

An Investigation into Consumer's Behaviour and Attitude towards Food Waste Generation: The Case of Pakistan

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Abstract- A large amount of food produced is wasted and disposed of and, to a vast degree, the waste is avoidable. The biggest commitment to food waste generation happens at an individual level. This paper lays a spotlight on the utilization of sustenance squander for investigating the reasons for food wastage on a singular level. This survey research is conducted to document the consumer propensities for inhabitants of Lahore and Gujranwala which is a noteworthy division of aggregate, keeping in mind the end goal to beat food waste conduct and call attention to alternatives to plan counteractive action measures. The results were quite similar in both cities. Few individuals from Gujranwala announced they put an extraordinary arrangement in decreasing wastage. The outcomes of this study recommend that the dispositions towards the treatment and respect for food are more affected by social class and instructive level than by various citizens.

Keywords - Food Waste, Consumer Behaviour, Consumer Attitude, Waste Generation, Pakistan

I. INTRODUCTION

In the European Union, food is defined as something 'Intended to be, or reasonably expected to be ingested by humans' [1]. It is very clear and obvious that if food is not used for eating it till finished then the next step is its disposal which may lead to wastage of resources for its production, supply and of course for disposing it. According to the UN Food and Agriculture Organization (FAO), developing countries waste 40 percent of food items, 1.3 billion tons of food is wasted annually all over the world. Approximately a billion people are starving, out of which 33% are children. While we waste 1/3 of the sustenance we produce.

The measure of food we waste is all that anyone could need to sustain the majority of the starving individuals on the planet. A child bites the dust at regular intervals because of yearning. One out of eight individuals rest hungry consistently. 40% of all food created in the US is discarded. Anyplace where food is produced, sold, or eaten is wasted; be that as it may, customers are certainly the greatest wellspring of food wastage [2,3].

Pakistan is a standout amongst the most sustenance unreliable nations on the planet and is positioned eleventh at extreme risk on the food security chance list, 61 Million Pakistanis are nourishment Insecure. Several individuals in

Pakistan kick the bucket every year in light of a lack of healthy sustenance and different insufficiencies. The issue of Food wastage affects nourishment security for destitute individuals, on sustenance quality and wellbeing, on the monetary improvement of a nation and condition [2].

The one reason of food products is the estimation of using a suboptimal food which means that is not keenly purchased but because of the charm of low price or buy one get one free offer due to its nearer date of expiry or past the best before, veer off from what is viewed as ideal (generally equivalent to what is seen as "ordinary"). This can be in the "purchase or don't purchase" decision circumstance in the store or the "do or don't expend" decision circumstance at the household level.

Suboptimal food encompasses foods that cause the largest amount of food waste. Together with food scraps and remains, these classifications constitute purchaser related nourishment squander. It isn't conceivable to give a correct number of the measure of waste as indicated by this separation, however, there is some regularly referred to information that can give a thought of the connection between in-store and at-home food wastage at the individual level [4].

In the previous couple of years, an expanding number of studies have analyzed food waste and consumer conduct, which requires an assessment of the condition of research to better target future research. This study aims to explore the reasons for food waste especially from consumer side - his behavior, purchase habits, and attitudes.

II. PROBLEM STATEMENT AND OBJECTIVES OF THE STUDY

The study focuses on the consumer's attitude and food waste generation at individual level in Lahore and Gujranwala. The present research was being conducted in Lahore and Gujranwala. This will give an insight upon the practices of food consumption, food wastage and consumer shopping behavior. Present research will help and guide towards further research with a representative sample. The The objectives of this study are

- To identify shopping habits of consumer and its relation to food waste generation.
- To estimate the amount of food waste generated by an individual.
- To examine the types of food wasted and reason for discarding food.
- To identify significant difference between Lahore and Gujranwala.

III. LITERATURE REVIEW

A huge amount of food either raw, cooked or processed is being discarded in the world [5] as stated by FAO (2011) 280-300 kg per capita per year in developed countries and 120-170 kg per capita per year in developing countries [2,3,6] and, to a large extent, this type of waste can be saved or reduced or avoided [7,8]. Food wastage is a leading cause of decreased food quantity for human usage and it is a severe problem in many poor countries where people not get food up to their satiety level. Even that countries' individuals may contribute more than others in production, postharvest, and processing of food [2,3]. Food waste usually increase at the end of the food chain when retail and final consumption is ready for humans [3,9]. The estimated amount of 40% of food at post-harvest and processing levels is being destroyed in developing countries and in industrialized countries more than 40% of losses happen at retail and consumer levels.

Although consumers are the contributors to food wastage but its losses at household level is neglected or under estimated [10] and more research is required to investigate consumer behavior about food choices. The observation indicates that ethically, people talk about not to waste food but on the other side they are doing the same practice of wasting food [11,12,13,14,15]. The reasons of wasting food have been investigated also in Italy [15] but there are only little insights about the possible drivers among Italian households. Although the themes covered in these researches represent an important starting point there is still a lack of understanding of the nature of household food waste behavior in Italy. As sustainable household waste management is becoming an important concern for local and national authorities also in Italy a good understanding of factors that contribute to the amount of wasted food seems to be essential if we/they design effective interventions. For these reasons, in the current study, then aim at analyzing food waste by focusing on the consumption to explore reasons for wasting food at the family level, which also in Italy is a significant fraction of total, to overcome food-wasting behavior and point out options to design preventive measures [15].

The food waste of around third of the world food is wasted at various steps of the supply chain [2]. The European countries are ahead with food wasting at consumer level [16]. The issue has gained considerable public attention in the past years, with a large number of initiatives developed by different stakeholders such as policymakers, retailers [17] and NGOs [18] and research projects that have and are exploring the issue. Furthermore, the European

Parliament has called for 2014 to be the 'year against food waste' [19]. It is known that consumers avoid deformed food [20] and foods close to the best before date [21,22] in the choice situation, while consumer food safety concerns [23,24], storage facilities [25,26], family practices around meals and leftovers [27,28] and planning capabilities [29] influence the quantity of food waste created in the household.

There is a broad consensus in the literature that private households are significant contributors to the total amount of food waste. Thus, if end consumer is focused and given attention for preventing food wastage, it can reduce the amount of waste. The issue is to highlight the motivational factors which tend individuals to waste food which can be consumed and to increase the knowledge about potential barriers to reduce wasting. Another research results indicate that households behaviors (shopping, eating, and food preparation habits) and its influence on the generation of food waste by an online survey among two European research centers in Italy (JRC/Ispra) and Germany (KIT/Karlsruhe). Furthermore, the reasons for the disposal of food as well as measures and technologies most needed to prevent wastage were discussed [30].

IV. FOOD WASTE GENERATION IN PAKISTAN

According to the UN Food and Agriculture Organization (FAO), developing countries waste 40 percent of food items, 1.3 billion tons of food is wasted annually all over the world. Approximately, a billion people are starving, out of which 33% are children. One third of the food produced is wasted. Pakistan is one of the most food-insecure countries in the world and is ranked 11th at food security risk index, 61 million Pakistanis are food insecure. Hundreds of Pakistanis face diseases and death each year because of malnutrition and various deficiencies [2].

Food products that are wasted at the consumer level even though they are edible "suboptimal foods", defined as foods that consumers perceive as relatively undesirable as compared to otherwise similar foods because they either are close to, at or beyond the best-before date; or deviate visually or in other sensory perception from what is regarded as optimal. This can be in the "buy/do not buy" choice situation in the store or the "consume/do not consume" choice situation in the household. Suboptimal food encompasses foods that cause the largest amount of food waste for example, approximately half of the food thrown away in households, as well as the food categories with the highest unfavorable sustainability-related impact for example, wastage of dairy products and fresh fruit and vegetable. Together with food scraps and leftovers, these categories constitute consumer-related food waste. It is not possible to give an exact number of the amount of waste according to this differentiation, but some often-cited data can provide an idea of the relation between in-store and at-home food wastage [31].

According to an estimate food prepared at different events in Pakistan, especially at weddings, is wasted when people rush towards the food and fill up their plates with more food than they can consume. The waste causes grief in the resorts, restaurants, national parks, seaside, and other public places. A huge amount of uneaten food is discarded in supermarkets, bakeries and other stores that sell food, lose out on tons of items that go into dumpsters every day. It has been detected that purchasing behavior can influence food waste. The amount of food waste generated varies from individual to individual, some people tend to produce more waste than others. Married men and women are more likely to generate less waste than those who are single. Youngsters generate more waste than the elderly, likewise, men and women who live on their own (hostels/separate apartments) tend to generate more food waste [32,33]. Due to the lack of interest and awareness regarding food waste generation and disposing of treatment a very few researches are being held on a very small scale which is least useful for our study paper. Because of the few types of research conducted and missing facts and figures of the concerned study, we found it very difficult to predict the exact percentage of waste generated on an individual level.

V. REASONS FOR FOOD WASTE GENERATION IN PAKISTAN

The literature "Causes & Determinants of Consumers Food Waste" by Authors L.E.J. (Lisanne) van Geffen, Wageningen UR E. (Erica) van Herpen, Wageningen UR J.C.M. (Hans) van Trijp, Wageningen UR was reviewed to determine the reasons for food waste generation [34]. To manage the food supply on an individual level, sets of behaviors need to be executed. The certain behavior is to be provisioned, and the supply food to be stored, prepared into meals, and consumed. The consumers tend to develop routines to integrate a variety of priorities into their daily practices. In an ideal situation, the waste generation is managed in such a way that the amount of food prepared or consumed must equal the amount that is consumed. Certain consumer attitudes tend to generate food waste. It is important to emphasize upfront that the routines developed to manage food in-home or out-of-home should not be considered as decisions made by individuals, but as routines developed by them. It is a matter of concern about how food is being managed in and when eating out-of-home in different stages on consumption level [35,36].

VI. IN HOME FOOD WASTE GENERATION BY AN INDIVIDUAL

Different researches aimed to categorize food waste behaviors into several stages [37,38,39] the following stages can be distinguished: planning, provisioning, storing, preparing, consuming, and disposal.

6.1. Planning

The planning is first step of any activity so the behaviors in the planning stage can indirectly result in food waste, for instance, due to incorrect or lack of planning. Planning inadequacy can lead to buy a large amount of food which is not required or more than the requirement. The food items have a limit to be expired or spoiled so cannot be easily consumed if more than required quantity [37,38].

6.2. Provisioning

The discounted prices on food items also attract consumers to buy them more than they require and finally most of it is spoiled [39]. The low price is tempting for people who do not have capacity to buy such products at normal price but it is not guaranteed that all portions is consumed or wasted. But alternately, it was a reason in UK to buy discounted products related to less food waste [40] or did not show any relation [41]. In a study, results indicated that people who buy less of other items when purchasing special offers generated less waste, and thus special offers may not increase food waste when consumers adjust their purchasing in other categories accordingly [42].

6.3. Storing

Storing refers to the storing of food, either as single items or as a combination of foods e.g. leftovers from a meal. In many cases, correct storage can prolong the shelf life of the products. How the storage is organized influences how much food is wasted, since a cluttered storage space increases the risk of forgetting products, whereas organized storage seems to prevent this type of spoilage [43].

6.4. Preparing

Preparing relates to the handling food, in other ways cooking or preparation of food products to enhance edibility and flavor. Most prominent are the preparation of the main meals, the peeling of fruit products or baking of cookies also falls in this phase. One influential behavior is the amount of food prepared. The portion which are prepared can be large enough than required consumption or may not have flavor required by consumers. It can be intentional or unintentional to cook large amount of food, in some cases, when consumers want to show their hospitality to guests or to make sure that their household members have a meal that matches their wishes [37,38,39].

6.5. Consuming

Food waste also increase when consumers do not store the plate and pan leftovers for later usage, or when they do store the leftovers but end up not eating them. Consumers are unwilling to eat leftover food in general but they do not want to throw so first it is stored but if not eaten then obviously it is spoiled [44].

6.6. Disposal

Disposal of food is the last stage after storing, preparing, and consuming because when no one is tending to eat the cooked or stored food, it is alternatively, given to pets or other animals and last can be thrown out or in the bin. But conscious people may also use peels of fruits and vegetables to make organic fertilizers [37,39].

VII. OUT HOME CONSUMER FOOD ATTITUDE

7.1 Out-Home Consumer Food Attitude

Food waste is also generated out of home settings such as wedding halls, restaurants, canteens, catering services, prisons, and homes for the elderly. The influence of consumers to prevent food waste in these settings is limited because everyone is there to enjoy and eat not to think for food saving. However, there are two stages in which consumers have direct control over the amount of food waste generated, ordering or serving, and consuming [39].

7.1. Ordering/ Serving

Ordering or serving relates to how consumers receive the food by the foodservice, in which the most common forms are ordering 'a la carte' or filling a plate buffet-style, or a mix of the two. Within these two types, several variations exist. For instance, in some food services, starters or side-dishes are standard included, in others they are not. Similarly, in some food services plates can be refilled without limits, in others they cannot. Also, the size of the meals can differ between food services, for instance, some offer standardized multi-course menus and other small dishes to share like tapas or sushi. Consumer behaviors that increase the likelihood to waste refer to how much food ends up on the consumers' plate. More food increases the likelihood of surplus food, as the consumers might be unable or unwilling to finish it all. It is not clear which type of serving causes more plate waste. However, there is an indication that buffet-style restaurants have more plate waste than 'a la carte' orderings [38,39] because when someone order for food he or she may be conscious enough to pay for the portion ordered otherwise in buffet they can have choice to eat or waste.

7.2. Consuming

The only option of consumers to prevent plate leftovers from being wasted is to take it home in a resource pack, also known as the doggy bag. Consumers report that they do not want to worry about food waste when eating out. Also, they mention that the portion size offered is the major cause of food waste. They perceive that serving size is out of their control and therefore do not feel ownership over the leftovers nor will ask for adjustments in serving size. Further, consumers report to feel embarrassed to ask for a doggy bag, but are more likely to use one when the doggy bags is proactively offered by the foodservice employee [42]. The services can be organized when restaurants placed some saying in the walls to show food for poor.

VIII. METHODOLOGY

This research is a cross-sectional descriptive study. The study was conducted online in which individuals from Lahore and Gujranwala volunteered. Male & Females participated with an age range of 17-42 years of Lahore and Gujranwala. The simple Random Sampling technique has been used to reach the required sample size (n=150). For this study, a sample size of 150 individuals (75,75 Lahore and Gujranwala respectively) was chosen. The male and female individual aged between 17-42 years of age was included in the study. They were married and unmarried individuals of Lahore and Gujranwala. The male and female aging less than 17years and above 42years were excluded in the study. The data was collected online through Google forms by a structured questionnaire. The respondent's consent was taken. Only those individuals filled up the questionnaire who was willing to do it. The Statistical Package for Social Sciences (SPSS) and Microsoft Excel has been used for data analysis. Mean and Standard deviation has been applied to do the comparison between Lahore & Gujranwala. Results have been presented in the form of figures and tables. Due to time constrain, a small sample size (n=150) was selected.

IX. EXPERIMENT AND RESULT

9.1 Socio-Demographic Characteristics

In Lahore as well as in Gujranwala the number of respondents was similar. A total of the sample (N=150) was taken, 75 respondents from each city. A majority of respondents were female (78%) from Lahore and (84.6%) from Gujranwala. A low percentage of male participants were due to their lack of interest in this research activity. The age group who reported was 17-33 years with a mean age of 22.8 in Lahore and 17-42 years with mean age 23.56 in Gujranwala. Approximately 70% of the respondents were unmarried both from Lahore and Gujranwala. It should be noted that not all respondents answered every question so that the populations are slightly different for each question.

9.2 Food Consumption

When asked about how many meals do people prefer to have per day, more than half (52.8%) of the respondents from Lahore have 3 meals and 35.3% have just 2 meals in a day, while in Gujranwala (52.1%) have 3 meals a day and 22.5% are likely to have more than 3 meals a day. Respondents who prefer to have freshly cooked food in their meals were 55.9% and 66.2% in Lahore and Gujranwala respectively, while others like to have all kinds (fresh, packaged, pre-prepared) food for in their meals.

Respondents from Gujranwala reported they never skip breakfast; contrary to these respondents from Lahore reported they are more likely to never skip their dinners. Outdoor eating ratios in Lahore and Gujranwala were quite similar, 44.1%, 20.6% once or twice a week in Lahore, while (37.1%, 21.4% & 31.4 %) once, twice and more than two times per week in Gujranwala. Approximately half (47.1%) respondents from Gujranwala have frozen and pre-prepared foods once per week their meals, contrary to this respondent from Lahore who has frozen and pre-prepared meals once a week were 32.4%. Table 1, 2, 3, 4 and 5 shows the detailed ratios of food consumption habits as a comparison in Lahore and Gujranwala.

Table 1. Meals per day of individual of Lahore and Gujranwala

	Lahore	Gujranwala
Meals per day	%	%
1 meal	2.9	2.7
2 meals	35.3	21.3
3 meal	55.9	52
More than 3 meals	5.9	24

Table 2. Food Preference of individual of Lahore and Gujranwala

	Lahore	Gujranwala
Food Preference	%	%
Fresh food	55.9	64
Packaged food	0	0
Pre-prepared food	0	0
All	44.1	36

Table 3. Skipping of Meals of individual of Lahore and Gujranwala

	Lahore	Gujranwala
Meal never skip	%	%
Breakfast	26.5	46.7
Brunch	2.9	2.7
Lunch	20.6	25.3
Dinner	50	25.3

Table 4. Outdoor eating of individual of Lahore and Gujranwala

	Lahore	Gujranwala
Outdoor eating	%	%
Once	44.1	36.5
Twice	20.6	20.3
more than 2 time	20.6	33.8
Never	14.7	9.5

Table 5. Outdoor eating of individual of Lahore and Gujranwala

	Lahore	Gujranwala
Pre-Prepared Food	%	%
Once	32.4	45.9
Twice	23.5	9.5
More than twice	11.8	17.6
Never	32.4	27

9.3 Food wastage

Food wastage per meal less than 20% was reported by 34.3% of respondents in Lahore and 49.3% of respondents from Gujranwala reported they waste less than 20% of their food per meal, while 13% from Lahore & 34.7% from Gujranwala reported that they waste no food at all. When asked about which of their meal is more likely to be wasted, respondents from Lahore outlined breakfast & lunch 31.5% each and dinner 22.9%, while from Gujranwala 44% outlined their dinner is more likely to be wasted (Table 2).

Table 6. Food wasted per meal of individual of Lahore and Gujranwala

	Lahore	Gujranwala
Food Wasted per Meal	%	%
Less than 20%	34.3	49.3
20-30%	20	10.7
30-40%	2	4
more than 40%	1	1.3
None Is wasted	13	34.7

Table 7. Left Over Meal of individual of Lahore and Gujranwala

	Lahore	Gujranwala
Left Over Meal	%	%
Breakfast	31.4	24
Brunch	14.3	10.7
Lunch	31.4	21.3
Dinner	22.9	44

Concerning what kind of reasons for food, there were no large differences in Lahore and Gujranwala. The main reasons (for this question multiple answers possible) were plate waste/leftover in the plate, and cooking too much food in both cities. However, in Lahore 'expired food' was mentioned much more frequently (51.4% respondents in Lahore and 37.8% in Gujranwala). In contrast, poor portion management while cooking & serving was ticked much more in Gujranwala (31.3% and 25.7% respectively). Other reasons were less than 25% which means they were of less importance.

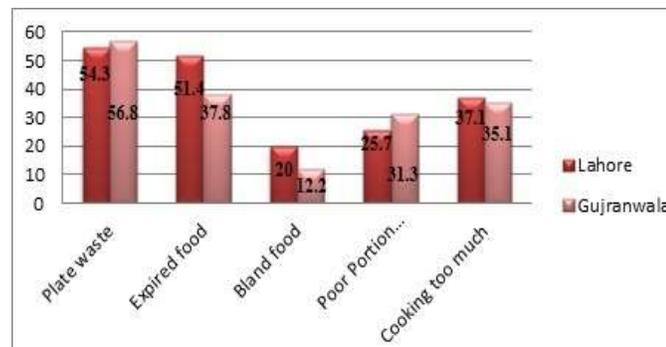


Figure 1. Types and reasons for food waste in Lahore & Gujranwala.

The respondents were asked about the ways they dispose of their edible yet uneaten food, (this question had a choice for multiple answers), a majority fed their edible uneaten food to animals and pets (62.9% & 48% in Lahore and Gujranwala respectively) while giving it to other households such as maids was their second priority with a ratio of 48.6% and 48% in both cities respectively.

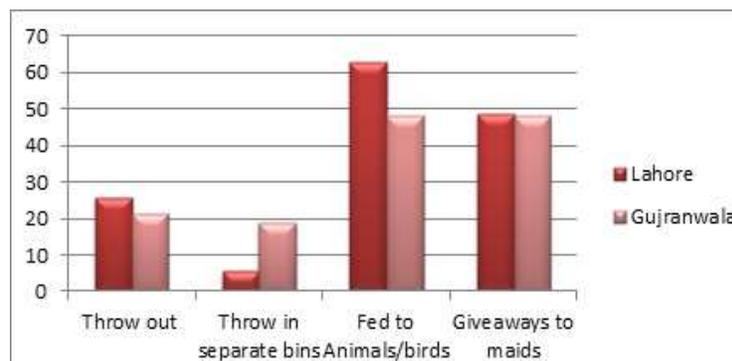


Figure 2. Ways of discarding uneaten food in Lahore & Gujranwala.

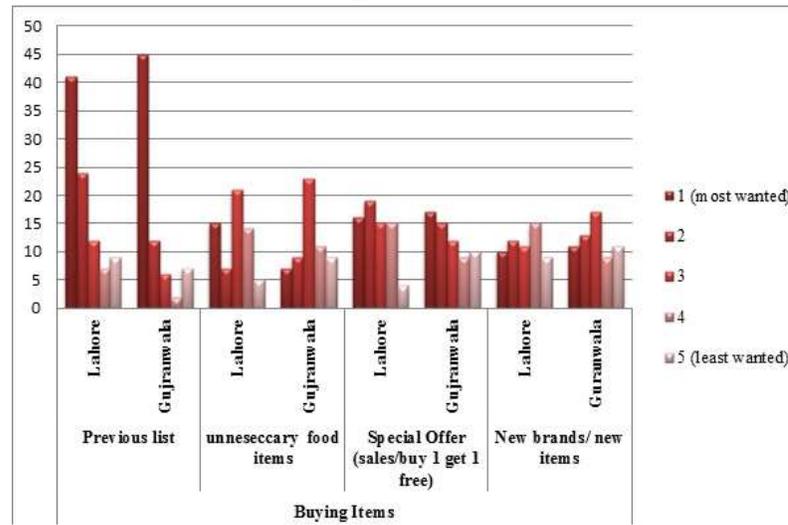


Figure 3. Preference for buying items in Lahore & Gujranwala.

The uneaten waste thrown in waste bins with other inedible food was marked by 25.7 % in Lahore and 21.3% in Gujranwala. A very little response for throwing edible uneaten food in spate bins was received as 5.7% in Lahore and 18.7% in Gujranwala. The average re-use of leftover food was 57.1% and 46.2% in Lahore and Gujranwala respectively.

9.4 Consumer's Shopping Habits

There were small differences concerning shopping behaviors between Lahore and Gujranwala, except for grocery shopping periods. In Lahore, 40% of the respondents marked that they do groceries every month while 25% reported they buy daily required groceries only, Contrary to this respondents from Gujranwala outlined they buy groceries per week(37.5%) and 28% marked grocery shopping on monthly bases.

Other factors, such as prior shopping list planning and satisfaction level of consumers were almost similar. In Lahore as well as in Gujranwala nearly half of the population (based on our sample) uses a shopping list (48% & 57% respectively), while 37.1% & 29.3% plan a shopping list off & on. The satisfaction levels of consumers were 85.7% and 89.1% in Lahore and Gujranwala.

Table 8. Shopping Periods of consumers of Lahore and Gujranwala

	Lahore	Gujranwala
Shopping Periods	%	%
Once a week	14.3	37.3
Once a month	40	28
Twice a month	20	21.3
Daily	25.7	13.3

Table 9. Shopping list planning of consumers of Lahore and Gujranwala

	Lahore	Gujranwala
Shopping List Planning	%	%
Often	48.6	57.3
Sometimes	37.1	29.3
Never	14.3	13.3

Table 10. Satisfaction of shopping of consumers of Lahore and Gujranwala

	Lahore	Gujranwala
Satisfied with shopping	%	%
Yes	85.7	89.1
No	14.3	11.9

What sort of item do consumers usually buy when they do their groceries, the response from both Lahore and Gujranwala were quite similar (see figure.3).

Lastly, we asked our sample, how much effort they think they put in to reduce the amount of food waste they generate, half of them (51.4% & 55.4% from Lahore & Gujranwala) marked they put a fair amount of effort in reducing the waste generation while around 32.4% from Lahore and 25.7% from Gujranwala reported they put a great deal in reducing waste generation (see table: 3).

X. CONCLUSION

Food wastage is difficult to avoid fully but can be reduced, with the awareness about food waste drawbacks, especially for developing countries. Food waste is a major concern now because of the earth degradable resources, especially cultivated land reduces, so the avoidance of such waste is necessary. As mentioned above, the sample of the survey presented here is not representative of two entire city populations. The main reason is that the survey was limited to an academic environment at both locations. Moreover, the questionnaire was distributed via the Internet and the response to it was completely voluntary. The respondents who were from lower-income classes, lower educational level, young people (below 18 years) and the elderly (persons aged 40 years and above) participated but can be more adequately represented in the sample. The results contributed to the knowledge about food wastage to the population of Lahore and Gujranwala.

Concerning the food items wasted survey the results of the study showed that male participants were less due to their lack of interest in this research activity. The age group who reported was 17-33 years. Approximately 70% of the respondents were unmarried both from Lahore and Gujranwala. Respondents were preferring to have three meals per day and like to have freshly cooked food of all kinds such as fresh, packaged and pre-prepared. Some respondents do not like to skip breakfast and other for dinner. Outdoor eating ratios were minimum once a week that shows the food wastage can be out of the home and they also had frozen and pre-prepared foods once per week their meals.

Food wastage is reported frequent but the respondents were reluctant to answer about food wastage because they did not want to see the reality that they waste food. But all of them were wasting food at all three meal times, may consciously or unconsciously. The major reasons for food wastage were plate waste or leftover in the plate, and cooking too much food, other can be expired food, poor portion management.

The ways they dispose of their edible yet uneaten food, a majority fed their edible uneaten food to animals and pet while giving it to other households such as maids was their second priority. Finally, the last is to throw in waste bins with other inedible food or in spate bins. The respondents do groceries every month a few were buying weekly or daily required groceries only and a prior shopping list is preferred for monthly purchase, they also try to put a fair amount of effort in reducing the waste generation.

Individuals in general tend to underestimate their food waste when asked to provide information from memory. The amount of food waste generated varies from individual to individual, some people tend to produce more waste than others. Married men and women are more likely to generate less waste than those who are single. Youngsters generate more waste than the elderly, likewise, men and women who live on their own (hostels/separate apartments) tend to generate more food waste [32,33].

The results of the survey concerning the food items wasted are lined with the previous researches. Most studies indicate that the largest contributors to food waste are easily perishable items like fresh fruit and vegetables, followed by the bakery, dairy products, and eggs. This sequence of most discarded foods applies also for Lahore and Gujranwala. The most common reasons that lead to food wastage are: out of date/expired food, cooking too much food or poor portion management, plate waste or leftover in plates and food that looked, smelled, or tasted bad (bland food) [3,4,9,10,15,19,30-33,35-39]

As previous studies show that more food is waste when people exclusively buy/shop more than required and more frequently [31,40]. Our study showed most of the young people like to buy food items once a week, which

could be a major reason for most of the food items to be wasted. When using a shopping list, the amount of food thrown away per capita is lower [31]. The survey indicates that people who are more often drawn to special offers waste less food on average than people who are not interested in special offers [32,33,42]. This is explained by the fact that people tending to buy discounted products have a higher regard for food because they cannot afford to waste money [39,41]. This finding is backed by several studies, but there is also some empirical evidence for the opposite result in literature: Households that are attracted by special offers make more food waste because they are encouraged by retailers to buy more than they need [17].

Furthermore, more than 60% of the respondents in both locations stated that they care very much about food waste and try to avoid it whenever possible [7,8,20]. All in all, there are—apart from few exceptions—no major differences in the answers between Lahore & Gujranwala. This result strongly suggests that the attitudes towards the handling of and the regard for food are more influenced by social class and educational level than by different citizenship or townie.

XI. RECOMMENDATIONS

The results can assert that the research on food waste can contribute the ways to avoid food waste by individual efforts and behaviors. Moreover, future research should build on to explore food waste consumer behavior in greater depth as by means of household food waste sources and by focusing on specific contexts, foods, and segments.

Furthermore, online surveys, which are a very common survey method, do not reach people without the appropriate technical equipment and the relevant skills to use it. For these reasons lower-income classes, people with lower education levels, and the elderly (persons aged 45 years and above) are not adequately represented in many studies. Further considerations are much needed on how to overcome these barriers.

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