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Environmental performance assessment systems in the hotel industry

The present paper, which is conceptually embedded in environmental management theory, focuses on the question of monitoring and reporting environmental performance in the hotel industry. Its principal aim is to analyse the functioning, characteristics, and advantages of the performance assessment systems that are currently used in facilities belonging to international hotel chains. Specifically, the study, drawing on the content analysis technique, substantiates its claims by referring to concrete examples from the hotel industry (Scandic, Marriott International, InterContinental Hotel Group, Hilton Worldwide). Crucially, emphasis is placed on the practical problems related to the operation of such tools. The paper concludes by providing a number of recommendations on how to implement and run environmental performance assessment systems in hotels. In this way, it expands a fast-growing research on the practical dimension of hotel operation, thereby being of special interest to hoteliers and hotel managers.

Systemy oceny wyników działań środowiskowych w hotelarstwie

W niniejszym artykule, odwołującym się do teorii zarządzania środowiskowego, omawia się problematykę monitorowania i raportowania wyników działalności ekologicznej w branży hotelarskiej. Zasadniczym celem artykułu jest zatem przeanalizowanie funkcjonowania i właściwości systemów, które służą do oceny wyników działalności ekologicznej i są obecnie używane przez międzynarodowe sieci hoteli. Studium, wykorzystując analizę zawartości stron internetowych i oficjalnych dokumentów, przywołuje konkretne przykłady zastosowań takich systemów w hotelarstwie (Scandic, Marriott International, InterContinental Hotel Group, Hilton Worldwide). Co istotne, nacisk położony jest na praktyczne aspekty monitorowania i raportowania wyników działań ekologicznych. Dlatego też artykuł zawiera praktyczne wskazówki (przydatne zwłaszcza dla hotelarzy i managerów zajmujących się kwestiami środowiskowymi) określające, w jaki sposób wprowadzać i stosować systemy oceny wyników działań ekologicznych.

Keywords: hotels, environmental performance assessment systems

JEL classification: M00

Introduction

With growing numbers of people realizing the long-term consequences of man-made environmental degradation, there has recently been a marked shift in attitudes towards nature [Duncan, 2013]. Accordingly, much attention has been paid to the idea of sustainability [Sachs, 2013]. In the corporate context, sustainability involves managing the Triple Bottom Line, which includes not only financial, but also social and environmental risks, obligations, and opportunities [Hotel Analyst, 2012]. This, in turn, emphasizes the importance of environmental management, which refers to "the processes and practices introduced by an organization for reducing, eliminating, and ideally, preventing negative environmental impacts arising from its undertakings" [Cooper, 1998]. All that is germane to the hotel industry, which produces significant environmental impacts [Sloan et al., 2009; Hawkins, Bohdanowicz, 2011]. This is because hotels consume large quantities of resources and generate a lot of waste. Since there is a strong link between resource consumption and operating costs, such inefficiencies risk denting profitability.

The aim of the present paper is to explore the fundamentals of monitoring and reporting environmental performance in the hotel industry. In doing so, it draws on content analysis, which is "a technique for gathering and analysing the content of text. The content refers to words, meanings, pictures, symbols, ideas, themes, or any message that can be communicated" [Neumann, 2003]. Given that it "facilitates the systematic and objective identification and categorization of communication themes or characteristics" [Hsie, 2012], this technique is particularly suitable for studies of analytical and descriptive character. Specifically, this paper describes the functioning of environmental performance assessment systems, at the same time providing a number of recommendations on how to implement and run such tools.

1. Environmental management in the hotel industry

As mentioned in the introduction, serious consideration has recently been given to the notion of sustainable development, which is about ensuring that humanity "meets the needs of the present without compromising the ability of future generations to meet their own needs" [United Nations, 1987]. The hotel industry, which has compelling reasons to protect the environment, should also contribute to the attainment of this aim. While greening their operations, hotels have to tackle similar problems (although differences in building design, size, and

location account for variations in the intensity with which particular issues manifest themselves). These can be grouped into three main categories after Rebecca Hawkins and Paulina Bohdanowicz: (a) "the throw-away culture" (which deals with waste disposal, segregation, and recycling), (b) "the carbon challenge" (which bears on energy and electricity consumption and, by implication, on carbon-dioxide emissions), (c) "the wet stuff" (which has to do with water efficiency and waste-water treatment) [Hawkins, Bohdanowicz, 2011]. In addition, hotels committed to sustainability should collaborate with industry organisations, such as the International Tourism Partnership or the Green Hotel Association [Hsie, 2012].

These entities assist hoteliers by offering detailed guidelines for the implementation of environmental programmes [UNWTO, 2004; CI, IBLF, 2005; ITP, 2008]. It is also necessary to mention like-minded initiatives, which were created by international institutions and, as such, are not specifically addressed to hotels. These encompass the ISO 14001, Carbon Disclosure Project Reporting, the Eco-Management and Audit Scheme, the Coalition for Environmentally Responsible Economics, Roadmap for Sustainable Development, or the Global Reporting Initiative [GRI, 2002]. Also of help are various eco-labels and certification programmes, such as the Green Tourism Business Scheme, Leadership in Energy and Environmental Design, Green Globe, Green Key, or Tripadvisor Green Leaders [Font, Buckely, 2010; Sampaio et al., 2012].

In order to make improvements in environmental performance [Chan, Hawkins, 2010], it is essential, in the first place, to know how a given facility fares in terms of resource use and waste generation. In other words, what is needed is environmental performance assessment. This ideally consists of two parts: a snapshot view of hotel features, technologies, and initiatives aimed at greater environmental responsibility and a tool that enables continuous (long-term) monitoring of environmental performance. The former can take the form of written meter readings and offline calculations, an automated excel file on a shared drive, or, which is typically the case in multi-unit companies, an online tool allowing simultaneous access by multiple users. The latter include Scandic's Sustainability Indicator Reporting (ScandicSIR), InterContinental Hotel Group's Green Engage, Marriott's Green Hotels Global, and Hilton Worldwide's LightStay.

Let us briefly describe each of the aforesaid tools. ScandicSIR is a web-based application that provides a flexible and robust way of collating, recording, and monitoring environmental and resource use and cost information [Scandic, 2014]. The system relies on accepted methodology for collection of information and key performance indicators (KPIs) calculations and undergoes periodical audits by a third party company. The system has three major aims: (a) to provide clear feedback to members in individual hotels and across the business, (b) to provide a global mechanism for reporting operational, resource consumption, and cost

data, (c) to collate data for the purpose of environmental management and Corporate Social Responsibility reporting. Reports for the following KPIs are available in the system: total and per guest-night (per area) energy and water consumption and carbon dioxide emissions, waste generation (sorted and unsorted) – at an individual hotel level as well as country and regional levels; energy and water league tables for regions and areas, as well as utility cost reports.

Green Engage, introduced by InterContinental Hotel Group, is a comprehensive online sustainability system, which "tells" hotel managers and owners what they can do to become "green" and develop a "green culture", at the same time providing them with the means to save money by "measuring, managing and reporting on their hotel energy, water and waste consumption, as well as benchmarking and the ability to create action plans to track progress" [Hotel Analyst, 2012]. As things stood in 2012, IHG had 1900 hotels out of 4400 enrolled in Green Engage, but some of its brands had exemplary uptake – for instance, all Crowne Plaza facilities introduced the system [IHG, 2014]. Altogether, Green Engage had approximately 6000 unique users. Initiated in 2009, it was rolled out in all owned and managed hotels in its portfolio as well as in those franchise hotels that wanted to take part (three years later the 2.0 version of Green Engage was launched). Green Engage follows GRI standards, and in 2012, following the development of Hotel Carbon Measurement Initiative by UNWTO and ITP, a carbon calculator was added.

By contrast, Marriott International uses Green Hotels Global, a system which is operated by The Carbon Accounting Co. Green Hotels Global provides metrics--based information on the environmental footprint of all Marriott hotels [Marriott, 2013]. It is focused more on carbon footprint, but also has many of the same capabilities as other tools presented above, such as recording water use and waste generation. Carbon dioxide emissions and water use are measured per occupied room and night, and per square foot meeting hour. It should be noted that Marriott reports on its performance according to the Global Reporting Initiative standards.

Hilton Worldwide introduced LightStay™, its proprietary system that calculates and analyses the company's environmental impact, in 2009 [Hilton Worldwide, 2013]. It takes into account energy and water use as well as waste and carbon outputs associated with building operations and services provided at the hotel properties. As part of this, the system measures indicators across 200 operational practices including housekeeping, paper product use, food waste, chemical storage, air quality, and transportation. LightStay™ also includes a "meeting impact calculator" with integrated HCMI methodology that measures the environmental impact of any meeting or conference held at a property. By providing corporate customers with real-time data on food, travel, and operational practices for any of its properties, this feature enables them to consider the environmental impact of hotel stays and meetings when making purchasing decisions (and to include it in

their own sustainability reporting). At Hilton Worldwide measurement of sustainability performance is regarded as a brand standard equal in importance to quality, service, and revenue.

2. The functioning and characteristics of environmental performance assessment systems

All these systems aim to help hotel management assess the environmental performance of a particular facility, displaying it in the form of a tabular or graphical presentation [Karagiorgas et al., 2006]. They combine measurement (of environmentally-sensitive "inputs" and "outputs") with industry-specific indicators (energy and water use per guest-night or waste generation and carbon-dioxide emissions per guest-night) and benchmarking [Stipanuk, 2001; Scott et al., 2004], which allows managers to learn how a hotel performs against industry norms or in comparison with its competitors with similar characteristics (or other establishments within the portfolio) or with itself over time [Hawkins, Bohdanowicz, 2011]. This is indicative of what should be improved. What it comes down to, therefore, is that reliable performance assessment systems are central to effective environmental management practice.

Of course, relevant quantitative and qualitative data are a necessity [Bohdanowicz, Martinac, 2007]. They must be collected from individual facilities and should be concerned with the following aspects of the hotel operation: consumption of energy, electricity, water and chemicals, waste generation, turnover, number of customers, outdoor and indoor temperature, and humidity conditions [Hsie, 2012]. It is also essential to get to know employee attitudes towards environmental practice as well as to find out what eco-friendly measures were implemented on-site. This can be done through questionnaire surveys and/or interviews conducted with frontline workers, managers, as well as hotel guests [Bohdanowicz et al., 2011]. Also, data of socio-economic and auxiliary character can be gathered [Kozak, 2004]. These include information on seasonally-adjusted demand, incidence of leakages, compliance with health and safety regulations, gender equality as well as investment outlays in the local economy, poverty alleviation and conservation of cultural heritage.

Although extensive research has been undertaken into the problematics of performance indicators in the international hotel industry, the accuracy and validity of the published figures have been contested and debated, principally due to the existence of large variations and discrepancies in the reported data [Burgos-Jiménez et al., 2002; Becken, Cavanagh, 2003; Warnken et al., 2005]. Researchers adduce many reasons for that, but, above all, highlight the differences

both in the methodology used to collect data and in the facility characteristics (weather conditions and climate zone, number of amenities, type of customers served, occupancy, building size and design) used as a point of reference [Matson, Piette, 2005].

Even though some of the benchmarks stress the need to use certain corrective factors so as to account for the above-mentioned discrepancies [Stipanuk, 2003], the overall reliability of such tools is questionable. Besides, it is argued that for global benchmarks to be reliable, too many hotel sub-categories would be required or extensive databases would need to be created. Most of the reported indicators (for example, in environmental reports and academic studies) fail to provide a perspective on indicators as related to the total use of resources ("input"), a company's activity ("output"), or management objectives (what is the planned level of consumption, for example). As mentioned above, many guidelines have been published on how to collect the information and construct indicators [UNWTO, 2004], but the need for good and reliable metrics and comparison schemes in pursuing sustainability still remains unmet.

Environmental performance assessment systems are developed either by specialised companies (which create and commercialize customized applications) or in-house. As a result, there is limited information publicly available about them (the EnergyStar Portfolio Manager is the exception in that it provides a document explaining the methodology). There is also a paucity of experience-based manuals offering "how-to" guidelines. Besides, though companies that already utilize such systems have studied problems related to their deployment and functioning, the resulting reports are internal documents unavailable to the public. All that makes it hard to draw on other organizations' experience. It is thus of importance to provide hoteliers with clear guidelines on how to successfully introduce performance assessment systems in their facilities.

3. Practical aspects of the development of performance assessment systems

The development of environmental performance systems is not without its challenges, which goes some way towards explaining a limited use of such tools. The procedure outlined here is based on hotel-specific experience, but the same guidelines can be adapted to a system developed for other tourism enterprises. However, these are just estimates as each phase can take more or less time, depending on a number of organization-specific factors.

The available literature on sustainability indicators provides guidance on the choice of relevant performance parameters and the information required. There

are, nonetheless, difficulties arising when system users at individual facilities are not able to collect the requested information (due to its limited availability on-site). One of the possible solutions is to involve future users in the design and development of the system. Local staff members have knowledge and experience of the situation, access to real-life data and information and can thus help in assessing what outputs from the system are most useful at department and facility levels. Finally, when participating in the creation of the system, they will identify with the concept and will probably be more willing to use it. Of course, in the case of larger companies it is virtually impossible to involve all personnel in such a project. Therefore, a representative sample of future users and data providers ought to be chosen, preferably having different backgrounds, level of technical and environmental knowledge and skills as well as functions within the company structure. An external consultant experienced in environmental management and reporting in hotel businesses may be contracted at this stage.

It is important to define the physical boundaries of the system and the frequency of data collection. Depending on the type of a facility and the range of environmental commitments, reporting may be limited to resource consumption only or cover impacts related to the production of goods and transport to and from it. The frequency of data collection can be determined on the basis of the weighing-up of the cost of staff-time and the installation of meters on major utility end-users against possible benefits. While for the purpose of general benchmarking it may be enough to collect annual data from invoices, performance monitoring requires monthly figures. In the case of individual end-users responsible for considerable energy and water use, it may be more suitable to adopt daily reporting routines.

To ensure the effective utilization of the system, methodologies for data collection and reporting procedures should be standardized and users provided with definitions of various terms, especially energy units, as these tend to be confusing. When developing a performance assessment system for a multi-user corporation, there may be a conflict between the expectations of user-friendliness, universal applicability, and relative simplicity of the tool with the general flexibility and reliability requirement. Currently, most of the existing instruments collect detailed information about a hotel's characteristics to allow for a more accurate benchmarking of performance through the use of correction factors.

If possible, in the case of corporate systems, data could be introduced into the database centrally from one source – an energy broker, a reservation system, or an outsourced laundry provider. Frequently, centralized updating of such a database may be a more appropriate solution and is likely to ensure the prompt reporting of high quality information (especially if combined with automated data logging). However, such an arrangement could have a reduced educational impact and

thus could do little to encourage individuals to be concerned with the performance of their facility. A combination of centrally populated data with information reported by individual users may prove to be the optimal solution. Regardless of automatic or manual data uploading procedure, constant and prompt technical support as well as data verification must be ensured. In other words, it is imperative that the functioning of the system is monitored and that backing is at hand whenever necessary [Wöber, 2002].

Lack of support in solving technical problems faced by users or questionable data quality may affect the willingness to use the system. During the development of the corporation-wide system, the issue of data security needs to be addressed, especially with regard to sensitive proprietary data on cost and/or occupancy rates. A procedure needs to be designed and enforced to ensure that only company employees have access to the database, and that the level of access is related to their role in the organization. It is important to have up-to-date information on the business units' status in the database, such as renovations, sales, and acquisitions, in order to ensure that all operational units within the portfolio actually report to the system.

The transparency of the system ought to be guaranteed by detailed information on the computer system's status as well as by the conversion factors and mathematical models used in the creation of output reports. Preferably, conversion factors and computational procedures developed and accepted by internationally recognised organizations should be used. Climate differences among various locations also need to be considered for the sake of comparison, and properly accounted for (either by the sub-classification of hotels into regional groups or by the incorporation of degree day data or average monthly outdoor and indoor temperatures). The software interface ought to be user-friendly and attractive, both in terms of navigation as well as general layout. It should also be in line with the company's image and policy. Additionally, the system ought to be adapted to the needs and possibilities of users at all organizational levels. In the case of companies with a differing portfolio, a hotel sub-classification within the database may be a necessary development so as to ensure realistic comparisons and benchmarks within the brand. Finally, the tool should be interactive and provide instantaneous feedback to the user.

4. The advantages of environmental performance measuring and reporting

Generally, the system should be designed to serve as a framework for a comprehensive environmental programme. The type of output provided by the sys-

tem ought to be well defined and correspond with the needs of a user, since different information may be of interest at different organisational levels. Typically recognized feedback levels in hotel companies include individual hotel, brand, country/region, and entire portfolio. These are also typical benchmarking groups. For a user at an individual hotel, of major interest is the monitoring of one's own performance over time and comparing it with in-house or industry benchmarks. Typically, these reports are available for energy (divided into types), water, waste sent to the landfill and that diverted from the landfill, chemicals and emissions of carbon dioxide and ozone depleting substances at a hotel level, either as total quantities or normalized per guest-night, occupied room, square metre of the area, or revenue. Most systems allow reports to be downloaded for future reference and off-line use. Some systems have also additional options. For example, the aforesaid EnergyStar Portfolio Manager allows users to choose the baseline year and shows if the hotel is eligible for the EnergyStar.

As a rule, users seriously committed to corporate social responsibility require more aggregated feedback reports that allow them to see the overall performance of the portfolio. This, in turn, helps them find out which facilities may require assistance or are eligible for awards (most of the systems offer such reports). These may take the form of graphs, lists, league tables, or collated reports. In the case of manual monthly reporting, it is also essential to have an overview of the data reporting status of all hotels in the portfolio so as to be able to take appropriate actions. In corporate feedback reports colour coding may act as a visual enhancer of the information provided. Once the performance goals are set, it becomes beneficial to have a report showing individual facilities' performance in relation to the targets, as is the case in the Portfolio Manager.

The provision of feedback is a crucial factor behind the functioning of the system. Users need to see that their efforts in collecting and reporting information are appreciated and used to produce valuable feedback. Furthermore, it is imperative that once the system is operational, it constantly receives strong corporate support. Continuity of the system's utilization may be achieved by frequent references being made to it by senior management, while hotel managers or environmental coordinators may be encouraged to report and discuss the hotel environmental status with all staff members on a monthly basis. It can also be used to evaluate the commitment level of area and hotel managers.

The systems usually contain a social networking capability that enables users to exchange ideas and experiences or to present their best practices and environmental initiatives. This encourages its use and, by this token, promotes the idea of sustainability. Furthermore, they provide support and advice to individual managers on how to improve the performance of their facilities or how to modify utility contracts, at the same time indicating which awards and eco-labels to apply for.

Such services can be provided via an interactive discussion forum or a FAQ list. A well-designed and implemented performance assessment system may certainly bring considerable benefits at an individual as well as corporate level. These benefits can be referred to as both business and non-business, and include increased profitability due to reduced operational costs (and elimination of inefficiencies), the potential for an improved market-share, and preservation of limited natural resources. Now let us see what improvements the hotel companies referred to earlier in the text made thanks to the introduction of environmental performance assessment systems.

During the ten years of SIR functioning, Scandic reduced its (total) energy use by 17%, unsorted waste output by 66%, water use by 14%, and carbon dioxide output by 32% [Scandic, 2014]. In 2010–2012, InterContinental Hotel Group managed to cut energy per available room by 11,7%. Furthermore, it achieved an 11% reduction in purchased water on a per room basis as well as a 2% reduction in waste water on a per room basis. Crucially, the company reduced its carbon footprint in its owned and managed hotels by 19% per occupied room. It also attained an absolute reduction in its global carbon footprint in the hotels and corporate offices of 76 000 metric tonnes [IHG, 2014]. In 2007–2013, Marriott International reduced its water consumption (cubic metre per occupied room) by 11,6%, energy consumption (kWh per square metre of conditioned space) by 16,5%, and greenhouse gas emissions (million metric tonnes of carbon dioxide equivalent) by 13,3% [Marriott, 2013]. At Hilton Worldwide, with the help of LightStay™, the carbon dioxide output was reduced by 12,8%, waste output by 24,9%, energy use by 12,2%, and water use by 10,2% in 2009–2012. This resulted in estimated USD 253 mn in cumulative savings from efficiency [Hilton Worldwide, 2013]. The advancements in sustainability standards, including LighStay™, earned Hilton Worldwide and its portfolio of 10 hotel brands ISO 14001 certification for Environmental Management Systems.

Conclusions

It is fair to say that, despite a relatively wide range of available systems for the evaluation of a hotel's environmental performance, their reliability and accuracy for individual units continues to be disputed. This is mainly because a high degree of heterogeneity characterizing the entire hotel industry limits the applicability of uniform benchmarks. Nevertheless, performance assessment systems are of high value to hotel managers. Their deployment by large hotel corporations bears this out. Unfortunately, detailed information on the nature of such systems, procedures, and group member participation is still limited, which affects the intelligi-

bility – and hence the usefulness – of the results published (of the commercial platforms available, the EnergyStar Portfolio Manager addresses some of the heterogeneity issues).

That said, the experience of international hotel chains provides a number of lessons, which can be of help to those intending to develop their own systems (it is important to remember, though, that independent hotels introduce technologically advanced environmental solutions which go beyond of what happens in multinationals). If a company decides to create its own reporting system, it needs to ensure that the information required from individual departments or units is relevant and relatively easily available. The development process and the system itself ought to be easily understood by users. Otherwise, there is a risk that it will not be used as designed. Training and information related to the system need to be provided to all potential users, with additional self-study materials. The quality of input data ought to be verified constantly or trustworthy external sources should be used for collecting the information for central scripting. Likewise, continuous technical support is crucial to the success of such an initiative. All users need to be offered feedback on their actions and business unit performances.

Users at different corporate levels may require differentiated feedback and output reports from the system and those need to be readily available. Individual users and independent hoteliers are interested in the performance of their own facilities, while national coordinators or area managers want to get a snapshot of the situation in all their units. Graphical representation of results as well as colour-coded tabulated feedback reports can be seen as user-friendly outputs from such systems. Both normalized (per service output, revenue, or service area) and absolute consumption figures should be provided so as to give users a full understanding of the performance. Intra-company benchmarks for groups of similar facilities in the portfolio may be created or best-in-the-class standards established. A "best practice" section or a discussion forum, where users can exchange ideas and experiences, could be created to facilitate improvements at an individual level.

All this argues for the development and implementation of environmental performance assessment systems. The benefits they bring are hard to deny. We hope, therefore, that the present study will help practitioners put into place and operate such systems.

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