Resolving Food Wastage using 'House of Quality' – Experiment at a Residential School in India

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'House of Quality' *is a conceptual tool for mapping attributes from one phase of the design process to the next. It helps to understand the role of different entities, the general flow and the type of information within the design process. However, there is a drawback with the potential to affect decisions earlier in the design process so that later failures of the product are unlikely to be traced. We discuss these limitations and explore its effect empirically as tested on food consumption at a residential school. Relevant data (primary and secondary) allows for both a qualitative and quantitative analysis. Several quality parameters which affect food consumption are identified for developing the 'House of Quality' through which the main factors leading to the deterioration of quality standard are identified. Descriptive statistics were used to determine the reasons for food wastage. Regression Analysis was used to see the effect of the Food Waste Reduction Practice (FWRP) model developed on the overall result at a residential school Mess in India.*

Keywords: Quality Function Deployment (QFD), 'House of Quality' (HOQ), Voice of Customer (VOC), Customer Needs, Product Development, Food Wastage, Performance Measures, Survey.

1. Introduction

Quality Management has set standards for most industries across the globe. Proper resource allocation and cost-effectiveness are necessary while performing any task, whether to be a simple task or involve complex processes. The aim is to improve the quality of the end product. Sectors including aviation, manufacturing, transportation and logistics and pharmaceutical industry set very high-quality standards. The slightest change in these measures can render the processes and functions imperfect, and can even endanger human life. Quality function deployment (QFD), "a globally admired quality management philosophy-cum-tool to improve quality, reduce development and pre-production costs, increase organization capabilities, and make the business sector/industry more competitive". QFD seeks to improve the quality of the products, thus aiding fast decision-making about the final product.

In the following sections, we first analyze the QFD process for its benefits and disadvantages. Next, for purposes of experimentation, a QFD is proposed and constructed for a residential school Mess Facility in India. Food safety in an Indian environment will be surveyed to collect primary data for exploratory purpose wherein 'food wastage' is growing at an alarming rate globally and calls for thoughtful attention. Employing the QFD tool, will serve two-folds first in re-

assessing the disadvantages of QFD and secondly in ensuring that the tool thus developed ensures a quality system that mitigates food wastage thus improving the quality of food supplied.

2. Quality Function Deployment

Quality function deployment was established in the early 1970s at a Japanese shipbuilding firm. It migrated to the Japanese auto industry and then to the US auto industry by the mid-1980s. Its objective was to provide a systematic way of dealing with the various complexities and trade-offs inherent in design decisions faced by product developers. The goal of QFD is to translate customer demands into target values for the product characteristics. Hauser and Clausing (1988) describe 'House of Quality' as a conceptual map which provides a means for inter-functional planning and communication. Many QFD practitioners believe that QFD is best carried out by a cross-functional team who complete one or more of a series of matrices which lead to insights about how best to create a winning product or service and how to prioritize their research and development activities. Today, it is used in almost every type of industry and application conceivable – be it a product or a service, and consumer (B2C) or for commercial (B2B) purpose (Hauser 1993).

Several benefits are derived by the use of QFD, such as 1) permitting teams to prioritize the developmental activities in a systematic and analytical way that puts the customer first, 2) allowing cross-functionality the support of all major functions within the organization in an orderly participative way toward a common view, 3) provision for "audit trail" for all project participants, and 4) allowing stretching the team's thinking as to which activities are most critical toward creating a winning product or service (Hauser and Clausing, 1988). Fung et al,. (2003) indicate that the use of QFD results in "achieving maximized overall customer satisfaction". Although the use of QFD can improve the design and minimize manufacturing costs, questions whether QFD indeed leads to "better" products, as is often claimed, have been raised.

Quality function deployment's main component, the 'House of Quality' (HOQ), is used both as a stand-alone tool (Kaldate et al., 2003) and as an integrated tool in the larger design processes (Olewnik et al., 2004). By utilizing QFD, the product development fulfils the customers' needs (Hauser and Clausing 1988; Bergquist and Abeysekera 1996). At its root, the HOQ is a conceptual tool for mapping attributes from one phase of the design process to the next. It allows a clear flow of information on a node-by-node basis in the design process from the identification of a "perceived need" node through the "manufacturing" node (Marson and Sartor, 2019).

A limitation of the HOQ is with the probability to affect decisions early in the design process, that later failures in the design or market success of the product are unlikely to be traced. This limitation results from the attempt to specify quantitative relationships in the mapping of customer attributes to technical attributes, i.e. mapping from the "perceived need" node to the "specification" node. Another disadvantage is that a QFD exclusively focuses on quality and interrelated metrics while overlooking other factors such as cost, product lifecycle, strategy and a company's strength in technology potentially leading to trade-offs and resulting in a product that is not optimally designed. Olewnik and Lewis (2008) highlighted HOQ's flaws, such as the designers' interpretation of HOQ results is viewed as a

critical limitation of the method, which can lead to invalid and poor decisions (Wolniak, 2018).

A successful QFD requires market surveys to gather insights and perceptions of customers. Moreover, much depends on the effectiveness of the survey process. If the questionnaires do not collect the right information such as the wants, needs or 'wow' factors; the customer contentment will be missed. Additionally, focusing on intangible statistical results, which are not the real representations, can harm the product design. Further, the consequences of inaccurate survey results have to be taken care of, if the organization carries out QFD practices. Another shortcoming with QFD is the hypothesis that the customer needs can be captured, documented and remain stable over the duration of the process. As 'customer-need', may change without notice adapting to a dynamic market gets complex and confusing. Hence a QFD can only complicate matters further.

Carnevalli and Miguel (2008) and (Wolniak, 2018) have reviewed numerous articles on QFD and identified many of its tangible benefits and difficulties. Methodological difficulties include making matrices, matrix-size and difficulty generated by the product to be developed more prominent. External difficulties include lack of support of upper management, company structure, lack of focus on the project, lack of knowledge about the product, difficulty in identifying clients need and lack of QFD team engagement. Research is needed on how to reduce the difficulties of using QFD. Refining the QFD and the HOQ is an ongoing effort. Methodologies to improve the HOQ end results have been proposed. This includes applying fuzzy-logic, neural networks and Taguchi method (Bouchereau and Rowlands, 2000); checking the internal consistency (Shin et al., 2002); employing fuzzy-logic upon the imprecise nature of relationships (Ramasamy and Selladurai, 2004); and adopting new techniques, like AHP and fuzzy algorithm along with QFD to conclude towards the quality of the end-item (Oke, 2013)

3. Food Wastage

The Global Food Safety Initiative was established to continuously improve food safety management systems and ensure confidence in the provision of safe food to consumers worldwide (Deininger and Sur, 2006; Neff et al., 2015). The GFSI-recognized quality certification schemes (currently including BRC, IFS, FSSC 22000, Canada Gap, Global GAP, Global Red Meat Standard, Global Aquaculture Alliance Seafood Processing Standard, Primus GFS, Safe Quality Food) are all representatives of the 6 Sigma quality approach (World Bank, 2005).

Food wastage, the world over is growing and calls for serious attention. As per, the Sustainable Development Goal 12 at Food and Agriculture Organization (FAO) at United Nations (2017), 1.3 billion tons of food is being wasted every year while almost 800 million people go hungry. The alarming rate at which food is being wasted is not only harming the economy but the ecosystem as a whole. Increasing food wastage is creating about 3.3 billion tons of ozone-harming gasses, subsequently extremely upsetting nature.

Developing countries including India are paying increased attention to food safety, because of the growing recognition of its potential impact on public health, food security, and trade competitiveness. Rising incomes, a growing middle class, increased urbanization and literacy, and a population highly tuned to international trends are creating a large consumer base, thus increasing the importance of food

quality and safety. Improving food safety systems, to meet domestic and export requirements, however, faces policy, regulatory, infrastructural and institutional obstacles.

According to Mandapaka and Kukkamalla (2015), food wastage can be reduced through innovation and research. The aim should be on producing food in appropriate quantity as necessary. Producing excess food generates waste that contaminates the environment (Baran and Yıldız, (2015). QFD structure for the design of products and services at a Fast Food Restaurant has substantiated that implementation of a reliable system in food and beverage management has a positive effect on the image for the company. In other studies, Costa et al., (2001), Joshi et al., (2013) and Pai et al.,(2016) have utilized QFD for identification, prioritization and determination of consumer requirements to help eliminate wastage. The model identified the significance of recognizing signs of waste or what's in the waste HOQ. Lee and Lee (2012) have used (what?) to find out the quality factors for the development of a food waste disposer, which reflects the needs of the consumer. The HOQ built shows the correlation between consumer characteristic and engineering characteristic (written by investigating the consumer needs based on consumer complaints through a survey).

Lipinski et al. (2013) discussed the detrimental effects of food wastage on economic and environmental aspects. The economic aspects represent wasted investments leading to decreased farmers' income and increased consumer expenses, while the environmental aspects lead to greenhouse gas emissions and inefficient use of water and land. They also suggested that such big inefficiencies suggest big saving opportunities and the possible approaches which can be followed to counter food wastage.

Parfitt et al., (2010) have reviewed global food wastage in relation to prospects of feeding a population of 9 billion by 2050. There exists a significant gap in understanding food wastage implications of the swift development of BRICS nations. Results indicated that losses were much higher in the post-harvest stage in developing countries and that too of perishable foods. Lagorio et al., (2018) demonstrates an operative initiative to reduce food waste with limited investment from production and storage down to cooking and consumption; by leveraging the involvement of stakeholders at a school canteen in Italy. In the same way, Ahmad (2015) describes the conceptual model developed to capture satisfaction and customer retention (dependent variable) interlinked with food quality and service quality. He further elaborates the food quality under five different dimensions viz. fresh, delicious, nutritious, variety of menu items and the smell of the food and also service quality related to five specific aspects namely, tangibles, reliability, responsiveness, assurance and empathy. Again, Kowalska et al., (2018) shows how customers' voice can be picked up in order to reduce development and manufacturing costs, improve product quality, provide features that satisfy customer needs, and reduce development time for designing high-quality products of the food industry. They have adopted a new approach by extending the quality function deployment matrix beyond the house of quality.

The need of the hour, thus, is to formulate strategies to counter the increasing rate of food wastage in a country like India (Caswell, at al., 1998; Bhandari, 2017). This paper utilizes the QFD methodology to conduct a structured survey for developing

the HOQ to understand the factors on which the quality of food could be enhanced and how important are the factors to mitigate food wastage.

4. Research Methodology

A study was conducted to explore factors which could be countered to mitigate food wastage at a private residential school's (attached to an upcoming private University) Mess facility in India. The number of Mess facility users is 1500 persons per day. While mess facility users can be both vegetarian and non-vegetarian; the food supplied is vegetarian; however, eggs and egg-based products are also served on the menu. Regular mess-working policies, including refrigeration and return to freezer, food storage and discard policies, food prep-work conditions, personal health and hygiene of cooks and food inspector checks, are adopted and in place. The study was undertaken to explain how quality management can reduce food wastage by developing a QFD. The "What" and "How" parts for the 'House of Quality' were determined by a survey. The data for this study were collected from 163 student paper responses, of which 140 student paper responses were complete (Nulty, 2008) at the campus of diverse demographic origin (refer to Table 1).

Table 1 *Sample Demographic Characteristics Source: Compiled by Researchers*

Profile of the Respondents	**Number**	**percent**
Under Graduate Students	60	43
Post Graduate Students	40	29
PhD Scholars	10	7
Faculty	20	14
Visitors	6	4
Parents	4	3

A questionnaire (Annexure-A) was structured to bring out the major factors which would help to mitigate food wastage at the facility. The questionnaire was designed keeping in mind elements such as the number of students residing in the school residences, average number of students taking meals during workings days and weekends, menu varieties, Mess atmosphere, food safety and quality standards. Each question depicted a factor relevant for mitigation of food wastage; ranged from personal details to individual tastes and preferences, type of menu, hygiene and ambience of the Mess. The respondents were not asked about back-end processes like procurement and supply chain operations. Some respondents were current or former Mess committee members, and that provided relevant inputs from both theoretical perspectives as well as practical quality management parameters for optimizing food usage on the campus. The results of the questionnaire were used to analyze and identify common themes for building the HOQ. Carefully chosen Factors identified for "What" of HOQ and "How" of HOQ are listed at Table 2.

Table 2 *Factors Identified for "What" of HOQ and "How" of HOQ*

Factors for "What" of HOQ	**Factors for "How" of HOQ**
• Taste of Food	• Estimate the no of students (quantity)
• Freshness of food	• Expert chefs for special food items
• Temperature of Food	• Quality of raw material
• Food Variety supplied by the Mess	• The condition of machines/equipment
• Offers by the nearby food corners	• Optimize the number of items

• Availability of Nutritional food • Combination of food menu • Waiting time at the mess	• Availability of Food at the counter

5. Presentation and Analysis of Data

Out of 18 questions, depending upon the weight marked by the respondents, we used eight factors to develop the *"What"* and six factors to develop the *"How"* of HOQ Table-1 above. Of the total respondents' majority were male respondents. It was found that the maximum weight was given to Taste of Food, Freshness of food and Temperature of Food.

1. As per the survey, 92 per cent of the users indicate that plate waste contributes to maximum waste.

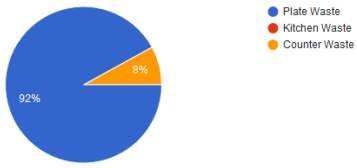

Figure 1 *Plate Waste vs Maximum Waste*

2. Lack of taste is the most important factor among the students for the creation of plate waste.

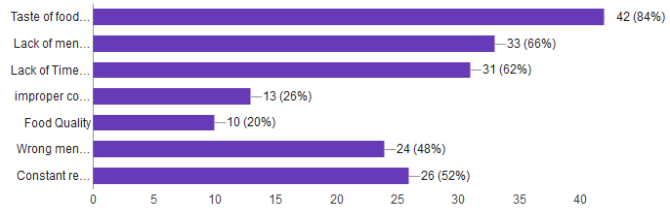

Figure 2 *Factors for the Creation of Plate Waste*

3. Food appearance and counter hygiene is most critical factor among students for the creation of counter waste.

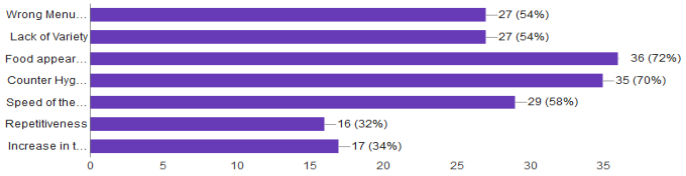

Figure 3 *Factors for the Creation of Counter Waste*

4. The Mess Facility provided us with data on food wastage for a period of one month. Based on the data, we created a dashboard. Filtering analysis indicated

that maximum food wastage occurs on 'Wednesday'. It substantiates the reason that mess users prefer to eat out in the nearby restaurant's non-vegetarian meals as most mess facility users observe a fast (religious purpose) on Tuesday. The below graph clear depicts it.

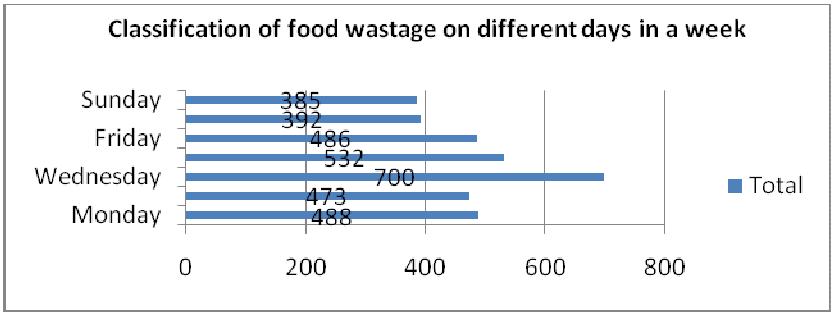

Figure 4 *Factors for the Creation of Plate Waste*

5. The second graph created using the data given by the Mess Facility indicates that the majority of food wastage quantity ranges from 101-125 Kg, followed by 126-150 Kg, where 1500 school residents avail Mess Facility per day.

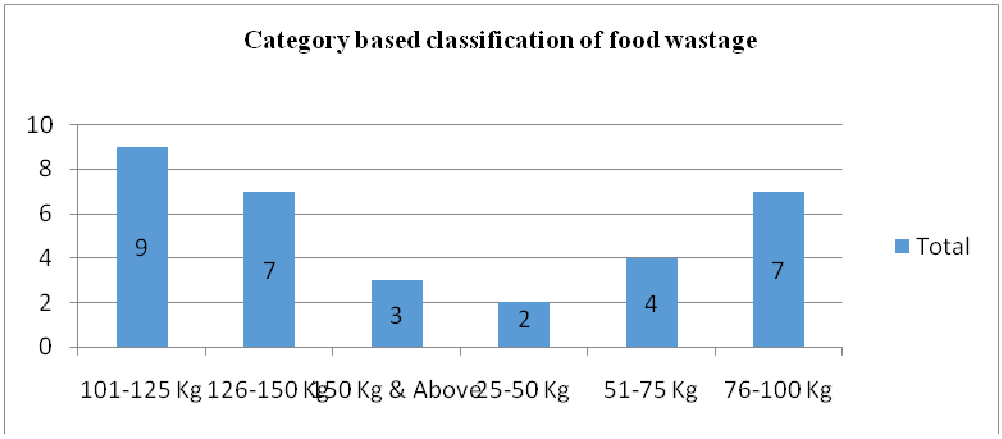

Figure 5 *Category based Classification of Food Waste*

6. Regression Analysis

It is clear from the demographic profile of the sample that 43 per cent (undergraduate students) were using the School's Mess facility. A regression model was developed based on the data collectionfrom140 respondents. The dependent variable used in the model was Food Wastage Reduction Practices (FWRP) and tried to identify the factors contributing at most towards the food wastage in a mess. It is indicated through the questionnaire and 'House of Quality' (HOQ) that the following six factors are the most reasonable causes of food wastage:

- Taste of food
- Food Quality

- Wrong Menu
- Lack of time due to the class schedule
- Constant Repetition
- Lack of menu variety.

The dataset was analyzed using the SPSS Statistical tool. Stepwise regression analysis is used to find and present the most statistically significant regression equation that fits the data well. It is evident from Table 3A that there was a high degree of the correlation value of 0.97 for food wastage reduction practices at School Mess when the independent variables were a taste of food, quality of food and combination of the food menu.

Table 3A *Model Summary*

Model	R	R^2	Adjusted R^2	Standard error of estimate	Durbin Watson Statistics
1	0.98	0.96	0.89	0.26	
2	0.97	0.95	0.90	0.25	2.77

Notes
Model 1: Predictor: Constant, Q4, Q6, Q9 and Q18;
Model 2: Predictor; Constant, Q4, Q9 and Q18; Dependent Variable: Q2
Source: Compiled by Researchers

Further R-square value in Table 3A is 0.95, which is significantly significant in explaining the food wastage by three factors - Taste of food (ToF), Quality of food (QoF) and Combination of food menu (CoFM). The regression model developed is based on these independent variables and dependent variables 'Food wastage reduction practices' (FWRP). The statistical results are at Table 3B. From the ANOVA Table 3(b), it is very much clear that model 2 seems to be fit, as it shows the p-value less than 5 per cent (i.e. 0.05).

Table 3B *ANOVA Output*

Model	Parameter	Sum of	The degree of	Mean Sum of	F-	Significance
1	Regression	3.62	4	0.904	12.73	0.202
	Residual	0.071	1	0.071		
	Total	3.69	5			
2	Regression	3.93	3	1.31	20.79	0.046
	Residual	0.126	2	0.063		
	Total	4.056	5			

Notes
Model 1: Predictor: Constant, Q4, Q6, Q9 and Q18;
Model 2: Predictor; Constant, Q4, Q9 and Q18; Dependent Variable: Q2
Source: Compiled by Researchers

The statistics outcomes of the responses were found to be in line with the qualitative responses received from the respondents. As mentioned above, the food wastage reduction practices at the School Mess was governed by three factors shown

in Table 3C. This reinforces that there is a need for improving the taste of food by employing trained staff and proper menu planning and along with the maintenance of the quality of food, in order to reduce the wastage. The same fact is substantiated by regression analysis (with the help of Model 2 having p – value less than 5% - as shown in Table – 3C), observed at the time of constructing the 'House of Quality' (HOQ).

Table 3C *Study of Regression Coefficients*

Model	Parameters	Unstandardized Coefficients		Standardized Coefficients	t- value	Sig.
		B	Standard Error	Beta		
1	(constant)	0.214	0.85		.025	0.83
	Q4	-0.63	0.11	-1.16	-5.19	0.12
	Q6	0.25	0.18	0.24	0.87	0.50
	Q9	0.18	0.19	0.27	0.88	0.53
	Q18	1.42	0.58	1.01	2.40	0.23
2	(constant)	-0.097	0.73		-0.12	0.90
	Q4	-0.67	0.11	-1.32	-6.06	0.02
	Q9	1.86	0.32	1.62	5.78	0.03
	Q18	1.75	0.35	1.28	5.87	0.04

Dependent Variable: Q2
Source: Compiled by Researchers

From the Coefficient Table 3C, the regression equation has been found to be
FWRP = -0.097 – 0.67 (ToF) + 1.86 (QoF) + 1.75 (CoFM)
Where; FWRP = Food Wastage Reduction Practice;
ToF = Taste of Food;
QoF = Quality of Food;
CoFM = Combination food Menu

Table 3D was used by the authors to conclude that the regression equation fits the data well and predicts the dependent variable significance, like the Significant value < 0.05 (5 per cent significance value).

Table 3D *Results of Regression Analysis*

R- Square	0.95
Adjusted R –Square	0.90
F – Value	20.79
P- the value of the overall model	0.046

Source: Compiled by Researchers

7. Implications and Recommendations

As inferred from the HOQ, factors such as taste, freshness and temperature of food matters the most to the respondents. Also, after developing the HOQ, we find few factors such as "Expert chefs for special food items", "Condition of

machines/equipment" and "Optimize the number of items" which could be focused upon in order to improve quality in order to mitigate the food wastage.

Next, as seen in the HOQ, Taste, Freshness and Temperature of the food were the prime factors considered by the respondents. If these factors were taken care of, the students would likely consume food served at the Mess, thus countering food wastage. Attention to other factors from the Mess Facility side such as meal estimation, the presence of expert chefs for special dishes, the condition of machines, quality of raw materials, would smoothen the kitchen flow processes, and reduce food wastage of food by optimizing waiting time.

Food wastage is high when there is any fest or other big events on the campus. This is mainly due to the operation of various food trucks and stalls. As a result, the Mess Facility staff faces difficulty in demand forecasting on these days due to constant fluctuations in several students having food in Mess. This leads to an increase in counter waste. Food wastage, as seen, is maximum on Wednesday, thereby directly establishes the fact that they are wrong in forecasting the actual requirement of food served in a mess. [Through Question No. 1, 2, 11 and 13].

Lack of hygiene in the Mess caused by the entry of animals (such as stray-dogs and others rodents) is also another factor why students are skipping meals served in the Mess. Cleanliness of the plate is another critical factor that demotivates students from having food from the Mess [Through Question No. 12, 13, 14 and 15].

Plate waste also increases due to hectic schedules as students' rush and consume only a portion of the meal served in the plate. On certain days' foods, wastages are high due to restricted menu combinations and less preferable menu variety. Constantly fluctuating cooking quality and repetition of the menu is another factor behind food wastage. Counter waste also increases due to the high waiting time.

Lack of proper and healthy nutrients is also another factor why students skip a meal in the Mess. Poor quality of materials used in food also increases the waste as it creates a negative impact on overall taste and appearance. Increase in a number of counters due to special conferences, and guest lectures also lead to food wastage as it is difficult to forecast the demand based on consumption patterns of delegates, visitors and students involved in these events. Through Dashboard analysis, it was found that maximum food wastage occurs on 'Wednesday' based on given samples of 30 days when food wastage frequently ranges from 101-125 Kgs.

The regression results that the reduction of food waste appears to be affected by several drivers and grouped under various themes. Reduction of food wastage could be achieved by improving the taste and quality of food as both these factors are positively related. However, the combination of the food menu is negatively affected the food wastages that means higher the variations in the menu variety; chances are there to have less food wastage in a mess. Management and policy-making interventions can help in reducing food wastage, especially during the event time.

8. Recommendations as per Identified Drawbacks

Analyzed from the literature on QFD, and in line with the identified drawbacks following are the recommendations

1. Implement a standard quality framework for procurement of daily raw materials and food ingredients. Also, ensure that the quality framework is met by the suppliers.

2. Closely keep a watch on eating pattern and menu combination and variety on 'Wednesdays' to identify the reason behind mass wastage of food.
3. Invest in latest and sophisticated plate cleaning technologies.
4. Ensure counters are constantly cleaned. Restrict entry of animals (dogs or cats, squirrels) and other rodents through the implementation of strict hygiene and cleanliness policies. Also, implement penalty policies for those found littering in the Mess or allowing entry of animals.
5. Ensure that chefs are properly trained to ensure standardization in the cooking of similar cuisines to avoid fluctuation in taste and overall food quality (Stanka et al., 1999).
6. Take regular student surveys to ensure the most appropriate menu combination and variety. It will also help the Mess Facility to avoid repetition of certain cuisines constantly.
7. Procure special counters with appropriate size on the basis of the scale of the conferences and guest lectures to minimize wastage. Special counter sizes on the basis of scale are required as Mess Facility is forced to use filled large counters during the events with small footfall, which leads to the creation of food wastage.
8. For each mess, consider having a separate counter to provide food for refilling plates. This will avoid students who take extra food, from waiting in the long queue.
9. The survey responses indicate that many students are not happy with the taste of food and the repetition of the menu. Therefore it is suggested that variety is offered in the menu to reduce the food wastage. The same fact is also highlighted after conducting a regression analysis on the data set. It's due to the p-value arrive in the second model of regression ($p= 0.046$ just approximately equal to 0.05 the level of significance taken into consideration).

9. Conclusion

The HOQ created proves that the taste of the food and cleanliness of the Mess Facility is the major factor behind food wastage (Figure-6). Other leading factors include the speed of service, menu combination, cleanliness of the plate. Food stalls and trucks operating on campus due to frequent events make it difficult for the Mess Facility (operator) to accurately forecast footfall in the Mess leading to an increase in counter waste. This study on food wastage at a Mess Facility of a residential school emphasizes that proper and agile planning, adopting strict hygienic policies including refrigeration and storage of food, return to the freezer or discard policies, personal health checks; can reduce food wastage significantly. For this, frequent surveys among all stakeholders need to be conducted.

This will also enable Mess Facility to enhance demand forecasting daily for each meal. Mess Facility team should also experiment with a various combination of demand forecasting techniques such as Delphi, Naïve Forecasting, Moving Average, Executive Opinion, etc. to come up with a most optimum solution. Mess Facility should adopt lean and 6 six sigma practices to increase its overall efficiency and effectiveness to improve its speed of services. Awareness drive has to be done among the students and staff to reduce the food wastage through telecasting various videos related to food wastage in the Mess and how it can create a negative impact in a country like India were large population still has no access to the food.

Therefore, optimization of wastage is essential for feeding others who have no access to food and from the company's perspective it can reduce the daily cost of operation increasing the profitability. The conclusions motivate for improving the conceptual soundness of the QFD tool for supporting design. In the authors' view, the QFD method has the potential to overcome most of the limitations and go beyond conceptual mapping.

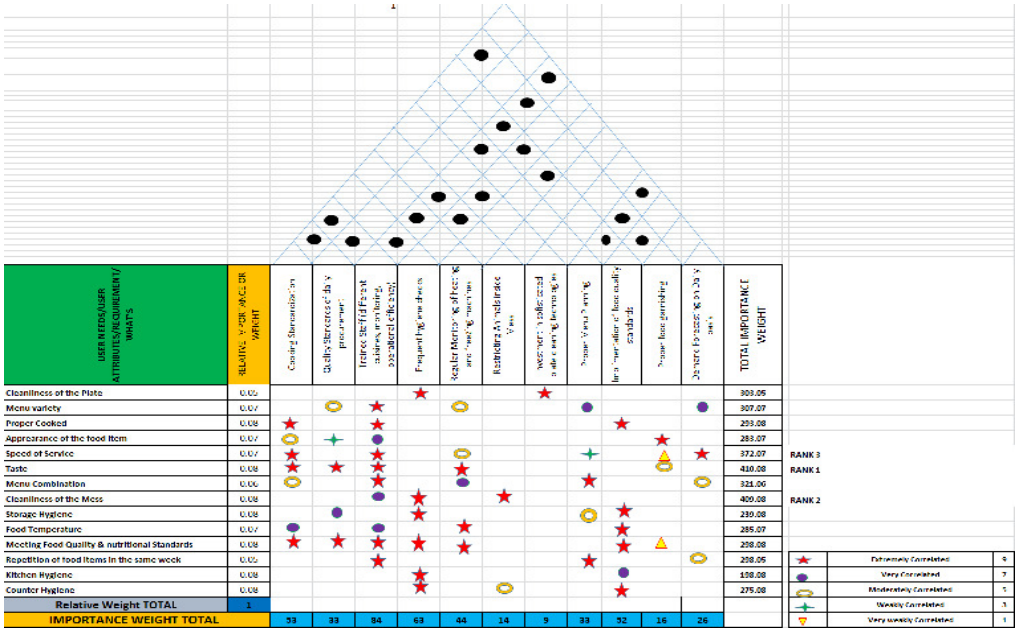

Figure 6 *QFD for Mess (Author's view)*

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11. Annexure-A: Survey Format

Following were the research questions:

1. Where do you think Mess Facility's food wastage come from?
   - Counter Waste
   - Plate Waste
2. What are the major reasons for the Plate waste?
   - Counter Waste
   - Plate Waste
3. What do think are the reasons are the counter waste?
   - Lack of Variety
   - Counter Variety
   - Speed of Service
   - Increase in the number of counters due to multiple events at the school.
4. What are the major reasons for the Plate waste?
   - Taste of Food Item
   - Food Quality

- Wrong Menu Combination
- Lack of time due to the class schedule
- Constant repetition
- Lack of menu variety

5. How much does taste matter to you?
6. How much does variety in menu options signify to you?
7. Do you think that the food is properly cooked?
8. How does the appearance of the food attract you?
9. Rate the food quality standards of Mess Facility
10. Rate the kitchen hygiene on campus run by Mess Facility
11. Rate the counter hygiene on campus run by Mess Facility
12. Rate the storage hygiene on campus run by Mess Facility
13. How much does the cleanliness of the Mess matter to you
14. Does the temperature of warm/cold food important for you?
15. Rate speed of service.
16. How often do you prefer to have a similar set of menus in the same week?
17. How clean are the plates given by Mess Facility to students?
18. Is the combination of food items served important? Rate

Note: Rate scale in the survey ranges from 1-9 with1 as most satisfied and 9 as most dissatisfied.

About Our Authors

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