

Assessing the current food waste minimization practices adopted in Hotels

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ABSTRACT

The hotel service sector on one side acts as a critical driver for economic growth in Kashmir. On the other side, this sector consumes a large amount of energy, which further generated a massive amount of food waste, posed threat to scarce resources and in turn created difficulties not only in utilizing limited resources efficiently but for the waste disposal as well. In Kashmir the food waste challenge in hotel service sector is under-scrutinized yet. This paper is attempted to investigate the management practices adopted by hotels in Kashmir towards food waste. In this regard 35 in-depth interviews with concern hotel managers were conducted. The paper established the significance of the food waste challenges in Kashmir and identified the major causes of food waste in Kashmir. Regardless of consumer's role in generation of food waste, hoteliers largely failed to engage the customers in food waste reduction. In order to reduce plate leftovers, variations to the dining culture should be eased through campaigns targeting to promote public awareness of food waste when dining out. Jammu & Kashmir government should take lead to strategize these drives and provide specialist training to hotel staff on how to reduce food waste occurrence in hotels.

Key words : Food waste, Practices, Diminution, Hoteliers, Hotels, Minimization, Service sector

Introduction

The adverse impact of Food Waste (FW) was well highlighted before, but its adverse consequences has now became a call of concern (Filimonau *et al.*, 2020; Parfitt *et al.*, 2010). Food and Agriculture Organization (FAO) estimated that 1.3. billion tons of food supplied for human intake goes to bins or wasted every year, out of which one-third goes to the landfills (FAO., 2013). Recognizing the overlay between food deficiency and food wastage, the goals towards sustainability were incorporated by the United Nations (UN) with an aim to reduce global FW generation during consumption and has considerably reduced its incidence in the production and distribution stages as well (Pujara *et al.*, 2019). Ac-

cording to FAO, 189.2 million people are under-nourished in India (Ramkumar, 2020). The dependency of food production on resources has a wide range of indirect environmental effects linked with food loss and waste (Schanes *et al.*, 2018).

The municipalities in the union territory of Jammu and Kashmir are struggling for the disposal of the waste in selected areas like Kashmir. The government has failed in installing the plants to decompose the waste through mechanical means (Bashir and Goswami, 2016). Tourism has a deep effect on the economy even though in hilly towns and faces new encounters in terms of FW occurrence, which has a negative impact on the environment (Bashir and Goswami, 2016). The tourism sector in Kashmir generates huge amount of solid waste due the abun-

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dance of religious-tourism activities during the booming season, due to lack of plain land, the location for waste collection is inadequate. It is evident from the available literature that lot of waste is produced at location due to the substantial inflow of tourists which not only affects the environment but also leads to the destruction of scenic beauty (Bashir, 2015). Therefore, the need of an hour is to reducing the waste at the source point. Due to limited research on food wastage in emerging economies, hotel service sector deters in considering the root causes and prevents the policy of alleviating practices (Parfitt *et al.*, 2010). So, the paper is attempted to know the sources and causes of FW along with the current management practices adopted by hotels to reduce FW in Kashmir.

Literature Review

Quantity of Food Waste produced from hotels

At an outset of industry, most hotels do not register their wasted food exactly as it exists, while some of the hoteliers that keeps perfect registers prefer it as commercially important with ensuring reluctance to distribute them openly (Filimonau and Delysia, 2019). It was reported that the FW in India was considerably as the overall food consumed in the United Kingdom (Siraj and Tanu, 2021). One more estimation showed that about 10 to 20 percent of the food at marriages in India was disposed as FW, so the annual FW in India was nearly 14 billion US dollars (Siraj and Tanu, 2021).

In Kashmir the net mass of municipal solid waste was detected as 442.17 Kg/day amongst these constituents of municipal solid waste 43% of waste is produced as FW (Bhat *et al.*, 2012).

It is as such contended that worldwide record on FW is in need to hold the exact, frequently updated statistics on FW existence in the hospitality service sectors of many nations if possible. These databanks should cover 'best practices in reducing FW' examples in advance as implemented by various groups of hotel operators.

Origin of Food Waste

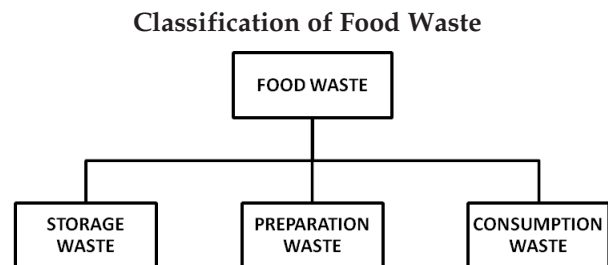
Extensive efforts had been pragmatic to identify the existence of FW in hotel service sector. Principato, Pratesi, and Secondi (2018) differentiated FW into two categories, i.e FW through kitchens and FW through customers, Principato *et al.*, (2018) stated, at

first FW occurs during the storage, preparation, cooking and service while the second arises from leftover plates. Another classification of FW is also divided into two categories i.e customer related FW & preparation related FW, the second one is further classified as plate leftovers and buffet leftovers (Papargyropoulou *et al.*, 2019).



Source: (Papargyropoulou *et al.*, 2019)

FW was also classified into four categories 1) waste due to spoilage; 2) waste during preparation of meals 3) waste due to excessive portion size and; 4) waste due to consumer behavior (plate waste) (Leite *et al.*, 2018). Martin-Rios *et al.* (2018) classified FW into three stages i.e FW during storage, preparation and consumption, these three stages were later adopted by industry and government in their reports on FW in hotel service sector (Martin-Rios *et al.*, 2018).



Source: (Martin-Rios *et al.*, 2018)

Approaches to Reduce Food Waste

The approaches to FW management varies significantly from one hotel to another based on different factors (Papargyropoulou *et al.*, 2019). The methods to reduce FW can be connected to the key sources of FW occurrence in hotels, i.e. FW during storage, during consumption and preparation (Martin-Rios *et al.*, 2018).

Food Waste diminution measures at storage point

Food spoilage at storage point was mainly due to technical faults, changes the appearance and quality

of the food, and results in wastage of food (Joardder and Masud, 2019). In order to address the issue of FW at storage point earlier food stuffs needs to be opted first for cooking by following FIFO (First in and First out) method of stock taking (Filimonau and Delysia, 2019). Another approach to reduce FW was selection of good quality equipment's to be used in kitchens (Pirani and Arafat, 2016).

Another contribution to food wastage at storage point was food spoiled during deliveries (Kasavan *et al.*, 2019) and this can be prevented by building a strong relationship with suppliers in order get the delivery of the food in good shape and condition (Filimonau *et al.*, 2019).

Food Waste diminution measures at preparation point

The main reason behind food wastage at this stage is overproduction of meals and it usually happens due to lack of demand forecasting (Silvennoinen *et al.*, 2015). To overcome this loss refined forecasting models needs to be adopted rather relaying on guesstimates (Filimonau *et al.*, 2019). Another reason is the wrong figure of guest count, in this situation excess food gets wasted and this can only be avoided either by means of online food sales or by giving it to the staff (de Almeida Oroski, 2020). Extra food can be bestowed to charities, subsequently deliver it to the needy (Mourad, 2016).

One more reason behind food wastage is large menu sizes, for which a large quantity of food stock is kept in hand. So, restricted menu need to be restructured in order to reduce the food wastage at this point (Filimonau and Delysia, 2019). Unskilled trimming is also a factor of food wastage and it can be reduced by providing training to the staff, so that required skill is imbibed within the staff (Baldwin, Shakman, and Turenne, 2012).

Food Waste diminution measures at consumption point

The main reasons of FW generation at this stage was the food left behind on plates during consumption (Pinto *et al.*, 2018). To boost up accountability over consumption, portion controlling was in need of practice so that an ideal meal size was shaped out (Principato *et al.*, 2018). To overcome the problem of FW generation on plates, the ideology of customer based choice needs to be structured and adopted by hotels (Filimonau *et al.*, 2020), so that the guests were educated about the negative social conse-

quences of FW (Jagau and Vyrastekova, 2017). If it fails to work, plate leftovers can be prevented through charging the guests for any unfinished meals (Dolnicar *et al.*, 2019). Another approach to avoid wastage can be provision of doggy-bags (takeaway facility) (Zuraikat *et al.*, 2018). (Filimonau, Todorova *et al.* (2020) argued that measures should be adopted at operation levels rather relaying on educating customers about the harmful consequence of FW, as these awareness campaigns may not affect the consumer behavior in the long run.

Methodology

After an extensive literature review an interview schedule was established. Initially it contained the themes designed around the objectives on: (1) To analyze the sources and causes of FW in hotels and, (2) To know the current management practices adopted by hotels to reduce FW. At first interview schedule was formulated in English and subsequently it was translated into Urdu (the language of interviews). The interviews were conducted in April 2021 and the data was collected from the concerned managers from different departments of the hotel viz. General Manager, Food and Beverage Manager, Executive Chef, which are directly involved in the food handling process right from storing to servicing of food items. In total, 35 managers took part in this study (Table 1). Size of the sample was determined with the help of theory of saturation, which proposes that the process of interviewing should draw to a close once saturation is achieved from the data (Francis *et al.*, 2010). It was stated that saturation can be achieved with almost 10 to 30 interviews normally (Thomson 2010 cited Marshall *et al.*, 2013), which is in connection with the objectives of the study, within the hotel sample, sixteen managers represent 'A' category hotels and nineteen managers represent 'B' category hotels. Interviews lasted for 25 to 35 min on average. Thematic analysis was applied after the data collected followed by coding as proposed by Braun and Clarke (2006). The themes and codes are presented in Table 2.

Findings

Most of the respondents agreed that FW is a complex issue for the hotel service sector in Kashmir; see Table 2.

Table 1. Demographic profile of the respondents

Hotel Category	Gender	Qualification	Experience
A	Male	Post Graduate	4-5 years
A	Female	Graduate	6-7 years
B	Male	Diploma	3-4 years
A	Female	Post Graduate	4-5 years
B	Male	Post Graduate	3-4 years
B	Female	Other	6-7 years
B	Male	Post Graduate	3-4 years
A	Male	Graduate	4-5 years
A	Female	Post Graduate	3-4 years
B	Male	Other	6-7 years
A	Female	Graduate	4-5 years
B	Male	Post Graduate	6-7 years
B	Male	Graduate	3-4 years
A	Female	Diploma	4-5 years
B	Male	Post Graduate	3-4 years
B	Male	Post Graduate	6-7 years
B	Female	Other	3-4 years
A	Male	Post Graduate	4-5 years
A	Female	Graduate	6-7 years
B	Male	Graduate	3-4 years
A	Female	Post Graduate	4-5 years
B	Male	Post Graduate	3-4 years
B	Female	Other	6-7 years
B	Female	Post Graduate	3-4 years
A	Male	Graduate	4-5 years
A	Female	Post Graduate	3-4 years
B	Male	Diploma	6-7 years
A	Female	Graduate	4-5 years
B	Male	Post Graduate	6-7 years
B	Male	Graduate	3-4 years
A	Female	Post Graduate	4-5 years
B	Male	Diploma	3-4 years
A	Male	Other	6-7 years
B	Female	Post Graduate	3-4 years
A	Male	Graduate	4-5 years

Sources of Food Waste

Hoteliers agreed that FW originates mainly from customer plates and preparation (Figure 1). Food waste from negligent customer attitude and overproduction was typical for other marketplaces (Papargyropoulou *et al.*, 2016) but this study demonstrated that the main sources behind food waste rests within the dining culture of the guests visiting the hotel.

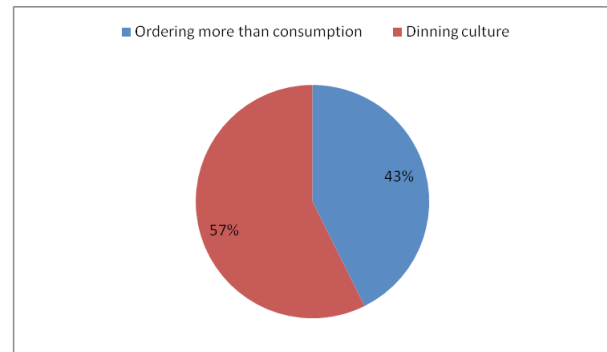


Fig. 1. Percentile representation of sources of food waste.

Certainly, the culture of dinning out fuels the guests to order more food than consumption & then to left the plates with food to show the abundance, as per below

Mir Tariq, Food and Beverage Manager

The difficult is that guests eat with their eyes and desire to see lots of food on their table/plate. A manager can take more efforts to be more economical, he or she may display only few things on the table/plate and then by preparing newer as they go, thereby reducing wastage. But the guest wants to see more food on the table/plate. Also, when guests

Table 2. Coding Structure. The table highlights the number of responses and quotes assigned to each quote.

Themes	Codes	Responses
Sources of FW	<i>Plate leftovers/</i>	Ordering more than consumption 17 (49%)
	<i>Customer Attitude</i>	Dinning culture 23 (66%)
Causes of FW	<i>Preparation issues/</i>	Cooking Skills 11 (31%)
	<i>Meals left unsold</i>	Overproduction 18 (51%)
		chef's unwillingness/laziness 15 (43%)
		Huge Portions 6 (17%)
		Large menus 8 (23%)
		Using leftovers as staff meals 21 (60%)
		Providing awareness to customers 20 (57%)
Practices adopted to reduce FW		Portion controlling 20 (57%)
		Reconfirming the order before cooking 7 (20%)
		Providing Training to the staff 9 (26%)
		Cooking food when ordered only 8 (23%)
		Offering discounts to finish the plate 7 (20%)

order any food item like meat, they want to have a big portion. They don't care whether they can finish the food or not, they just want to have good value for their money.

Nasir Ahmed Sheikh, General Manager

Dinning culture in India is one of the key sources of food waste. I have been observing that foreign customers don't produce as much food waste as domestic guests. When domestic guests go to a hotel, they just want to enjoy the time and thus spend their good time with friends and family, so, in order to "show off", they order more food than they need. Only one out of 10 guests order right quantity food as needed. As a result, 25 to 45% of the food goes to waste.

Wajid Ahmad, Food and Beverage Manager

Our hotel offers buffet services only and from my experience, buffets produce more food waste than any other service. This is because most of our guests are using buffets as table meals, then sharing it produces much waste. I think this is due to the way we eat.

Causes of Food Waste

Over-production of food was identified as the central cause of FW. The cooking skills were also blamed for FW generation during preparation but it was pronounced less, significantly (Figure 2).

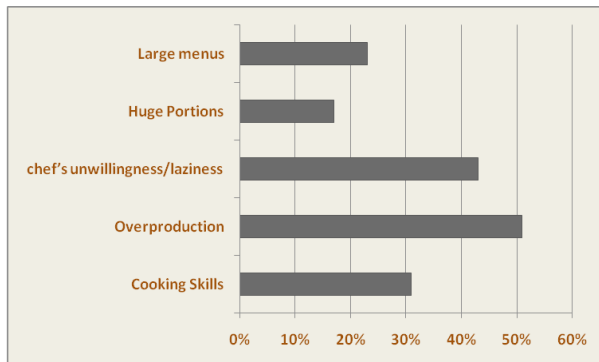


Fig. 2. Percentile representation of causes of food waste.

Further, FW was also extensive due to large menus incorporated by hoteliers in an effort to distinguish from its competitors and increase customer satisfaction. Food waste was also caused by disinclination or laziness of chef towards the re-use of leftovers, thus emphasizing the necessity to involve the chefs and other staff of the kitchen in FW minimiza-

tion.

Chef Ashaq, Executive Chef

Most of the food waste in my hotel is produced by the guests. It is always observed that the guests have a habit of ordering too much food due to the cultural thing I guess ... Even if the guests are advised by our staff still they produce too much food waste and usually ignore the advices. Our menu is very long and the guests always want to taste more dishes even if they know they cannot finish the plate. We cook extra food even if the guest consume very less because we don't have any other choice.

Bhat Javid, General Manager

I think the reason behind food waste occurrence in the kitchen is due to lack of required skills for the chef. If we compare professional chefs with unskilled chef, we may find unskilled produce more waste than skilled ones. Because of the deficiency of required skill to prepare the food in more economical way, neither they can use their raw materials as completely as possible nor do they guarantee the actual taste of their dishes. So, if the taste or the presentation of the dishes is not good, then you need to throw it and do it again, which will cause much waste.

Current Practices adopted by Hotels to reduce Waste

Before examining the FW reduction practices, hoteliers were asked on whether or not they had any dedicated FW policies and practices, adopted by the hoteliers to reduce waste (Figure 3).

Excitingly, though, the debate stressed on standard operating procedures not merely as a source of control on FW minimization, but also a potential cause behind food wastage as well. For instance,

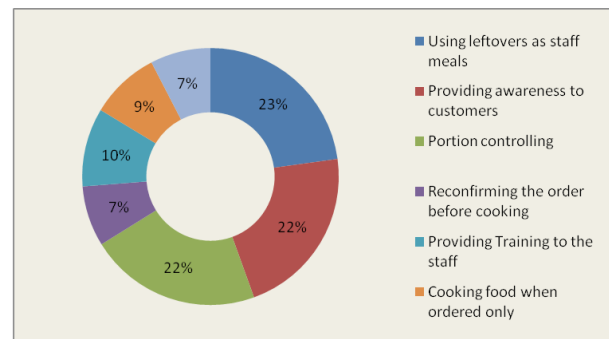


Fig. 3. Percentile representation of food waste reduction practices adopted by hotels.

certain standard operating procedures suggested managers to distinct FW from packaging waste for improved recycling and safer disposal. But, several procedures alongside urged the necessity to estimate over than the volume of buffets, in this way FW was generated due to overproduction.

Syed Farooq, Food and Beverage Manager

Buffet table figure most of the food waste generated by hotels, this is due to in-house rules. The amount of food to keep for each guest as per the policy of the hotel rests in-between 5-8 guests, so the manager are bound to keep sufficient amount of food for each type to feed almost 5 to 8 guests at one time. There is no second choice for the managers, so that they could maintain the level until the closure of the meal service even though, sometimes or on some days there are not enough customers to eat the food provided.

Sheikh Aadil, General Manager

In order to minimize the food waste, we need to start public awareness campaigns and government must support in doing this. Just as the government is trying to promote solid waste separation at home, reducing food waste in hotels should also be promoted among the public. In Kashmir, if the government does not support it, it's not really going to work. Public awareness is the best way to reduce food waste generated in hotels and this can be possible if famous stars start to say 'do not do this', people start listening. From our side, for example, we can train our chefs so that they improve their cooking skills and provide smaller dishes. We can also control portions through different techniques. We can even provide small discounts to guests for not wasting food.

The practices adopted to reduce food waste by study respondents reflected the central causes of FW existence, i.e. from customer plates & during preparation (production). To overcome this problem, most of the hoteliers took benefit of ingredient re-purposing (Table 2). In spite of alleged easiness, ingredient re-purposing needs to be in practice or the hoteliers need to spend severely in menu designing. For instance, menus can be retained trimmed in order to avoid unnecessary orders of uncooked food (Martin-Rios *et al.*, 2018). This could be a perfect practice to alleviate FW and to differentiate the entity from other competitors. It is of course more effective if the menu is structured in a way

that any food left-overs are further used as substitute to prepare new dishes (Okumus, 2020). Ingredient re-purposing practice in hotels of Kashmir was an inspiring thing due to its more popularity in the food service establishments with a speedy turnover (Filimonau *et al.*, 2019). Further, left-over food was also used to feed the staff or sometimes used to prepare meals for staff (Table 2) which was a prevalent practice to reduce FW in hotels over the globe (Sakaguchi *et al.*, 2018). To overcome the issue of FW generation from customer plates, most of the study respondents tried to educate their customers through awareness programmes in an intention that this would change guest attitude toward food wastage (Table 2). One of the most prevalent measures practiced by hoteliers in this regard was persistent announcements through table signs and menu labels. Though, the influence of these practices on plate waste minimization was not known as the respondents claimed that they did not take any effort to evaluate their efficiency. So, the key reasons behind non-implementation of such evaluations had ever been started was in the anxiety of customer dissatisfaction regarding their food wasteful attitude. This shows that customer fulfillment was given priority over the sustainability in Kashmir hotels, which was in line with results stated by Kallbekken and Saelen in 2013 (Kallbekken and Saelen, 2013).

Conclusion

FW management signifies a key operational challenge in the hotel service sector. Though, this remained untouched in the studies, which is a noteworthy limitation in order to discuss the rising occurrence of outdoor food consumption. So, this study proposed an advancement in the research agenda to explore the FW management approaches to reduce FW in a sample of hotels in Kashmir. The main findings of the study are that the dining culture makes a huge contribution to FW generation during consumption. More so, the growing customer expectations regarding good quality food offered by hotels and the industry wants to achieve these opportunities in quest to customer reliability results in over-production of food, so generates FW on the preparation side. Many management practices are adopted by hotels to reduce its food waste. Some of these practices are; re-purpose of excess ingredients and using the leftover as staff meals. But the attempts to engage the customers to reduce its

FW are limited and do not originate directly from hoteliers at all times but from the authorities in the locality, and the main focus remains on inactive nudging of customers by presenting table signs in order to encourage guests to waste a lesser amount of food. To ensure the FW minimization, the hoteliers should move to more 'active' nudging in the form of discounts given to the customers for finishing the plates. To support the hotels in minimizing the food wastage, governmental must be active. This can be organized by designing widespread and new public awareness campaigns on a large scale basis. Another approach may be the provision of subject specific training on FW minimization to hotel managers and their staff as well. The paper sketched out a number of research openings for future i.e research on FW in the hotel service sector of Kashmir should emphasis on its diverse sub-sectors to measure the degree of FW within the hotels, to establish the main sources & to identify the most active approaches to reduce the food waste. Second, establish the main causes and quantifying the effects of consumer attitude towards FW. Lastly, planning and experimenting with several nudges to recognize the largest effect on customer attitude towards food wastage in order to support hoteliers in Kashmir.

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