	7	
Dumping and supply	Deliver post on wards	27	
Dumping and supply	Pick and pack cleaning material for cleaning services	21	
…	…	…	
Cleaning, disinfection generally	Empty and clean waste bins	378	
Cleaning, disinfection generally	Dust: Windowseats, radiator, fingermarks (e.g. on window handles, light switches)	96	
Cleaning, disinfection generally	Dust: Higher than 1.8 m (surfaces, lamps, edges)	43	
…	…	…	

Enabled Transparency - Results
The aim of this study was to develop a method to enable benchmarking of cleaning activities in Swiss hospitals. However, these benchmarking results not only provide Swiss hospitals with valuable data but also add to the understanding of the Swiss hospitals' particularities. The following passages display some benchmarking data of the seven hospitals initially involved. These results are based on the hospitals' figures from 2012.

Results of the previously mentioned key figure *"total cleaning cost"* are seen in Figure 1 in form of the key figure *"Total cleaning costs as a percentage of the hospital total costs in %"* This information shows that cleaning costs do not count for a major part of the total hospital costs, with an average of only 1.54%. However when it comes to cost-cutting demands, cleaning services are often forced to cut costs, despite their relatively low impact on hospitals total costs.
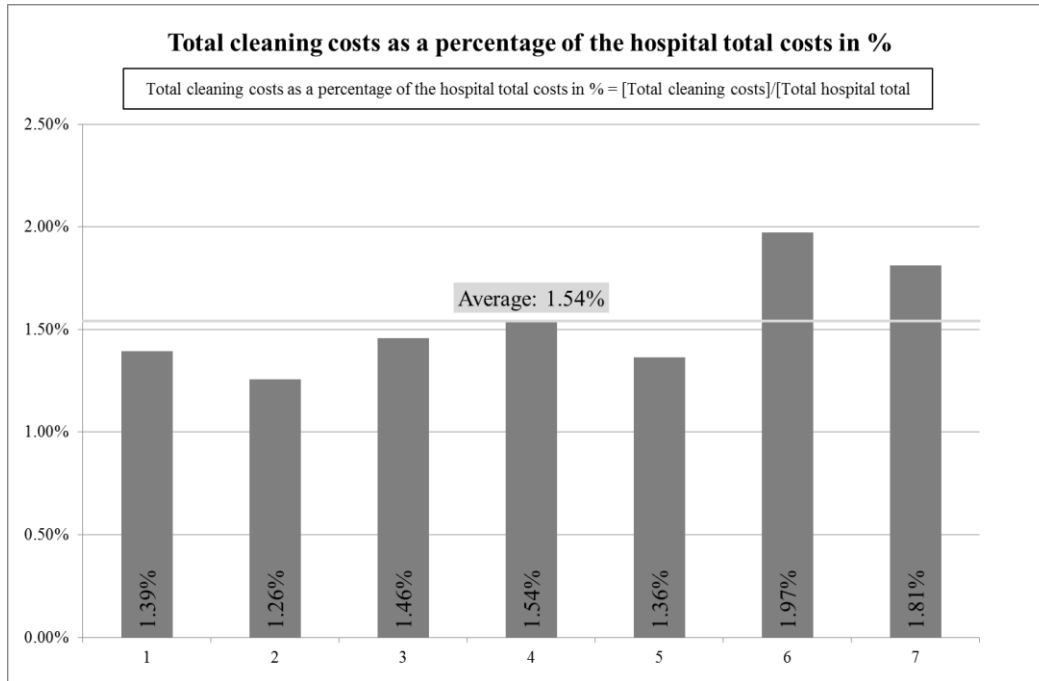
Total cleaning costs as a percentage of the hospital total costs in %

Total cleaning costs as a percentage of the hospital total costs in % = [Total cleaning costs]/[Total hospital total

Average: 1.54%

1.39% 1.26% 1.46% 1.54% 1.36% 1.97% 1.81%

Figure 1: Benchmark Results – Total cleaning costs as a percentage of the hospital total costs in %

Figure 2 displays the key figure *"material costs as a percentage of total cleaning costs"*. This information shows that material costs only count for a small part, average 5.21 %, of the total cleaning costs, as staff costs are relatively high in Switzerland. Differences between the hospitals are based on different cleaning techniques used. Hospitals 4 and 5 invested in new cleaning equipment which affected their 2012 numbers, which explains why they are above average.
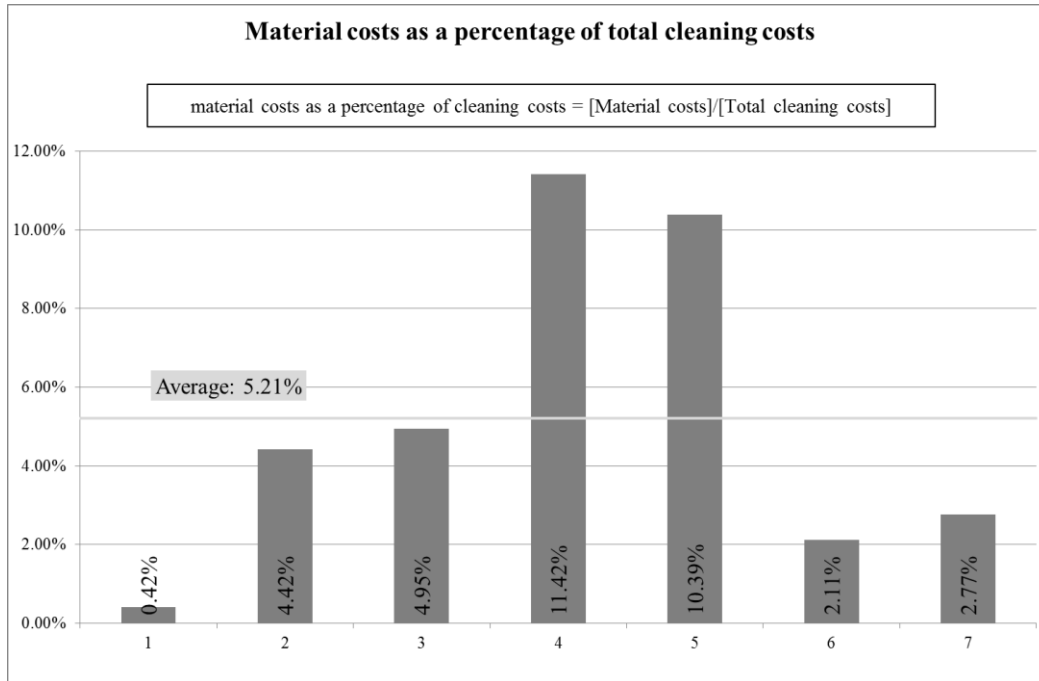
Figure 2: Benchmark Results – Material costs as a percentage of total cleaning costs

As mentioned above, staff costs in Switzerland are relatively high. Figure 3 shows average hospital staff costs in Swiss francs per full time equivalent (FTE) working in the cleaning department. The average across participating hospitals is around 73,000 Swiss francs which is about 77,000 US dollars (at exchange rate May 26, 2015). Hospitals 1 and 2 have outsourced their cleaning services and could not obtain wage data from the external service provider. Differences are presumably due to the staff structure based on the employee's age, skills and number of years of employment.
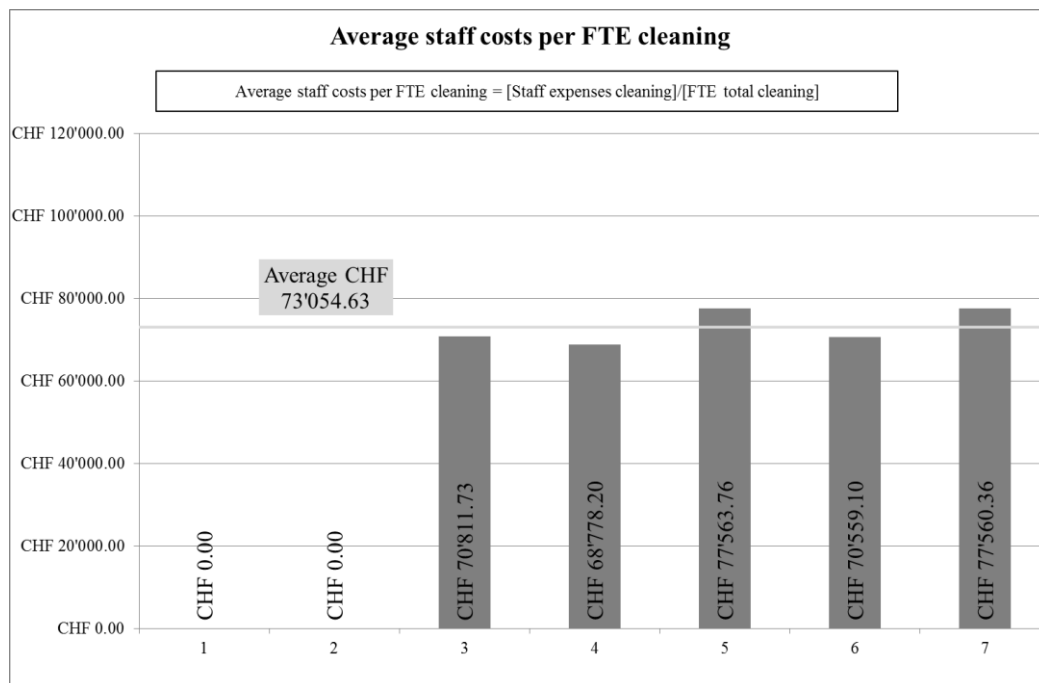

Figure 3: Benchmark Results – Average staff costs per FTE cleaning

Figure 4 contains central information, the task points assigned from the weighted task catalogue and hospitals total cleaning costs per square metre. The data shows that there is no obvious correlation of high total costs with the task points assigned, as hospitals with relatively high task points can also score relatively low on total cleaning costs, such as hospital 4. The range is relatively broad, ranging between 55.06 – 85.17 Swiss francs. These results are currently being researched, as it is important to understand the reasons behind them. Nevertheless, the existing benchmark results based on the developed method enable for the first time a high level transparency on which to base an investigation behind the data in further steps.
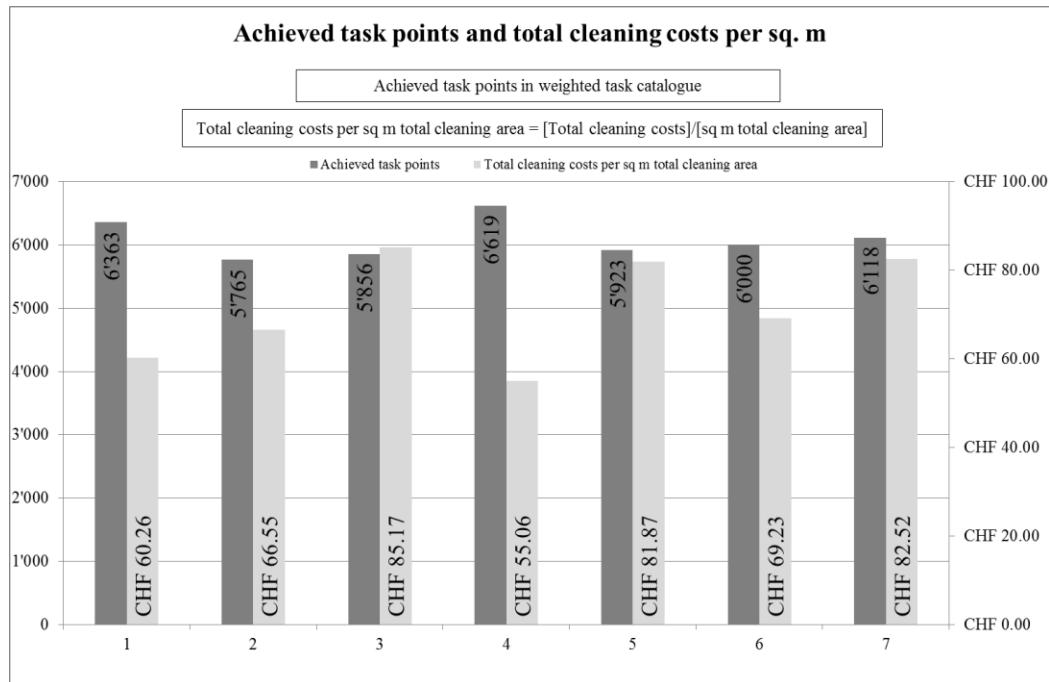

Figure 4: Benchmark Results – Achieved task points and total cleaning costs per sq. m

Cleaning services in hospitals are a complex matter. To put the benchmarking results into perspective, further hospital specifics are obtained using the benchmarking method (such as number of buildings, number of hospital beds and number of internal patient transfers as they trigger resource intensive cleaning tasks), as they assist in explaining differences in the results.

Conclusion

The research set out to explore how existing sources of process and cost information could be used as a basis for benchmarking activities across hospitals in Switzerland and to determine which key figures are required by FM professionals to benchmark cleaning services in hospitals. It was undertaken in the context of the current restrictive financial situation in Swiss hospitals, together with the implementation of the new reimbursement in advance system, which forces hospitals to act more economically than previously.

The research led to a rigorous method to benchmark cleaning services in Swiss hospitals. However, the findings are mostly limited to quantitative figures and do not include qualitative attributes of

cleaning services, such as cleaning standards and cleaning frequencies. Nevertheless, the results are currently being implemented in practice where a first set of hospitals is officially benchmarking their cleaning services with figures from 2014.

The findings add to the knowledge of how FM costs emerge and are justified in Swiss hospitals. As cost discussions predominately occur around the core activities of hospitals (treatment and care), less attention is generally paid to FM costs before cost cutting demands are set out. The findings of this research provide FM managers with argumentation aids when discussing effectiveness and efficiency issues on a strategic level. Benchmarking activities for hospital cleaning services based on a mixture of clearly defined accountability and process-based data information are now possible.

Relevance of Findings

Based on this research, the benchmarking platform set up in 2012 for Swiss hospital FM services has been added with the feature of cleaning services, complementing the previously introduced catering benchmark. So far, around 50 hospitals have made use of the platform. Of these, 13 benchmark their cleaning services and 45 their catering. The response to it has been very positive, as participation provides clear structures to enhance the cost transparency in hospitals and, for the first time, to effectively compare cleaning structures and costs across Swiss hospitals. In this light, the findings are very relevant to the target group. As mentioned above, the limitations of this study are that the results have so far only been applied to quantitative measurable figures and not yet to qualitative aspects of hospital cleaning services. Nevertheless, it provides a well-founded base for further developments.

Outlook

The cleaning benchmark itself will be further developed in terms of also including qualitative aspects. In the near future, the benchmarking method will be continuously adapted to other FM services, such as textile services or technical FM services. All future research activities are guided by the aim of providing FM personnel in hospitals with argumentation aids to ensure efficient and effective support services.

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