Exploring the Differences in Waste Management Strategies in Different Types of Hotels

Yulia Lazareva

Waste management in hotels is of critical importance to daily operation of the business. However, it is often an overlooked process. This article explores which types of waste management strategies are more and less commonly adopted in UK hotels. It also evaluates whether there is a difference between the types of waste management strategies implemented in different categories of hotels, based on their ownership and level of service. The aim is to identify recommendations on how waste management should be approached at different types of hotels. Data was collected from online reports and hotel websites. Overall, 52 hotels were selected through convenience sampling. A Chi-squared analysis was performed in order to identify differences between the types of hotels in relation to the waste management strategies they implemented. The results showed that recycling was the most widely adopted waste management strategy, with waste prevention and reuse methods being considerably underutilised. No statistically significant differences were found between the hotels' level of service and ownership and the type of waste management strategies they adopted. This suggests that a universal approach should be taken when studying, applying and promoting sustainable waste management strategies to the hotel industry.

Keywords: sustainability, waste management, hotels.

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Introduction

In 2016, the UK hotel market is expected to achieve its highest occupancy levels in history outside of London (77%) and its highest levels in the London region in the past decade (84%) (Price Waterhouse Coopers, 2015). This expansion will inevitably result in an increased environmental impact from hotels, which includes the amount of resources they consume as well as greater amounts of waste generated (Hsiao et al., 2014). Some believe that producing waste is the single biggest impact hotels have on the environment (Bohdanowicz, 2005). In 2015, UK hotels were estimated to produce 289,700 tonnes of waste per year (Waste and Resource Action Programme (WRAP), 2015a). In another example, a hotel guest can generate on average up to 1 kg of waste per day (Losanwe, 2013). However, one of the most successful practices in a Swedish hotel has shown that this figure can be reduced to only 50 g per guest per night, if systematic waste management strategies are implemented (Bohdanowicz, 2006).

Food waste has a significant contribution to the overall issue accounting for 27% of all waste produced by hotels (WRAP, 2015a). The UK hospitality sector wastes 920,000 tonnes of food annually, 75% of which is avoidable (Parfitt, Barthel and Macnaughton, 2010), meaning that it was discarded despite being suitable for consumption prior to disposal (WRAP, 2009). If more action had been taken, reducing food waste by only 5% would have saved the UK hospitality industry £250 million between 2013 and 2015 (Oakdene Hollins, Responsible Hospitality Partnership and WRAP, 2013). Food waste is a critical type of waste that must be diverted from landfill as much as possible, as its decomposition causes the release of methane, a gas that greatly contributes to the greenhouse effect (United States Environmental Protection Agency, 2012). In the UK, if all discarded food were removed from landfill, the reduction in the amount of greenhouse gases would be equivalent to removing a fifth of all cars from the roads (WRAP, 2011). It is also important to acknowledge the resources (e.g. water, energy and labour) that are used to produce food and are ultimately wasted if the food is not eaten (Hall et al., 2009). Excessive food waste is also an ethical issue. One in nine people globally do not have enough food to support a healthy lifestyle (World Food Programme, 2015). All this demonstrates the importance and relevance of the issue of waste to the hotel industry.

The current article addresses the subject of hotel waste management and explores which types of waste management strategies are more and less commonly adopted in UK hotels. It also evaluates whether there is a difference between the types of waste management strategies implemented in different categories of hotels, based on their ownership and level of service.
Literature review

Definition of hotels and hotel categories

In order to clarify the scope of the study, it is important to define ‘hotel’ as a term. Although there is no legal definition of a hotel specific to the UK, Section 1 (3) of the Hotel Proprietors Act (1956) defines a hotel as ‘an establishment held out by the proprietor as offering food and drink and, if so required, sleeping accommodation, without special contract’. Hotels do not include self-catering holiday accommodation, pubs and farmhouses, seaside and other lodging houses, residential homes, convalescent and nursing homes, health farms etc. (HM Revenue and Customs, 2016).

Ownership is determined by the type of owner/operator the hotel is associated with, which can be a chain (two or more outlets) or independent (only one outlet) (The European Consumer Centres Network, 2009). In order to avoid ambiguity, in this article if an owner or an operator associated with the hotel belongs to a chain company, the hotel is also regarded as part of that chain. Examples of chain companies include Marriott International, Hilton Worldwide and Premier Inn.

Level of service refers to the variety and standards of services provided by a hotel. There are no standardised industry definitions for this category; therefore, three classifications and their explanations are adopted for the purpose of this article: luxury, mid-range and budget. Level of service is not synonymous to a star rating, as some properties labelled four-star can also be ‘luxury’ and in this instance would be considered in the ‘luxury’ category. Luxury hotels are those with a high level of comfort in rooms, personalised service and higher room rates. Mid-range hotels offer good value rooms but maintain relatively high standards of service. They have less sophisticated food and beverage offerings than luxury hotels and offer some augmented hotel facilities and services such as laundry, room service and Wi-Fi. Budget hotels provide basic rooms and limited service offerings with the emphasis on low price in a convenient location.

Categories of waste

As well as defining hotels and hotel categories, for the purpose of this study it is important to clearly define and categorise the terms ‘waste’ and ‘food waste’. The European Union (EU) Waste Framework Directive (WFD) defines waste as ‘any substance or object, which the holder discards or intends or is required to discard’ (EU WFD, 2008, p. L 312/9). In the hotel
business, waste can be further divided into hazardous and non-hazardous. Among hazardous substances are oils, housekeeping chemicals and paints (Zein, Wazner and Meylan, 2008). Non-hazardous waste is categorised into solid and wet. Solid waste represents items made of cardboard, paper, plastic, metal, glass, cloth, wood and organic (non-food), as well as bulky items such as electronics and furniture (Zein, Wazner and Meylan, 2008). Wet waste is otherwise known as food waste (Wagh, 2008).

**Waste management strategies**

The EU WFD (2008) has introduced the Waste Hierarchy pyramid, a framework that requires businesses to prioritise their management strategies according to their desirability, which in turn is based on the level of environmental impact (Figure 1). This model provides a comprehensive understanding of waste management because it goes beyond recycling alone, enabling businesses to categorise waste management strategies and choose the most suitable ones by combining the needs of the hotel with the needs of the environment (Chertow, 2000). The most appropriate practice will depend on individual circumstances. For example, recycling is not always an optimal solution as added travel miles can sometimes lead to a greater carbon footprint (Radwan, Jones and Minoli, 2010; Radwan, Jones and Minoli, 2012). Based on the above arguments, this article will classify waste management strategies using the Waste Hierarchy pyramid.

![Figure 1. Waste Hierarchy. Source: adapted from EU WFD (2008, p. L 312/10) and WRAP (2015b).](image-url)
Prevention

According to the Waste Hierarchy, prevention is the primary waste management strategy hotels should consider. It is defined as ‘measures taken before a substance, material or product has become waste’ (EU WFD, 2008, p. L 312/9). In the literature, hotels have been reported to mostly attribute this type of strategy to managing food waste, for example:

- Proper stock rotation (first-in-first-out approach) (Pirani and Arafat, 2014);
- Avoiding over-trimming during preparation (Pirani and Arafat, 2014);
- Portion control to reduce amount of food left on plates (Brochado and Freedman, 2009);
- Menu engineering, which includes use of ingredients nearing expiry date (Boonyakiat, 2012).

In addition, an example of Vietnamese hotels included avoiding unnecessary photocopying and double-sided printing as the preventative strategies implemented in hotel offices (Trung and Kumar, 2005).

Reuse

Reuse is defined as ‘any operation by which products or components that are not waste are used again for the same purpose for which they were conceived’ (EU WFD, 2008, p. L 312/9). It is more widespread around different areas of hotels, an example of which could include reusable food and detergent packaging, such as delivery containers and soap dispensers in guests’ rooms (Trung and Kumar, 2005). Donating food to local charities or giving it to staff is an effective way of reusing food. However, it also bears challenges, such as ensuring safety of the food. Another barrier to this strategy is that it is entirely dependent on whether the food redistributing charities operate in the hotels’ area (Pirani and Arafat, 2015). Offering ‘doggy bags’ for leftover plate food to guests could also help reuse edible food. Similarly to donating, there could be concerns over how quickly the leftovers are consumed and at what temperature the food is kept prior to consumption. Despite potential issues, this method is extremely popular in the US, where larger portions are served intentionally to account for a doggy bag (Marthinsen et al., 2012). Such practice in Europe is perceived as less of a social norm and many diners are too embarrassed to ask to take their leftovers home, or think they are not allowed to (Sustainable Restaurant Association, 2011). Some attempts to reduce the negative social perception of doggy bags and promote their wider use were made by the Zero Waste Scotland ‘Good to Go’ campaign (Zero Waste Scotland, 2014). Restaurants around Scotland signed up for distribution of branded doggy bags, which can contribute to the overall efforts of reducing food waste by the dining outlets (Zero Waste Scotland, 2014).
Recycle

Recycling includes ‘any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery’ (EU WFD, 2008, p. L 312/9). Recycling was found to be the most common form of waste reduction strategy in hotels cited in scholarly articles (Pirani and Arafat, 2014) and included the majority of materials mentioned under the category of non-hazardous solid materials, e.g. cardboard, glass and aluminium. Composting using food waste as a source of enriching soil in agriculture is a way of recycling food waste. The emphasis here is on the fact that this type of food treatment ideally should only proceed once the attempts were made to prevent or reuse edible food. The constraints for recycling as a type of waste management strategy include the availability of recycling facilities in the area, and managers’ and staff attitudes towards recycling.

Energy recovery and disposal

Energy recovery constitutes ‘any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy’ (EU WFD, 2008, p. L 312/10). Anaerobic digestion is an example of this waste management strategy. It involves processing food waste in a way that creates biogas, which can be used as fuel (EU WFD, 2008). Although being positioned rather low in the Waste Hierarchy, energy recovery is still more beneficial than discarding food waste to landfill. However, as with recycling, this method should only be applied to the food that could not be eaten by humans or (in order of preference) sent for animal feed or composted. Finally, disposal is defined as ‘any operation which is not recovery’ as described in the definitions above (EU WFD, 2008, p. L 312/10) and should only be used as a last measure.

Drivers and barriers to sustainable waste management

Effective waste management presents many financial benefits for the hotel sector. Firstly, reducing the amount of waste produced can lower the cost associated with its disposal, transportation and labour (Todd and Hawkins, 2001). This is particularly relevant to the UK, as the cost of sending waste to landfill has been rising with the specific intention to promote other waste treatment measures (Deloitte, 2015; HM Revenue and Customs, 2015). Secondly,
minimising waste also means fewer resources spent on subsequent restocking (Pirani and Arafat, 2015). Thirdly, implementing green strategies creates a positive image for a hotel, leading to improved relationships with stakeholders (Ball and Taleb, 2011). Customers in particular react positively to such measures, which contribute to guest satisfaction (Prud’homme and Raymond, 2013) and increase perceived value of the hotel (García-Pozo, Sánchez-Ollero and Marchante-Mera, 2013). This allows businesses to increase prices by as much as 5.15% for each environmental measure (Sánchez-Ollero, García-Pozo and Marchante-Mera, 2013).

However, with such seemingly obvious economic benefits and extensive guidance provided by the government and charity organisations, it may seem surprising that some hotels are hesitant to implement waste management programmes. There are still many barriers hotels need to overcome in this respect. The starting point can be that some hotel managers are not interested in implementing environmental policies, in particular waste management. This is especially the case in smaller properties, for example those with either less than 30 rooms (Radwan, Jones and Minoli, 2010) or less than 50 rooms (Main, Chung and Ingold, 1997). The challenges for these hotels include:

- Inability to generate sufficient amount of waste for waste management companies to be interested in handling (Maclaren and Yu, 1997);
- Lack of time among managers and line employees (Horobin and Long, 1996);
- Lack of space and financial resources to install supporting machinery (Mowforth and Munt, 2008).

The above reasons cause managers of small hotels to form a misguided view about the issue of waste. They feel that waste management should only be a responsibility of larger businesses (Mowforth and Munt, 2008). Indeed, individually smaller properties may not seem to produce much waste compared to larger ones. However, the amount of solid waste produced by small properties collectively was found to have the greatest environmental impact compared to all other activities performed by these hotels (International Hotel Environmental Initiative, 2002).

Factors affecting implementation of waste management strategies

There are various factors that affect what types of waste management strategies a hotel implements such as size, level of service, age and a chain it is part of (Gil, Jiménez and
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Lorente, 2001; Mensah, 2006), as well as availability of waste management contractors and facilities in the area, and the employee and management’s willingness to take part in the programme (Shanklin and Hackes, 2001). There is evidence that larger hotels with a higher level of service tend to implement environmental initiatives to a greater extent (Mensah, 2006). However, whether the level of service of a hotel affects the type of waste management strategies it implements has not yet been explored. Ownership is another category that can have a particular influence on waste management in hotels. Managers in independent establishments are less likely to pay attention to this area than those in chain hotels (Bohdanowicz, 2005). Subsequently, when they do implement waste management strategies, they are likely to be different to strategies used in chain hotels due to the difference in attitudes and availability of resources. Based on the above arguments, this article will compare hotel waste management strategies based on two parameters: ownership and level of service.

Aims and objectives of research

Based on the evidence above, it is clear that sustainable waste management in the hotel industry should form an important part of a hotel’s business strategy. So far, the majority of the literature on hotel waste management has primarily focused on implementing various waste reduction methods and evaluating their effectiveness (Pirani and Arafat, 2014). However, the idea that some waste management strategies may be more commonly implemented in some types of hotel than others has not yet been explored. This can potentially mean that approaches to promoting and adopting waste management strategies may need to be tailored according to the type of hotel operation. Based on these arguments, this study aimed to achieve the following objectives:

Objective 1: To explore which types of waste management strategies are more and less commonly implemented amongst UK hotels;

Objective 2: To explore whether the type of ownership of a hotel (chain or independent) influences the type of waste management strategy the hotel undertakes;

Objective 3: To explore whether the level of service of a hotel (luxury, mid-range, budget) influences the type of waste management strategy the hotel undertakes.
Methodology

Design

The research was conducted using a quantitative approach with a cross-sectional design, in order to compare waste management strategies implemented by different types of hotels in the UK.

Sample

The sample comprised 52 hotels. The hotels were included if they were located in the UK and implemented at least one of four types of waste management strategy: prevention, reuse, recycle and/or energy recovery (as defined by EU WFD, 2008). It represents a convenience sample obtained from reports, periodicals and hotel websites. Despite this limitation, the author aimed to achieve a fairly even distribution of hotels across all categories within level of service and ownership. The initial sample of hotels was gathered from WRAP and Green Hotelier (an online magazine based on the work of International Tourism Partnership). These are registered charity organisations which cooperate with hospitality businesses with the aim of promoting sustainable practices and subsequently report on their progress. Hotel and waste are the key words that were used to perform the search within those websites. In addition, the sample acquired from these sources was supplemented by an Internet search for green strategies and hotels. From the results of the search, examples that reported implementation of waste management strategies were selected. The variety of online sources enabled the author to collect a sufficient amount of data for analysis in a limited time and without the need for additional resources.

Data collection

Once a hotel that implements waste management strategies was identified, the strategies were listed and categorised according to the definitions provided earlier. As a result, a ‘yes’ (if implemented) or ‘no’ (if not implemented) answer was recorded for each of the four strategies. Each hotel was also given a category according to ownership (independent or chain) and level of service (luxury, mid-range and budget).
Data analysis

In order to meet the first objective, the data was analysed using descriptive statistics to determine how frequently each waste management strategy is implemented across all hotels. Secondly, a series of Chi-squared analyses were performed to determine whether there was a statistically significant difference between different types of hotels in relation to the waste management strategies they implemented.

Results

The distribution of hotels was as follows: level of service – 25 luxury, 19 mid-range, 8 budget; ownership – 22 independent, 30 chain. The proportion of budget hotels in this case was considerably smaller to those of luxury and mid-range, despite the author’s efforts to have a fairly equal distribution of hotels across categories.

The comparison of the four waste management strategies has revealed that recycling was the most widely adopted waste management practice, being used in 75% of the analysed hotels (Figure 2). Prevention (used by 30.8% of hotels), reuse (25%) and energy recovery (19.2%) each were implemented in less than a third of all hotels.

![Figure 2. Percentage of hotels adopting each waste management strategy.](image)

A series of Chi-squared analyses were performed to compare the differences in implemented waste management strategies according to the hotel’s level of service. No statistically
significant difference was found between waste management strategies used by luxury, mid-range and budget hotels, with all p-values being greater than 0.05 (Table 1).

Table 1. Results for level of service category.

<table>
<thead>
<tr>
<th></th>
<th>Luxury (%)</th>
<th>Mid-range (%)</th>
<th>Budget (%)</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevent</td>
<td>32.0</td>
<td>26.3</td>
<td>37.5</td>
<td>0.365</td>
<td>0.833</td>
</tr>
<tr>
<td>Reuse</td>
<td>28.0</td>
<td>31.6</td>
<td>0.0</td>
<td>3.225</td>
<td>0.199</td>
</tr>
<tr>
<td>Recycle</td>
<td>72.0</td>
<td>84.2</td>
<td>62.5</td>
<td>1.646</td>
<td>0.439</td>
</tr>
<tr>
<td>Energy recovery</td>
<td>24.0</td>
<td>10.5</td>
<td>25.0</td>
<td>1.464</td>
<td>0.481</td>
</tr>
</tbody>
</table>

Another set of Chi-squared analyses was carried out to compare waste management strategies within the categories of ownership. Similarly, no statistically significant differences were observed between waste management strategies being used by the chain and independent hotels (Table 2).

Table 2. Results for ownership category.

<table>
<thead>
<tr>
<th></th>
<th>Chain (%)</th>
<th>Independent (%)</th>
<th>Chi-squared</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevent</td>
<td>36.7</td>
<td>22.7</td>
<td>1.1580</td>
<td>0.2820</td>
</tr>
<tr>
<td>Reuse</td>
<td>20.0</td>
<td>31.8</td>
<td>0.9450</td>
<td>0.3310</td>
</tr>
<tr>
<td>Recycle</td>
<td>70.0</td>
<td>81.8</td>
<td>0.9450</td>
<td>0.3310</td>
</tr>
<tr>
<td>Energy recovery</td>
<td>23.3</td>
<td>13.6</td>
<td>0.7680</td>
<td>0.3810</td>
</tr>
</tbody>
</table>

Discussion

This study has addressed three objectives related to waste management strategies implemented in UK hotels. It was found that 75% of the investigated hotels adopt the recycling strategy, which is considerably higher than other forms of waste management: prevention (30.8%), reuse (25%) and energy recovery (19.2%). No statistically significant difference was found between strategies the hotels use when separated by type (ownership and level of service).

Results that show recycling as the most commonly adapted waste management practice are consistent with previous research (Pirani and Arafat, 2014). Although recycling helps to divert various materials from landfill, which allows reduction of negative environmental impact, it is not always an optimal choice. It can lead to a higher overall carbon footprint if, for example, the recyclable materials need to be transported (Chertow, 2000). In addition, it is not as favourable as other waste management strategies such as prevention and reuse, according to the EU WFD (2008). Prevention and reuse are much less frequently implemented and need to be promoted among businesses in order to make waste management in hotels more
sustainable. This can be achieved through campaigns educating businesses about the benefits of applying the Waste Hierarchy principles (EU WFD, 2008).

As far as the author is aware, there is no previous research that could support or contest the findings related to objectives two and three. The fact that no relationship was found between the levels of service or ownership of a hotel and the type of waste management strategies it adopted indicates that approaches to increasing hotels’ awareness about sustainable waste management should be universal. This means that all recommendations that are made below should equally apply to all types of hotels studied in this article.

Strengths and limitations

The conducted research has several important strengths. Firstly, it employed a novel idea of relating a type of hotel to the type of waste management strategy it used. Despite the fact that no significant differences were found between the types of hotels and their waste management strategies, this study allows the author to draw an important conclusion that approaches to promoting sustainable waste management in hotels do not need to be tailored to any particular group and should be targeted at the industry as a whole. Secondly, the results of this research have a fair degree of credibility because reliable sources of information such as WRAP and Green Hotelier reports and articles were used to supply many of the hotel case studies (21 out of 52).

However, the report has some limitations. The data collection was primarily based on a convenience sample. The examples of hotels were chosen from the ones available online in a form of data that was not specifically created for the purpose of this study, and may not have been fully relevant, which affects its internal validity. This limitation was managed by interpreting the information provided on websites and consistently categorising all strategies using the EU WFD (2008) definitions of prevention, reuse, recycle and energy recovery. Another limitation arose when using hotel websites for data collection, as potentially biased information could have been acquired due to the author not independently verifying the truthfulness of the hotels’ claims about their waste management strategies. On some occasions it was possible that the hotels either did not advertise all their waste management strategies or advertised the ones that did not actually take place on the premises, either of which may have affected the accuracy of the results. Thirdly, the relatively small size of the sample (52 UK hotels) means that it is not possible to generalise the results to the global hotel sector, nor is it possible to attribute the results to any particular area of the UK, as the data did not sufficiently represent any of the UK regions. The validity of the results could have been
further improved by increasing the sample of budget hotels, which were under-represented compared to luxury and mid-range categories. In addition, the categorisation of the hotels by level of service was subjective as it was not based on any industry-wide definition, but on the author’s own categorisation.

**Recommendations for future research**

To improve upon the limitations of the current study, future research can explore how other hotel characteristics, e.g. size of property or its geographical location in the country, may affect what types of waste management strategies a hotel uses. In addition, future research in hotel waste management strategies would benefit from using a randomised sample of hotels. To improve objectivity, the strategies that hotels claim to implement should be checked in person by visiting the property and carrying out observations. A larger sample should also be considered in order to increase the external validity of the method. A more comprehensive approach could also consider the extent to which strategies are implemented among hotels, rather than looking only at whether particular waste management strategies are employed or not.

**Implications**

**Managerial implications**

The results suggest that managers of hotels should pay more attention to strategies for the prevention of waste and reusing materials and products, as those are the most profitable and also the most preferred methods of waste management, according to the EU WFD (2008). The fact that recycling is already a widespread strategy may indicate that it is one of the easiest to introduce, and so the remaining quarter of hotels that do not yet implement it may benefit from adopting it.

**Implications for the government**

All hotels in the UK currently have a Duty of Care to act according to the principles of the Waste Hierarchy (The Waste Regulations, 2011). This emphasises that hotels’ efforts to implement sustainable waste management strategies are not only an ethical, but also a legally binding
responsibility. The government already provides some assistance for businesses through the Department for Environment, Food and Rural Affairs (Defra). This assistance is provided in the form of guidance documents and an online support tool (Defra, 2011a; Defra, 2011b; WRAP, 2015c). However, more should be done in order to make hotels aware of their responsibilities, e.g. by introducing control methods to monitor their progress in waste management. This could be achieved through introducing waste management reports submitted to the local council or to charity organisations such as WRAP, which would assist in monitoring of how accurately the Waste Hierarchy principles are complied with, as well as the extent to which each strategy is implemented.

Conclusion

The current article has added to the existing research related to waste management in hospitality, particularly in associating the types of hotels with the type of waste management strategies they implement. Although the research showed that separating hotels by type of ownership and level of service may not be a particularly useful technique when it comes to studying their waste management strategies, there are other methods of classification that can be explored in this context. While inadequate implementation of waste management strategies remains an issue in the hotel industry, there is a need for increased research in this area, regardless of the type of the hotel.

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