

Hoteliers' attitude towards solid waste source separation through mega festivals: A pilot study in Karbala

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Abstract

Management of solid waste generated from religious gathering has been, until now, the topic of few studies. This is confusing as the religious festivals are significant Municipal Solid Waste (MSW) generators and, in the same time, mismanagement of the generated MSW can cause grave threats to the environment. Source separation is an effective method to minimize the amount of the generated waste where the community plays a vital part about its success. This paper aims to identify hotels managers' attitude and readiness to be part in a proposed MSW source separation plan during mega events in the city of Kerbala, Iraq. This is done using a pilot survey conducted with 29 hotel managers' during one religious festival. Mixed method approach with the assistance of questionnaire was employed for collecting data about hoteliers waste management awareness and willingness to practise source separation. The result indicates that, although the majority of the hoteliers have low awareness about MSW management subjects, (65.5 %) were willing to practice MSW source separation. In addition, the hoteliers suggest that developing waste storage system by providing recycling bins will encourage pilgrims to practice source separation. Thus, Kerbala MSW management authority can use the result of this study to implement MSW source separation program during religious events.

Keywords: Environmental awareness, Kerbala, major festivals, recycling and hoteliers.

1. Introduction

Tourism is a significant industry in the world that is represents 8% of the world's total job and 9% of the world's gross domestic product (El Hanandeh, 2013, MercoPress, 2010). This

industry can sustain high level of employment and income in many countries. However, it is a source of negative impacts on environment and public health. One of the most significant impacts of tourism is the generation of solid waste (Mateu-Sbert *et al.*, 2013). One form of tourism industry is the religious tourism where people travel to participate in particular festivals significance in their faith. According to The World Religious Tourism Association (World Religious Travel Association, 2011), every year, around 300 million people participates in religious festivals around the world.

Several religious festivals occur in the city of Kerbala, Iraq every year which are attended by millions of visitors (Obaid *et al.*, 2014). The dramatic increase in the city population during these festivals causes a substantial increase in the quantity of the solid waste generated that tremendously affects its Waste Management System (WMS). Currently, the city is using basic WMS that leads to significant impacts on the local environment and public health. In addition, the growing costs of waste collection, treatment and disposal have escalated the problems of managing festivals wastes (Cierjacks *et al.*, 2012).

Waste management is an important issue as improper waste management will affects other issues including operation costs, land scarcity, and negative impacts on environment and human health (Sheau-Ting *et al.*, 2016). Solid waste recycling is an effective method used to minimize the quantity of the generated waste where the community plays a vibrant part about its success (Fujii *et al.*, 2014). However, funding deficiency and low public participation are problems facing the success of the municipal solid waste management plans particularly in developing countries such as Iraq (Keramitsoglou and Tsagarakis, 2013). Babaei *et al.* (2015) stated that about 60-80% of the European countries solid waste are recycled while an insignificant percentage of waste is treated similarly in developing countries. Therefore, large quantities of municipal solid waste are disposed of in the landfill without recovery.

Proper infrastructures are necessary for a successful waste management system. However, understanding the system users' preference and knowledge greatly affects the success of waste management system (Babaei *et al.*, 2015). Therefore, conducting a comprehensive survey to investigate affecting variables such as public preference, involvement willingness and knowledge is clearly essential. Many research reported in the literature have studied and assessed these variables (Purcell and Magette, 2010). Only a dearth of studies have investigated these variables during mega events (Alsebaei, 2014). To achieve a functional solid waste management plan during mega festivals, it is important to study and understand the variables that dramatically affects community involvement in the recycling scheme.

In order to develop the primitive system currently used in Kerbala, it is crucial to investigate public preference and willingness to participate in a recycling scheme during mega festivals. Therefore, this study has been devoted to understand public reaction towards introducing a recycling program during mega festivals. To achieve this goal, Ashura, a multi-million event take place in Kerbala attracting up to 5 million visitor, has been selected as a study event (AFP, 2016).

2. Methodology

2.1 Study area

Kerbala is one of the main tourism centres in Iraq since it is hosting several traditional festivals attended by millions of visitors. It is situated southwest of the Iraqi capital, Baghdad, covering an area of 5023km² Fig (1) (Abdulredha, 2012).The estimated population of the city is 1,003,516 residents (Republic of Iraq Ministry of Planning Central Statistical Organization, 2010). According to the city authority, the city compromises 848 hotels that are fully occupied during each festival.

Ashura, one of the main festival in Kerbala, is lasting up to 10 days and attracting more than 5 million tourist (AFP, 2016). In 2014, this festival produced around 12,000 tons of solid waste. It is worth noting here that exact numbers on waste amount do not exist and have had to be estimated by the collection authority. Primitive municipal waste management system is currently available in the city. Produced waste are collected and transported to final destination, landfill site, without treatment and recovery.

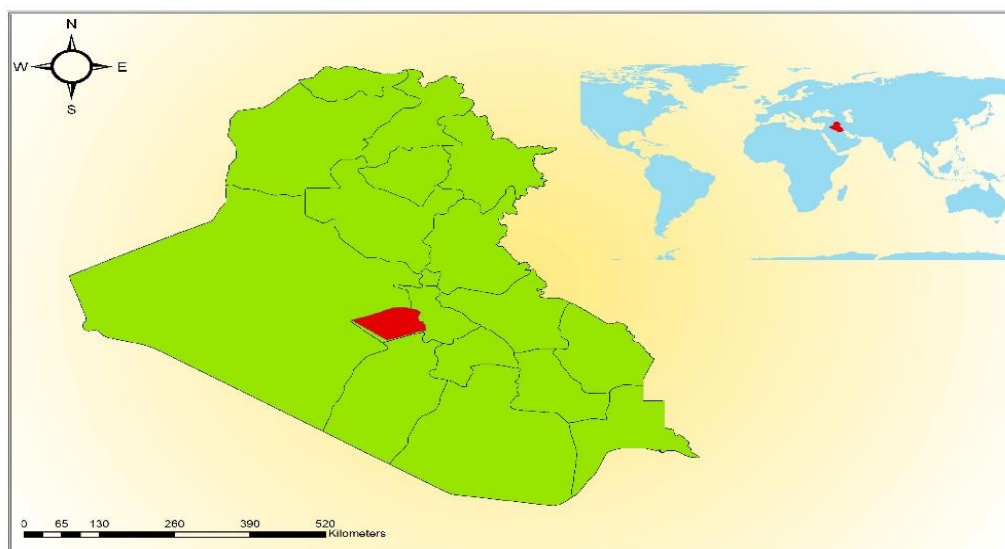


Figure 1. Kerbala City Location

2.2 Data collection and analysis

A pilot survey was carried out to study hoteliers' knowledge about solid waste recycling and their willingness to practice source separation. A total of 29 hotels managers' were randomly selected from the city centre to gather the required data. Research assistants personally contacted all of the 29 hotel managers and asked them to fill a structured questionnaire containing open-ended and close-ended questions. The questionnaire consist of two parts: the first part contains a group of questions exploring the hoteliers' knowledge level about environmental pollution, waste pollution, waste recycling, waste reduction, and waste composting. The other part included questions exploring hoteliers' intention to practice source separation, and the actions that can motivates them to practice source separation.

Statistical Package for Social Science analysis was performed using SPSS software (version 23; SPSS Inc., Chicago, IL). The hoteliers' responses such as willing to practice solid waste source separation and awareness were examined using descriptive statistics.

3. Result and discussion

3.1 Demographic attributes

The demographics variables (gender, education level, and age group) of the participants are summarised in table 1. The majority of the hoteliers had received higher education degrees. All the respondents were males, which it is expected owing to the cultural norms of the city. Most of the hotels managers' falls within the age 36 to 45 years.

Table 1. Respondent Profile

Groups	Groups	Observer's number	Observer's Percentage	Total
Education level	Completed higher education	19	65.5 %	29 (100%)
	Completed secondary education	7	24.1 %	
	Completed primary education	3	10.3 %	
Gender	Male	29	100 %	29 (100%)
	Female	0	0.0 %	
Age Group	18-25	2	6.9 %	29 (100%)
	26-35	12	41.4 %	
	36-45	14	48.3 %	
	>45	1	3.4 %	

3.2 Solid waste separation and recycling

Public support and participation plays an essential part in the success of any solid waste management system (Babaei *et al.*, 2015). Therefore, this study attempts to measure hoteliers attitudes towards the application of source separation and recycling scheme during mage festivals. The results of this researches shows low knowledge level across the respondents about several subjects including environmental pollution, solid waste pollution, waste recycling, waste reductions, and backyards composition (27.5 %, 17.2 %, 3.4 %, 3.4 %, 3.4% respectively). About 65.5 % of the hoteliers were willing to practice recycling and source separation (Fig. 2) owing to their desire improve waste collection system (84.4 %), enhance the city economic (63.1%) and because it is their duty(26.3%).

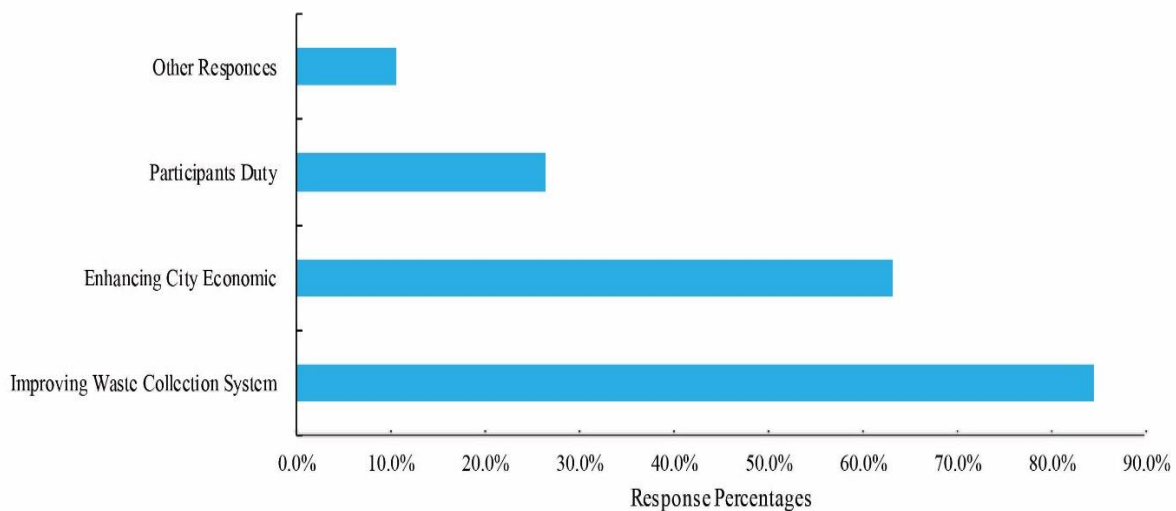


Figure 2. Categorized answers to the question “The goal of participating in WSS plan?”

Citizens’ participation in waste recycling and source separation schemes is changing according to public awareness and the availability of recycling opportunities (Keramitsoglou and Tsagarakis, 2013). Around 34.4 % of the hoteliers were not willing to practice waste source separation due to several reasons including low public awareness (90 %), unavailable recycling service (80%), and lack of financial rewards or penalties (10 %). Research shows that the public willingness to participate in recycling plan increases when the recycling bins were positioned near their houses (Gonzalez-Torre and Adenso-Diaz, 2005, Grodzińska-Jurczak, 2003). Likewise, low public awareness negatively affects (Babaei *et al.*, 2015). For these reasons,

introducing a recycling plan during mega festivals starts with providing recycling bins and rising the public awareness.

3.3 Separated waste collection

Currently, curbside waste collection system is applied in Kerbala during mega festivals. Waste generators collect the waste in plastic bags or small containers and move it to the curb. Yearly, Kerbala municipality provide around 1000 plastic containers in the event area to increase waste collection efficiency. Majority of the hoteliers store their waste by using these containers.

Introducing an effective solid waste-recycling program requires high participation rate by the hoteliers. Therefore, ascertaining hotel managers' preferences for recycling is essential. Accordingly, hoteliers were requested to choose the best attributes that would promote their participation in solid waste recycling plan. The majority of the respondent (37.9 %) asked for recycling containers to be involved in the practice. Another 24.1% of the respondents proposed that rewards might increase hoteliers participation rate. Similarly, 24.1% suggest low enforcement might increase participation rate. While, around 13.8 % suggests that training programs would raise the rate of waste separation and recycling (Fig. 3). In addition, the hoteliers were asked to suggest actions that increase Kerbala visitors' engagements in such system. Actions such as providing recycling containers in the events area (65.5 %), imposing fines and rewards (27.6 %), and starting educational programs (75.9 %) (Fig. 4). Establishing a recyclable waste storage system and commencing educational plans during festivals are basically essential to introduce a recycling scheme since the majority of the hoteliers were willing to practice waste source separation (65.5 %).

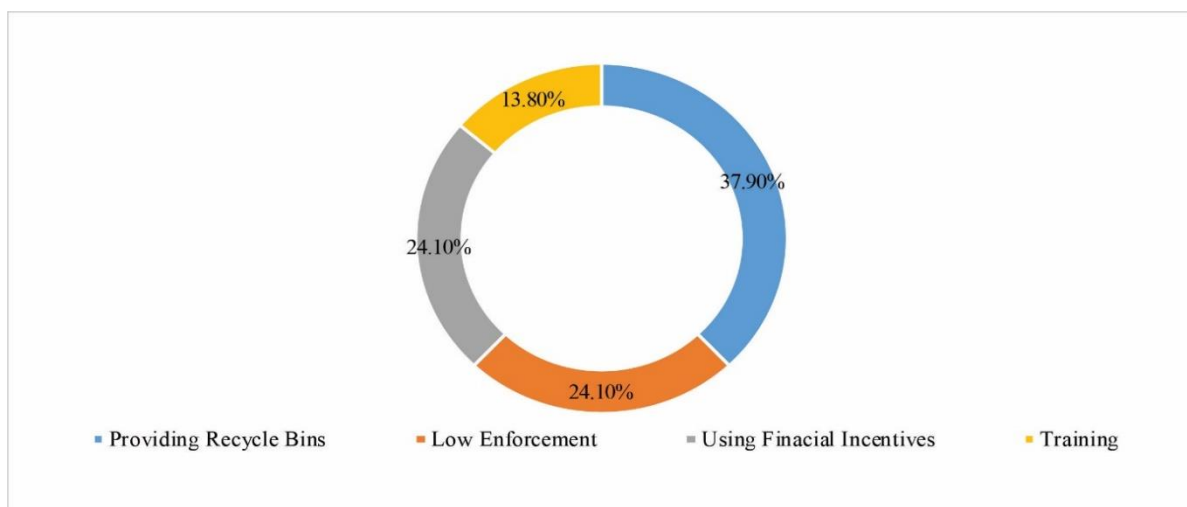


Figure 3. Responses to the question “what is preferred sorting option for you?”

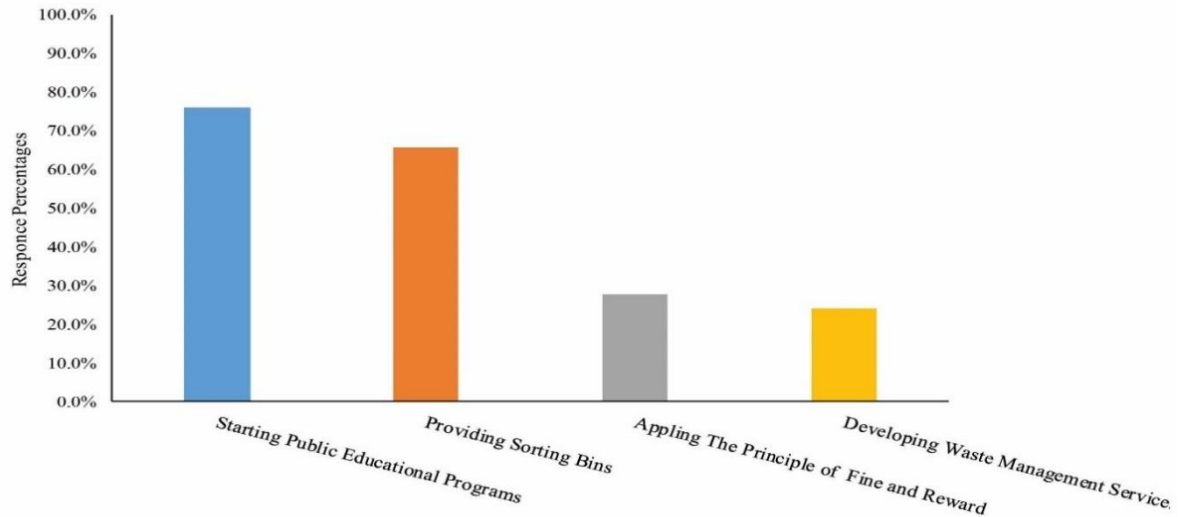


Figure 4. Classified responses to the open-ended question “the actions that would motivates visitors’ participation in the recycling program?”

4. Conclusion

A key player in the success of a waste management system is the public involvement. Thus, it is crucial to investigate public attitude towards the application of a new development such as the introduction of a recycling program. As the management system applied in Kerbala lacks the use of recycling scheme, it is complex to understand the public reaction towards a source separation and recycling program. Therefore, this pilot study was devoted estimates hoteliers participation rate in a recycling program during mega festivals.

The outcome indicates that despite the fact that the majority of the hotel managers have low knowledge about waste management subjects such as waste pollution, waste recycling, and waste reduction, a significant percentage of them (65.5 %) were positive towards the involvement in the recycling program during major festivals. In addition, providing proper solid waste management infrastructures and initiating educational programs to rise the public awareness and knowledge seems to be crucial to the success of the recycling program.

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