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# Analysing Waste Management and Recycling Practices for the Hotel Industry

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**Abstract**:

The aim of this article is to investigate waste management and recycling practices in hotel industry thouth in-depth interviews with industry professionals. The procurement, kitchen and Food&Beverage managers of five international chain hotels particicipated in the in-depth interviews (in total 15 interviews). As a result of the interviews it was determined that the three elements considered in the reduction of waste were 'expiration date', 'packaging' and 'wholesale procurement'. There are three main reasons for the food waste generation; large portions, expiration dates and the guests themself. The staudy investigates the most common waste generated in the hotels. The results of the study have shown that geographic location is an important barrier for recycling due to the lack environmentally friendly suppliers and recycling companies in some regions.

**Keywords:** waste management; recycling; hotel industry.

**JEL Classification:** Q53; Q56; Z31.

## Introduction

Considering the definitions given in the literature, it is noteworthy that waste is a subjective concept. According to some study results, a product that must be disposed can be a resource for a new product for someone else (Pongracz 2002). According to Gilmour and Manns (2001) waste is divided into two types: controlled and uncontrolled wastes. Controlled waste comprises industrial, domestic, commercial and clinical wastes. Uncontrolled wastes are mining and agricultural wastes. Efficient and systematic waste management ensures that all wastes are disposed of and recycled in a controlled manner which result in mitigating the damage to nature and humanity. If the waste is not managed properly, it can create a serious health hazard (Miller 2000). Waste management is therefore an important issue that requires effective solutions. Landfill or incineration is a widely practised method for wastes in many countries. Nevertheless, solid waste management is still a serious problem for many countries. When the material consumption seen as economic progress is encouraged; purchase and then generate large quantities of solid waste as a result of throwing away (Read 1999). The subject of recycling; an efficient and effective solid waste management system is frequently encountered (Hoo 2002). Recycling is a process that is formed by previously collected, processed, reproduced and used materials (Schultz *et al.* 1995).

In many parts of the world, a significant increase is expected in the service sector over the next few years. Depending on this growth, there will be an increase in the amount and type of wastes that will occur in hotel enterprises (Pirahi and Arafat, 2014). For example, a hotel customer causes an average of 2.28 kg waste per day (Phu *et al.* 2018). This amount means that millions of tons of waste are generated annually when hotel customers around the world are considered (IHEI, 2002). International hotels generate many different types of waste (Ball and Taleb, 2010). The wastes that may occur in a hotel operation in the service sector are divided into different classes among themselves such as paper, plastic, glass, metal, food (Owen *et al.* 2013). If an efficient waste management system is not created for a popular international hotel chain, it may undermine its reputation due to its negative impact both on the environment and the customers (Shaalan 2005).

One of the sectors where food waste (Owen *et al.* 2013), which has an important place among the wastes occurring in the service sector, is intensively formed is the food and beverage business (Creedon *et al.* 2010). According to Crosby (1993), food waste has a significant share in other wastes occurring in hotels. It has been explained that two-thirds of the total waste occurring in the hotel establishments is food waste during the preparation and service of food (Shanklin and Pettay, 1993). Recyclable waste is another type of waste from hotel enterprises. The separation and classification of hotel facilities for recycling plastic, metal, glass, paper and food solid wastes is of great importance for the protection of the natural environment. In order to achieve efficiency in recycling, the program must be developed and the participation of staff and customers must be ensured (Enz and Siguav 1999).

Trung and Kumar (2005) in their research, they investigated the waste categories of hotels according according to number of stars and methods of disposal of these wastes. About 60% of the hotels stated that food waste (wet wastes) was sold to local collectors for animal feed purposes, about 10-30% of solid waste was classified and sold to local collectors for recycling purposes. Reusable dry waste, corresponding to 10-30% of total waste, is classified as plastic, paper, cardboard, tin cans, glass, metal (Trung and Kumar 2005). The tourism industry can be seen as a natural laboratory for waste management and recycling practices within the scope of its products and services. Recent years, it has been observed that there has been an increasing study on waste management and recycling; however, there is a paucity study on the tourism industry. Therefore, the aim of this study is to investigate waste management and recycling practices for hotel industry by in-depth interviews.

## 1. Literature Review

In a study on small hotels in Sweden, Hu (2005) explored what the least harmful hotel practices were. He stated that there are many difficulties in practice and that business owners have important tasks in overcoming the problems. He also stated that there is a need for significant financial resources for small hotels. Despite all the difficulties, the hotel in Bastedalen Herrgard has managed to use renewable energy and solve the problem of waste transport. Thus, it is concluded that small hotel businesses need more support to go further. While the case study in this study showed that the guests could provide important assistance, the success of this hotel business could not be achieved in achieving the desired result.

Chan (2009) has determined the green measures at three hotels in Hong Kong certified by ISO 14001. Both qualitative and quantitative data were collected and analyzed. It was determined that energy savings were not achieved in approximately half of the responses to these questions. In addition, energy consumption for water and electricity consumption is high and energy saving for gas fuel consumption is low. Molina-Azorin *et al.* (2009) examined the relationship between environmental practices in Spanish hotel enterprises and company performances by using cluster analysis and regression analysis. According to the study, if hotels improve their environmental responsibilities, they provide sustainability by protecting the natural structure and resources of the place and increase their income by reducing the cost of environmental management applied by the hotels and increasing their performance levels.

In the United States, Leea *et al.* (2010) conducted an online research with the customers of green hotels. The aim of this study was to research how a green hotel image and brand can be improved by using cognitive concepts. The findings confirmed that the cognitive image components (quality characteristics) can have a positive effect on the overall image of green hotels. In addition, it was found that the service quality of the hotel on the customer (cleaniness, comfortability, hygien, ambience, as well as fresh and healthy food), the value of the hotel (the benefit from the hotel, the value-based pricing) has a stronger effect.

Day and Cai (2012) examined the relationship between tourism, energy and environment. As a result of the research, suggestions have been made for problems related to the problems such as building system capacity, technology development and adaptation, supporting behavior change of individuals, understanding of the balances and interactions within the system and adopting multidisciplinary approaches to these difficulties in

the tourism system. Radwan *et al.* (2012) investigated the solid waste management practices of green and non-green hotels in the UK (Geern Dragon Environmental Standard Rad) and developed a Solid Waste Management Model Dragon for them. The findings revealed that small hotels tend to use high levels of landfill for the disposal of solid wastes and that they feel negative about the implementation of more sustainable solid waste management alternatives. On the contrary, it was found that small green hotels used the garbage area as a last resort and preferred other waste hierarchy options targeted as much as possible.

Shieh (2012) examined the financial impact of environmentally friendly green practices on hotel industry in Taiwan. In the study, the cost efficiency of the 68 international hotels in Taiwan was determined according to the 7-stage green hotel criteria. The data obtained; green applications have shown that the hotel has a negative and meaningful relationship with cost efficiency. In other words, green practices were ineffective in the financial decisions of the hotel.

Minthapala and Mudadeniya (2013) examined the environmentally-friendly sustainability practices of hotels in Sri Lanka after the war in terms of the customer. According to the findings obtained from the customers, environment-friendly sustainable practices are not luxurious and contain simple rules for hotels (brand building, target positioning, public communication, advertising, pricing, personnel selection and training of staff, etc.). Kallbekken and Saelen (2013) observed a change in the amount of food waste by the use of two simple non-disturbing methods in hotel restaurants. These two simple methods are to reduce the size of the plate and to use social markings. When these methods were used, it was observed that the amount of food waste in the hotel decreased by about 20%.

Mensah (2014) investigated the primary and secondary factors affecting the environmental performance of hotels in the city of Accra in Ghana and it was also investigated whether the size of the hotel affected the hotel's environmental performance. As a result of the research, the first degree of effect of customers and management on the environmental performance of hotels where; the size of the hotel was found to be effective in the second degree. Sealey and Smith (2014) identified some of the challenges and obstacles to solid waste reduction in the Bahamas through a year-long pilot project. These challenges are logistics and labor, economies of scale for island recycling, and finally training requirements.

In a study conducted by Nayak and Rao (2014) in India, the effect of green hotels on consumer behavior was investigated. The study was based on how many hotels affect the choice of guests. Although behavioral intent has been widely accepted as attitudinal commitment, when we look at the indicators in the market but and hospitality literature; hotel customers do not tend to prefer more hotels to pay more money. In other words, they are usually reported by consumers, paying less and tend to stay in green hotels. This the result reflects the fact that hotels that are green in consumer behavior are also economic.

Phu *et al.* (2018) revealed that the waste production rate of hotels is 2.28 kg/guest per day and the hotel's capacity may vary depending on the price of the room and the restaurant level. Differences in waste production rates of hotels were statistically significant. The waste composition of hotels was 58.5% for biodegradable waste, 25.8% for recyclable products and 15.7% for others. As the capacity of hotels and the number of rooms increases, the recyclable waste rate decreases.

## 2. Methodology

In social sciences, quantitative research methods are mostly used in positivist research. Qualitative research, on the other hand, starts with assumptions, with a wider perspective, with the use of theoretical approaches as much as possible, with research problems or problems that focus on social or individual problems and related people or groups (Creswell 2007). In addition, unlike quantitative methods, qualitative research methods benefit from different methods and provide the researcher with an in-depth analysis of the case being investigated (Marvasti 2004).

Since the aim of this study is to focus on waste management and recycling and understanding of ideas, perceptions and experiences of department managers in hotel establishments, it has been decided that qualitative research methods are appropriate. In qualitative research, researchers try to understand the meanings that people place on the facts by examining the facts in their natural environment. It is stated that qualitative studies emphasize processes and meanings, emphasize the socially structured nature of reality, the close relationship between the researcher and what is investigated, and the situational constraints that shape the research, and seek answers to questions that emphasize how social experience is created and gained meaning (Denzin and Lincoln 1994). It is argued that qualitative approach is a very suitable method to evaluate the mechanisms and suggestions of existing theories, to produce alternative suggestions and to form a new theory (Ragin *et al.* 2004).

In qualitative research, the discovery of theory from data has been described as grounded theory (Glaser and Strauss 1967). In theory-based theories based on qualitative research methods, researchers often do not begin with a hypothesis or attempt to prove or refute preconceived ideas (Strauss and Corbin 1998; Mills *et al.* 2006). In a theory based approach, researchers perform comparative analysis, classification and coding of data by enabling them to make their voices heard by interacting with the research participants (Corbin and Strauss 2008). The theoretical framework emerges in the light of the data, and as a result, the grounded theory approach facilitates understanding and provides meaningful guidance to the action by providing opinions (Strauss and Corbin 1998). As a result, it was determined that the research proposal could be made in line with the current researches and the opinions of department managers in hotel establishments.

In-depth interview technique was used for the purpose of the study. Interviews are known as a frequently used data collection method in qualitative research (Denzin 2001). Interviews are considered important because people's feelings, thoughts and worldviews cannot be observed (Merriam and Tisdell 2015). In this study, data were collected by interview form with F&B, procurement and kitchen department managers of five 5-star international hotel chains. Table 1 shows the demographic characteristics of the hotels included in the study.

Table 1. Demographic Characteristics of the Hotels

| Hotel | Country | Room number | Bed capacity | Staff (2018) | Occupancy rate in % (2018) |
|---|---|---|---|---|---|
| H1 | Turkey | 1094 | 2378 | 853 | 62 |
| H2 | UAE | 316 | 638 | 387 | 95 |
| H3 | Kazakhstan | 184 | 368 | 268 | 46 |
| H4 | Egypt | 783 | 1145 | 820 | 35 |
| H5 | Russia | 114 | 228 | 161 | 57 |

Data were collected through online interview forms due to the fact that hotels operate in different countries. As stated in the related literature, online interviews are also the types of interviews that can be used in qualitative research for data collection (Creswell 2007).

## 3. Results and Findings

First of all, the answers given to 10 questions directed to purchasing managers were examined. The answers to the question regarding the wastes generated in the purchasing department were subjected to a frequency analysis. Table 2 shows the wastes generated in the purchasing department and their frequencies.

Table 2. Wastes Generated in the Purchasing Department

| Name of waste | Frequency |
|---|---|
| Paper | 5 |
| Office supplies | 4 |
| Batteries | 3 |
| Cartridge | 3 |
| Paper cups | 2 |
| Plastic water bottles | 3 |
| Plastic packaging | 4 |
| Leftover food | - |
| Metal | - |
| Domestic waste | - |

As shown in Table 2, the wastepaper is the most common waste generated in the purchasing departments of the hotels. Other wastes include batteries, plastic packaging, office supplies, cartridges, plastic water bottles, paper cups, leftover food, metal, and domestic wastes.

As a result of the question about how to pay attention to food waste during the food purchase stage of the hotel, purchasing managers of four hotels has drawn attention to the issue of 'expiration date' and 'packaging'. Hotels pay attention to the expiration date during storage to reduce food waste. First In, First Out method is applied in hotels. The expiration dates of the food products in the external storage are checked regularly every week. In this way, the expiration dates of food products are prevented from passing through the storage stage. When food wastes occur due to mismatching-planning errors in the purchasing stage in hotels, a joint decision is

made with the supplier companies causing the error. In the purchases, the products are recycled if the cost does not increase much. Therefore, it can be said that the cost factor has an effect on the decision of the hotels to buy recycled products. In general, recycled products are purchased for fryer oil, room soap, electric lamps and office equipment.

Although some of the purchased products are purchased in industrial packaging, products with packaging materials are also used more due to the limited supply chain. However, these packaging materials are given by the hotels to the recycling companies that collect such materials. Hotels buy food and beverage supplies in large packages and wholesale, not in small packages for waste reduction. As a result of the interviews, it can be said that an important obstacle in the purchase phase is the limited supply chain. The purchasing managers of the hotels included in the study stated that they purchased some products with excessive packaging for reasons such as the location of the hotel, guest satisfaction, and cost.

Within the scope of the study, the purchasing managers were asked their suggestions, plans and projects to prevent the waste generated during the purchasing process at the hotel. The answers given are as follows;

- "Attention is paid to purchase products in large packages and wholesale. We require a certificate of environmental management system from our suppliers, and we avoid products that generate excessive amounts of waste" (H1)
- "We need to separate products in the goods receiving area or in relevant areas if products are processed and make sure they are reused" (H2)
- "Right product/right quality/right size from right source will prevent waste" (H3)
- "We evaluate the supplier before making the purchase. In this respect, companies that we are constantly having problems with are warned, and if the issue continues, we change either the supplier or the product" (H4)
- "We need to choose companies that we work with carefully and one of the criteria should be waste reduction. Maximum attention should be paid to product's life span" (H5)

The average daily served pax in the season is 8000 for H1, 3000 for H2, 1000 for H3, 775 for H4 and 170 for H5. The average daily meal pax served out of season is 1000 for H1, 3000 for H2, 800 for H3, 550 for H4 and 103 for H5. The average amount of food waste generated per day is 486 kg for H1, 20 kg for H3 and 174 kg for H4. Ratio of daily average food wastes among other waste types is 15% for H3 and 23% for H4. When the daily amount of food waste is divided by the number of bed capacity (occupancy rate taken into account) the amount of daily food waste per bed capacity is 3,03 kg for H1, 8,46 kg for H3 and 3,89 kg for H4. The answers to the question regarding the wastes generated in the service and bar department were subjected to a frequency analysis. Table 3 shows the wastes generated in the service and bar department and their frequencies.

Table 3. Wastes Generated in the Service and Bar Department

| Name of waste | Frequency |
|---|---|
| Vegetables | 3 |
| Fruits | 3 |
| Glass bottles | 5 |
| Plastic bottles | 5 |
| Tin cans | 5 |
| Paper napkins | 4 |
| Paper | 5 |
| Food left on plates | 5 |
| Cardboard packaging | 5 |
| Straws | 3 |
| Plastic cups | 2 |
| Paper cups | 2 |

As shown in Table 3, glass bottles, plastic bottles, tin cans, paper, food left on plates and cardboard packaging are the most common waste generated in the service and bar departments of the hotels. They are followed by paper napkins, vegetables, fruits, straws, plastic cups, and paper cups. According to Food&Beverage (F&B) managers, the two most important reasons for the food waste are 'expiration date' and 'large portions'. An F&B manager said that "guests are taking too much food from the buffet and cannot eat all the food". Current procedures of hotels to prevent food waste are as follows:

- Standard of procedures and ISO 9001
- Planning and organization

- Service staff controlling the orders
- Reduced the amount of servings of food on a la carte

The wastes recycled in the F&B department are as follows; food from buffet can be used for staff canteen, glass wastes collecting to separate liquid containers and pouring out, empty bottles and juice boxes collecting separately and throwing to colored special garbage containers. Paper cup coaster is used in a hotel and they are disposed of. In the other three hotels, permanent cups are used instead of paper cup coaster. Food materials such as sugar, salt and sauce are served in reusable containers. The choice of glasses in the bars varies according to the service of the bar. Glass bars are used in the main bars and plastic and cardboard cups are used in the beach bars. Plastic and cardboard cups are collected and separated separately.

Food wastes returned from customers after serving/remaining on their plates are collected in organic garbage and used for recycling. The amount of waste increases depending on the nationality (Middle East, Chinese and Local). Within the scope of the study, F&B managers were asked their suggestions, plans and projects for preventing wastes in F&B areas. The answers given are as follows;

- "Training and more supervision. Up to guest request preparing orders" H1
- "Offering HB or B&B instead of All Inclusive" H2
- "Each and every bar and restaurant employee should be provided with training. We plan to keep an employee in the garbage area to work with the steward and separate wastes" H3
- "When the hotel occupancy less we do not serve the buffet and we are offering a la carte or set menu for guests to prevent waste" H4
- "Packaged products should be recyclable. The use of glass and polycarbonate products should be promoted. Glass products are preferred in our hotel instead of plastic" H5

The answers to 24 questions directed to kitchen department managers were examined. The answers given to the question on the waste generated in the kitchen department were subjected to frequency analysis. The waste generated in the kitchen department and the frequencies are shown in Table 4.

Table 4. The Waste Generated in the Kitchen Department

| Waste name | Frequency |
|---|---|
| Food waste | 5 |
| Plastic | 5 |
| Glass | 5 |
| Cardboard | 5 |
| Waste oil | 3 |
| Paper | 5 |
| Metal | 5 |
| Production loss waste | 5 |
| Tissue | 4 |

As can be seen in the Table 4 the waste observed in the kitchen departments of the hotels are glass, food waste, plastic, cardboard, production loss waste, metal, tissue and waste oil. While two hotels do not have an employee who control the eco-friendly practices in the kitchen department, in the other two hotels chief stewards are employee who control the eco-friendly practices. All four hotels do not have a culinary environmental certificate. Similarly, the four hotels do not have a specific share of the kitchen budget for eco-friendly practices. Therefore, it can be said that the hotels do not give importance to the certificate programs related to environmentally friendly practices. Food that is left out of service, stored in safe conditions is generally used in the employee cafeteria. If food that is left out of service in good quality, they are re-evaluated at the buffets considering the production time.

All four hotels do not use decorative plastic and paper plate mats on the buffet lines. Therefore, such wastes are prevented. It is determined that hotels do not use disposable products to keep food warm at the buffets. Instead, electrical and more often induction heaters are used in buffets.

In the kitchen department, obsolete cabinets and stoves are sold to scrap dealers. The small amount of battery waste is given to the recycling company. Printer cartridges are refilled. In the kitchen departments of the hotels, there are recycling waste bins in each units. However, kitchen managers state that a healthy recycling cannot be implemented. The reason for this is the lack of proper recycling infrastructure in the region where they operate. Therefore, it can be said that the availability of recycling infrastructure facilities in the region where the hotels operate also affects the recycling activities of the hotels.

In all four hotels, refrigerators in the kitchen are positioned according to the principle of energy conservation. Thus, possible energy loss can be prevented. The kitchens have smoke sensitive alarm systems. However, technologies such as time clock and sensor systems are not used for hood motors. Controls are done manually according to need. In all four hotels, the kitchen has a water-saving spout tap, timed sinks and knee-controlled sinks. Therefore, in the kitchen department of hotels, it can be said that water waste are at the forefront rather than energy practices.

The amount of oil waste used for frying in the kitchen varies according to the season. These oil wastes are taken from the hotels by the licensed company. Food wastes produced in the kitchen (wrong order preparation, etc.) are re-evaluated in the employee kitchen according to their suitability. Food waste generated in production is used for pet feeding. Food wastes not consumed in the open buffet (salads, cooked meat, fish, chicken, frying) are also re-evaluated in the personnel kitchen. Similarly, food waste from the buffet is evaluated for feeding pet if it is not to be used.

The products whose expiry date is approaching are planned to use according to the current events and served in the employee kitchen. Some products that are close to expiry date are returned to the companies. The products whose expiry dates are past are kept in the report and delivered to the relevant authorities for disposal. Products whose expiration dates have passed are disposed of in cost control monitoring. In other words, it is disposed of.

Food waste from the kitchen and from the service is collected in separate trash bins at all four hotels. If food waste is not usable, they are disposed of. Food wastes to be used are delivered to authorized companies for use in pet feeding or animal farms.

Trainings related to waste management are provided to kitchen personnel at regular periods. Kitchen managers say that the amount of waste is reduced by these trainings. In all four hotels, some vegetables and fruits are used as a decor in limited. Vegetables and fruits used as decor are thrown away. Preparing meals with poor quality products triggers food to be less vertebrate and causes food to be consumed in a small amount as it will cause less consumption. Poor quality products also increase food waste during the meal preparation process. According to the number of guests staying at the hotel, taking into account the available menus (including events-banquets-banquets) and also the consumption rate favored by the guests, the high consumption of products can prevent food safety.

Within the scope of the study, kitchen managers were asked about their suggestions, plans and projects for preventing wastes in the kitchen. The answers given are as follows;

- "To review their suitability with their high quality products, to train or find experienced staff, and to build the education and infrastructure of this system more important" H1
- "Canned cans, glass jars, waste breads, plastic waste, fresh vegetables, pastry legumes and cardboard boxes can be recycled" H2
- "Enough ordering, sufficient production, storage under proper conditions and regular control are required" H3
- "Its most important to have training on the waste management and awareness" H4
- "We re-use and rework system in the winnow application. Prepare the right quantity of food according to assumed guest consumption" H5

## Discussions and Conclusions

When the interviews with purchasing department managers were evaluated in general, it was determined that the three elements considered in the reduction of waste were 'expiration date', 'packaging' and 'wholesale procurement'. The biggest barriers to waste reduction and purchasing recycled products are 'cost' and 'low supplier option'. Research of Bacot *et al.* (2002) and Maclaren and Yu (1997) supported this results because they reported various barriers facing hotel businesses in relation to recycling are cost, time and space. For that reason cost issue is important for recycling implementations in hotels. Purchasing recycled products can sometimes mean cost for hotels. Incentives may be given to producers of recycled products for the purchase of recycled products by hotels.

According to results the biggest obstacle to inadequate recycling practices is that there are not enough 'recycling facilities and infrastructure' in the region where the hotel operates.The practices implemented and the type of materials recycled varied by geographic location of the property (Shanklin *et al.* 1991). Results of the study has shown that geographic location is important barrier for recycling, because in some regions there is lack of environmentally friendly suppliers and recycling companies. Incentives for recycling and waste facilities should be provided by local governments and the government in the areas where hotels are clustered.

There are three main reasons for food wastes in F&B departments: large portions, experiation dates, and the guests themselfs. According to Phu *et al.* (2018) a hotel customer causes an average of 2.28 kg waste per day. According to results the amount of daily food waste per bed capacity is 3,03 kg for H1, 8,46 kg for H3 and 3,89 kg for H4. Hoteliers have difficulty to achieve zero food waste in their hotels, because it is a common characteristic for the hotel sector (Sandaruwani and Gnanapala 2016). It is stated that the Middle East and Chinese guests cause more food waste. This result supported by Linh (2018) who reported that food waste varies according to the country where the customer comes from. In order to prevent wastage in food consumption, nationality analysis of the guests must be done.

According to F&B managers, the two most important reasons for the food waste are 'expiration date' and 'large portions. An F&B manager said that "guests are taking too much food from the buffet and cannot eat all the food". This result supported by Giorgi (2013) who reported that plate waste is large due to portion sizes being too great, a point that was observed by hotel managers in his study, who subsequently agreed to review meal sizes. However, Kallbekken and Saelen (2013) found that hoteliers can reduce food waste by 19.5% by reducing portion of dishes using smaller size of plate.

According to Singh *et al.* (2014) the most recycled goods by hotels are dry goods (cardboard, paper etc.). Results of study revealed that glass, plastic, and cardboard products are used according to the service provided such as restaurant, main bar, and beach bar. Paper and plastic products are collected separately and recycled.

The literature has showed that food waste can potentially be recycled and used for feeding animals (Farrell 2000). According to results in consumable products in the kitchen department are delivered to authorized companies for pets and animal farms. It was determined that the not consumed foods from buffets were reevaluated in the employee kitchen according to the situation. Similarly, products with an expiration date and products that are incorrectly prepared are evaluated in the employee cafeteria. Although there are various criticisms on this subject, it is generally a policy to use food from the buffet which is under favorable conditions in the employee cafeteria. The important point is that there should not be more food in the buffet. Therefore, the amount of food to be prepared should be done carefully.

When the interviews with the managers of the kitchen department were evaluated in general, it was determined that the three elements that were taken into consideration in the reduction of wastes were 'education', 'use of quality products' and 'do not use vegetable and fruit as a decor'. As Barclay *et al.* (2006) indicated that employee commitment was essential for the success of the hotel's waste minimisation programme, it has been determined that employee training reduces waste. Therefore, waste reduction and recycling trainings should be provided periodically to all employees in all departments. In addition, an authorized employee for waste management should be identified in departments such as kitchen and F&B.

In the study, the data were obtained from F&B, kitchen and purchasing department managers of international chain hotels operating in five different countries. For future studies, it is recommended to conduct studies through surveys and with the participation of more department managers.

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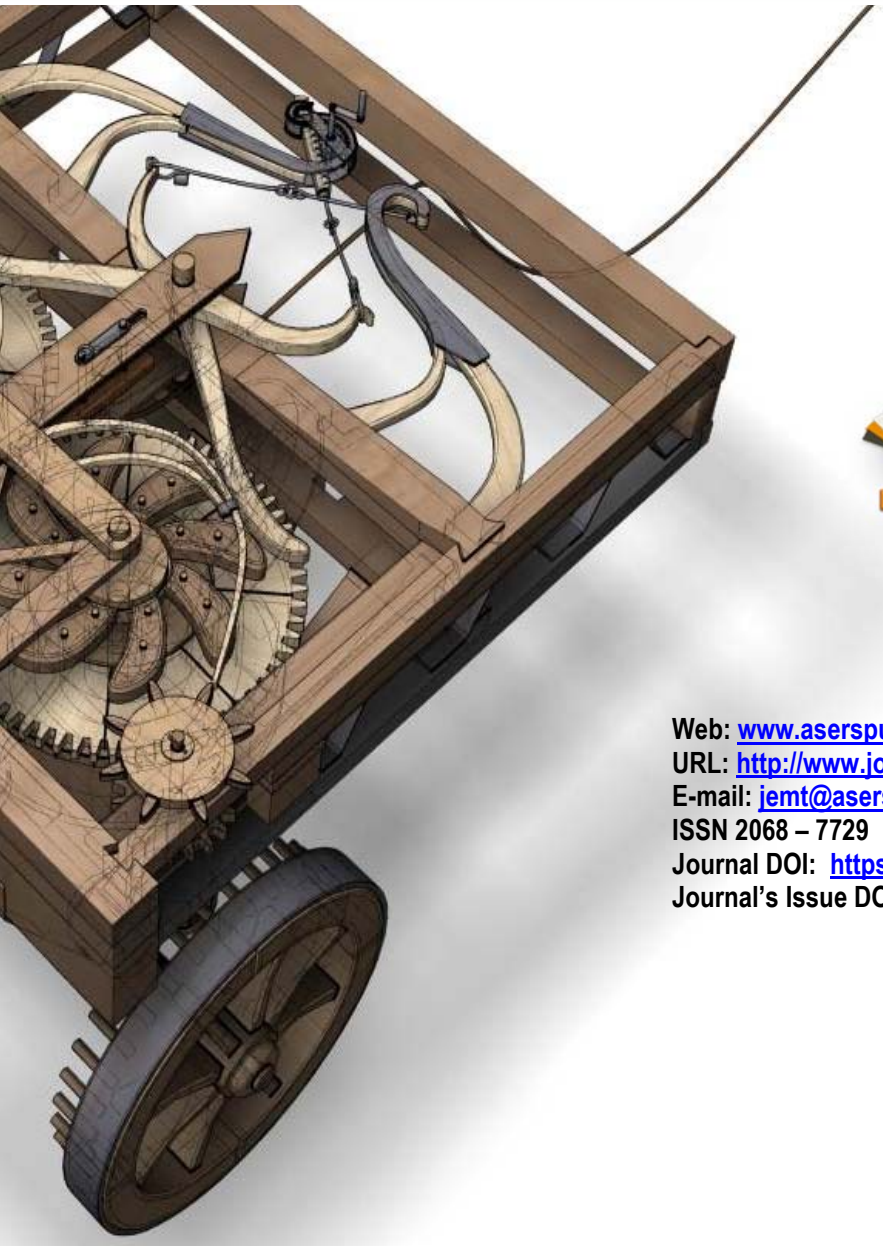

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