# Food Waste Management

## Background Of The Study

The food wasted across all developing countries is about 1.3 billion tones food is wasted globally each year, one third of all food produced for human consumption. This is staggering given that food waste creates serious constraints on essential factors of production such as energy and capital along with continuing stress on vital natural resources like land and water. The FAO identifies that, The amount of food lost or wasted costs 2.6 trillion USD annually and is more than enough to feed all the 815 million hungry people in the world about four times over. Now a huge difference is created at here, one to ten in per capita waste between the developing and developed countries. However, as the developing block contributes to more Than 40% of the global population, the difference in absolute waste is reduced to just one to two. Therefore a drastic trend is occur in food waste extends to societies where millions still suffer from hunger and malnutrition(diseases due to less feeding).

A recent report from FOA (2015) estimates that approximately 800 Million people around the world do not have enough food, and at that place the hunger and malnutrition create a great risk for human life. Black et al. (2013) estimate that under the nutrition in the aggregate including fetal growth restriction, stunning, wasting, and deficiencies of vitamin A and zinc with suboptimum breast feeding is a cause of 3.1 Million child deaths annually. If we can say in easy manner, we can say that around 1.3 Million tons or 32% of human produce is get wasted (FOA, 2011).

The situation in Pakistan is not very different : 60% of population food is unsecure, while 44%of children under 5 years are stunted(The Agha Khan University, 2011). According to media reports ( Pakistan Environmental Protection agency, around 40% of finish food get wasted(Dawn, 2016). For this, the risk of hunger and malnutrition is increase day by day so we need to pay attention and action.

The developed countries is slowly beginning to reduce the food waste management by starting different programs and making new polices. Organizations such as waste Resources Action program in the United State kingdom and Rethink Food Waste through Economic and Data (ReFED) in USA specialize in quantifying losses due to food waste and identifying the strategies to stop them. Even, the US Administration declared 2015 as the year against food waste and they just gave a lot of attention to this issue. However, if we talk about Pakistan the issue of waste management is not yet given due consideration. There is no any survey or study has conducted on federal or provincial level to quantify the amount of food wasted, both in household and restaurants and to develop any policy recommendations officially.

At the same time there are some unofficial organizations that works for poor and hungry people. Recently several non-profit organization just started there service as a volunteer in order to create awareness to this issue. One of the such organizations is a Rizq that is started by three students of LUMS(DAWN, 2015). They just working on wasted food in restaurants in Pakistan.

According to FOA(2011), the main the main reason of food waste in low-income countries are

mainly connected to financial, managerial, and technical limitations in harvesting techniques, storage and cooling facilities in difficult climate conditions, packaging and marketing systems.

## Research Questions

1. How much food we can save on daily bases?
2. Is this helpful to save our scarce resources?
3. Is this helpful for development in this country?
4. Can we increase per capita income by this?

### 1.1 Research Objective:

1. Find out the direct and indirect techniques to store the food in order to reduce food waste.

## Hypothesis Development

Null hypothesis: H0: “If food waste in Pakistan is zero, then people remain hungry”.

Alternative hypothesis: HA: “If food waste in Pakistan is zero, then no one remain hungry”.

## Significance Of Research

We can save a bulk of food because Pakistan is under developing country and most of the population having low income, and financial conditions are also not good and due to this per capita income is also very low in Pakistan so it can be helpful to save our scarce resources and we can spend our income at right place(development of country).

## Literature Review

### Theoretical Literature

A small amount of literature is available on food waste management due to the less attention on this topic in the past few years. Papargyropoulou, Lozano, Steinberger, Wright, and Bin Ujang (2014) examine the factor that are the main cause of food waste and they also propose the framework to identify the most appropriate options for the prevention of food waste and how to manage it. In first, through minimization of food surplus and avoidable food waste is the best option. The second best option is available the distribution of food among poor people or who cannot afford the best food. In the same case, ReFED (2016) makes collaborative effort between food businesses, government, farmers, consumers to not only quantify the food loss that arises from different sectors but also start various business activities in order to reduce the food waste. They just provide three food waste solution (i) food waste prevention strategies (ii) food waste channelization and recovery (iii) food waste recycling. ReFED (2016) reported effective demand forecasting and cold chain management could be the some of the best ways to prevent food waste.

### Empirical Literature

Food waste management is a dependent variable at here. So the other variables just as income, competition between different classes, attention, excess verity of food etc. are the independent variable. In this study, the binary logistic model (which have two possible answers) is used.

### Methodology Literature

This part of study describes the methods and sampling techniques used to calculate the food waste in restaurants in Pakistan specifically in Lahore. This research is the combined study of quantitative and qualitative methods. The first focus is on the quality and characteristics of the research, and the second focus is on the empirical aspects of the research. The research method chosen is always based on the motivation of the subject and the viewpoints and preferences of the researcher. In addition, there is another method, the hybrid method, which contains both qualitative data analysis methods and quantitative data collection methods, and focuses on economic and empirical aspects as well as theoretical evidence and academic opinions.

Innocent A. Jereme, Chamhuri Siwar, Rawshan Ara Begum, Basri Abdul Talib et al (2016) in this research only the point of discussion is only waste food management, energy management and energy making, and supporting government policies, in this research no one talk about hungry people and about removing poverty.

Sabinne Lee and Kwangho Jung et al (2017) this research is revolving around food waste pollution and environment because south Korea is developed country that’s why they does not have issues about poverty and per capita income of every single person is very high. In contrast, in Pakistan there are too many issues about poverty because mostly people are jobless and day by day hunger of people is in increasing.

## Methodology

On this topic only small amount of data is available and that is not sufficient for research because there is no any official research is conducted on food waste management in Pakistan that’s why there is need to collect data through both resources through primary as well as secondary. Secondary data is collected by recent secondary resources from books, newspapers, magazines and recent researches but primary data will be collected by different methods. The research is quantitative and deductive reasoning will be used to prove the already mentioned hypothesis (chapter 1) true or false.

## Research design

This is exploratory research because there is no any large amount of data is available about this type of research, now this is conducted informally. This study will be combination of two designs Descriptive and exploratory. Data will be collected through Questionnaire to relation of variables with each other.

## Data Collection

This research is based on both types of data quantitative and qualitative and different methods are used for data collection in this research primary data collection is done by survey sample and questionnaire design and structured interviews.

## Survey Sample And Questionnaire Design (Quantitative)

Pakistan is an under developing country but we have a lot to restaurant chins here but all the restaurant are not licensed by PFA (Pakistan food authority) but this research choose only 20 restaurants that is licensed by PFA and design the questionnaire for those restaurants in order to collect quantitative data.

## Population and sample size

All the restaurants and consumer in Lahore is the population, from all of these twenty restaurants and hundred consumer is selected as a sample.

## Sampling techniques

Researcher use the data that is gathered by snowball sampling technique this technique does not depend on probability that relies on facts only. i.e. in this technique a researcher or interview host call a person and collect data and that person provide the number of three further contacts and that contacts we select for interview and those three provide further nine and this chain is extended according to the sample size or according data we need.

## Statistical Analysis

In the research study data will be analyzed using SPSS and MS excel.

## Conclusion

In the final step of research, we find the result why food waste is increase day by day and how to fulfill the hunger of nation. And what will be the best preservation and storage methods.

In the era of nineties(1900’s) the ratio of food waste is very low due a small population but with the passage of time the waste is increase. If we talk about other countries they are working on it and making new strategies in order to reduce food waste specifically japan.

A Gantt chart is a type of bar chart that illustrates a project schedule, named after its inventor, Henry Gantt, who designed such a chart around the years 1910–1915. Modern Gantt charts also show the dependency relationships between activities and current schedule status.

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