

# Assessment of Student Satisfaction and Managing Facility Towards Price, Service, and Quality of Food in Female Hostels, University of Agriculture Faisalabad

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**Abstract:-** The impact of several service qualities on university students' overall satisfaction and perception level was investigated in this study. The main goal of this study was to evaluate the hostels' sanitary conditions, food handling and safety methods, and the expertise of workers working in the hostel's mess hall in order to prevent food-related disorders and diseases. A survey was carried out at four different University of Agriculture Faisalabad dorms, designated R1, R2, R3, and R4. Total plate count and swab test were used in the laboratory to analyze the microbial content of the hostels' water, crockery, and foods. For the microbiological analysis, a total of 16 hostels were sampled. A questionnaire was also created, with a sample size of 150 participants. Student satisfaction with several service quality and food quality features was average, according to the findings. Furthermore, all aspects of service and food quality were discovered to have a significant and beneficial impact on total student satisfaction. The basic parameters of the questionnaire were quality of food, service quality, atmosphere of mess hall, employee behavior and price of food. The highest mean values of TPC observed in water were  $604.67 \pm 4.10$  respectively. The highest mean values of TPC observed for crockery were  $111.33 \pm 3.02$  respectively. The highest mean values of TPC observed in food samples were  $5771.3 \pm 1.5$  respectively. According to the results of the survey, mess halls had difficulty in implementing hygienic conditions among employees due to poor levels of knowledge among some staff members, and microbiological contamination was also discovered in dormitory mess halls. Following the study, the staff was given some advice to help them improve their hygienic conditions and food handling methods in order to prevent food related illness incidents among students.

**Keywords:-** Swab Test, Total Plate Count, Mean Value

## I. INTRODUCTION

Universities are places where students learn and exchange their expertise. Students require healthy food to fulfil their nutritional demand. Food is a substance that is

necessary for the body to sustain energy to do work and study hard. Moreover, food is not only required for energy intake but also it acts as a fuel for brain to alert and concentrate on their studies and produce positive result and extra ordinary performance, that's why more nutritious and hygienic food is required (Drummond et al. 2001). Providing good quality food to the universities is important for good health of students. In this century, most of the operations regarding food service in universities are subcontracted that's why the food operators from outside the university serve their food to the students to run their business (Kim et al. 2009).

There are a lot of factors which determine the perceptions about food service quality being provided in campus. Dinning frequency is greatly influenced by the atmosphere, service, menu, quality and price. If regular basis surveys are conducted to investigate the service and quality of food, then you would bring about positive impact among student satisfaction level. The dinning frequency will be enhanced only if the students are satisfied with the provided food facility. There would be a negative perception about provided food facility if the food facility is under less beverage's options, high price, un-hygienic food and poor service quality (Smith et al., 2020).

Service quality is most important in any business to attain good returns and develop customer's satisfaction level. Many researchers have conducted studies regarding service quality, money value, selection of food and ambience of foodservice area in university (Joung et al., 2016; Dollah et al., 2012; Tudin et al., 2010). The perception of students about the quality of service depends upon two factors which are student's satisfaction and their intents in behavior. The behavior of the staff is key factor in attracting the customers even they can compromise one other issues. Manners plays vital role in food service industry customer forecasting (SAGLIK et al. 2014).

Different sorts of goods ingested through various processing methods are more likely to be contaminated, causing buyers to become ill. It is primarily caused by food processors that lack knowledge of how to create healthy and

clean-living habits. In study conducted by Hasyim et al., only 20% of the 10 sources were wearing aprons, and around 90% of witnesses had clean hands, nails, hair, and clothes, according to observations and in-depth interviews. Seventy percent of people wash their hands but don't use cleanser, while the other thirty percent don't wash their hands at all when handling food. Not all food-related sources make use of equipment (Hasyim et al., 2014). Due to poor hygienic standards in food preparation, handling, and storage, microorganisms which may include Salmonella as well as Campylobacter, and other agents which are transmittable, are more likely to be transmitted (Fielding et al., 2001). Furthermore, sick food workers can pose a serious risk of a foodborne outbreak (Munir and Ali, 2019). Acute diseases like vomiting and diarrhea can be caused even by acute inception due to a vastly infectious pathogen called Norovirus (WHO; 2008).

The effect of housing and atmosphere provided in university is a key factor in shaping students life that's why it's been a substantial research and study topic. Thus, it is evident from the research studies that modest environment has positive impact in students' life while filthy environment results into negative outcomes. (Bekurs, 2007). At the University of Alexandria in Egypt, 543 students were polled on their satisfaction with various quantities of food as well as beverages for determination of the quality of food, beverage, service, pricing, and value. Student's satisfaction was under average with different service attributes but overall response of student satisfaction was positive (El-Said and Fathy, 2015). In region of Malaysian universities, students had negative impact of perception level of different facilities due to expectation with product quality, service quality, price of foodservice and value to technological application. Moreover, Students prefer to buy meals from outside the university because these meals are not as expensive as compared to university meals (Othman et al., 2013).

It has been more difficult to ensure the student satisfaction level with food services provided in university cafeterias due to many factors which may include increase in number of enrollments, economic conditions as well as limited options for students regarding food services in college due to its captive nature. Moreover, there are numerous challenges that a catering service provider in university has to face including student's culture difference, different dining habits and now they have been restricted to the campus so having limited options (Joung et al., 2014; Choi et al., 2013). The alleged factor is a forecast of the satisfaction of the customer, given that if the perception of the value service is good than the satisfaction of the customer will also be good. Consequently, the satisfaction of the customer interconnects with the price and value for money. Other attributes conducive to the dining of the customer practice and the different menu choices and environment also attract them to return back (Joung et al., 2014). In order to compete successfully, business employees should meet the needs of the customers. Customers that are satisfied will repurchase and spread favorable word of mouth about the company (Liu et al., 2016; Yu, 2007).



(Liu et al., 2016)

Fig 1 Effect of Customer Satisfaction on Food Business

For this study, the data was collected from UAF hostels. Data was collected by using professional questionnaire from targeted 150 students and after that data was analyzed statistically. A variety of priority of student's perception and satisfaction towards hostel was tested for its relationship with variables like hostel mess hall quality, service quality, the atmosphere of the mess hall, quality of food in the hostel, behavior of the staff with the students, price and other facilities. It was also explored that whether having perception and satisfaction, the variables have shown a positive impact on UAF hostel's performance, and challenges and barriers harm the performance of the hostels of UAF. All these variables are shown in this conceptual framework. The study conducted on service quality, satisfaction as well as loyalty has shown domination the services literature up to this point. These debates have centered on both operational and theoretical issues, with a focus on identifying the links between these entities. Researchers' work and discussions have enabled us to distinguish between these three conceptions, leading to a developing consensus on their interrelationships. There is little doubt that improving customer happiness and perceptions of service quality leads to more desirable outcomes.

## II. METHODOLOGY

### ➤ Area of Selection

The detailed research on student's perception and satisfaction has been conducted to explore the mess hall quality, service quality, atmosphere of mess hall quality of the food in hostel and behavior of the managing facility and mess hall staff with the students that student's perception and satisfaction to show their understanding in the hostel. At the same time, this research also uncovers the barriers and challenges that the student's perception and satisfaction from exploitation of perception and satisfaction. The data was collected from female hostels of UAF. The impression of different features was analytically assessed on the choice of satisfaction and performance of their three hundred respondents were undertaken. The researcher handed the questionnaire to the students herself at the end of lunch and dinner in mess hall.

The data was collected through self-administered questionnaires. This questionnaire consists of two portion one is about the student's information and hostel name and second about the information of mess hall quality. Likert scale that was used ranges from 1-5 "Excellent" to "unsatisfied" (1: Excellent 2: Satisfied 3: Neutral 4: Moderately satisfy 5: Unsatisfied).

For the purpose of this study the data was collected from UAF hostels. A well-structured questionnaire was used to collect data from targeted 300 students and after that data was analyzed statistically.

- **Conceptual Framework:**

In this research, a variety of priority of student's perception and satisfaction towards hostel was tested for its relationship with variables like hostel mess hall quality, service quality, atmosphere of mess hall, quality of food in the hostel, behaviour of the staff with the students, price and other facilities. It was also explored that whether having perception and satisfaction, the variables have positive effect on the performance of the hostels of UAF and challenges and barriers have negative effect on performance of the hostels of UAF. All these variables are shown in this conceptual framework.

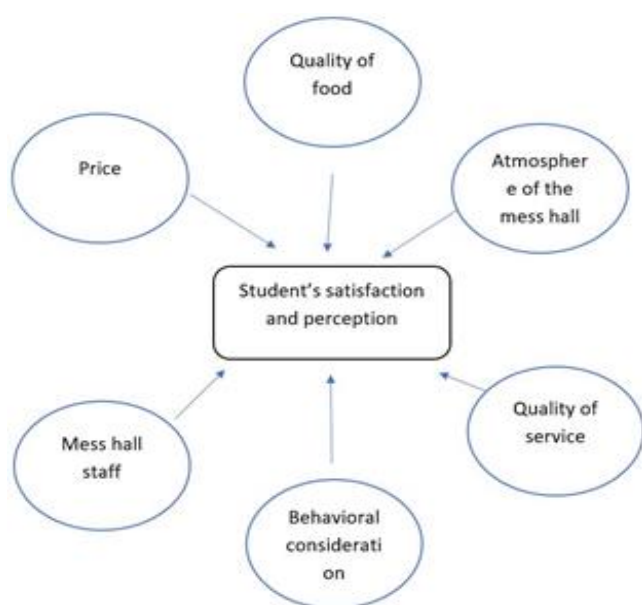


Fig 2 Conceptual Framework

- **Two Methods of Evaluation**

The research was carried out using two ways. Microbial analysis was performed in the first technique to examine the microbial contamination of the environment in which food was produced and served, the quality of water used in the hostels, food samples for microbial analysis, and the microbial contamination of the crockery. In the second method, a self-structured questionnaire was created based on prior studies to collect data on food safety management culture in university hostels.

The information was gathered from four female hostels at the University of Agriculture in Faisalabad. The sample size for microbiological analysis was 16 people from all of the hostels. Four samples of water, eight samples of food and four samples of crockery were taken from each of the four hostels. In the lab, microbial contamination of tableware, water, food, and the hostel environment were examined. The questionnaire has a sample size of 150 people. A questionnaire was issued to hostel students in order to assess the staff's awareness of food safety and cleanliness culture.

- **Sample Collection:**

Samples will be collected from different hostels of UAF Faisalabad. Sample will be taken in sterilized bags and transferred to laboratories of NIFSAT further analysis.

- **Water Quality**

Water samples were gathered from hostels in test tubes to examine the quality of the water utilized by the eateries. Then, in the laboratory, TPC and swab test were used to analyze the microbiological contamination.

- **Crockery Hygiene**

The hygienic conditions of the crockery were tested because different types of bacteria can be present on crockery and they cause food-borne infection e.g., *Staph.comylococcus aureus*, *Escherichia coli*, *Salmonella typhi*, etc. The sampling of crockery from each hostel was done. The total number of samples collected from the hostels was 4. The cotton swab test kit was used to gather the samples. Before swabbing, I squeezed the excess diluent out of the cotton swab. Then I swabbed a crockery in a criss-cross pattern with this cotton swab. Then I put the cotton swab back in the test tube, securely closed it, and gave it a good shake to dissolve the germs in the diluent. ( Afunwa *et al.*, 2019). Then, in the laboratory, TPC and swab test were used to analyze the microbiological contamination.

- **Food Sampling**

Microbial contamination of cooked food (rice and meat) in hostels was tested via food sampling. Each hostel provided one sample of cooked rice and one sample of cooked meat. A total of 8 samples were obtained from the hostels. Only 200g of each prepared item was gathered on a plate and sealed in a zipper bag. The zipper bag was instantly placed in the refrigerator to avoid microbial contamination, and the temperature was measured using a thermometer. The samples were kept at a temperature of 4°C. The analysis was completed within 24 hours of the sample being taken. Only TPC were used in the laboratory for food sampling.

- **Microbial Analysis**

To examine crockery hygiene, food hygiene, and water hygiene, microbiological analysis was performed on the samples taken from hostels. The samples came from the eateries that had been chosen. Cotton swabs were used to gather samples of dinnerware, the surroundings, and food and water from hostels.

- **TPC (Total plate count)**

Test of total plate count was conducted to determine microbial contamination in the samples in question. These tests were carried out in the NIFSAT microbiology laboratory using the AOAC method (2016).

- ✓ **Media Preparation**

Nutrient agar was utilized to make the media. 28 grammes of agar were mixed in 1 liter of distilled water, and the mixture was autoclaved for 15 minutes at 121°C.

✓ *Sample Preparation*

For sample dilution, a normal saline solution was made by dissolving 8.5g/L NaCl in boiling water. After then, a cotton swab kit was made. A test tube with a cotton swab was included with the kit, with one side of the swab adjusted in the test tube's cap. The test tubes were carefully cleansed and dried. Test tubes were autoclaved after being washed. The prepared saline solution was then added to each test tube in 9mL increments. Then, in the first test tube, 1ml of the homogenised mixture was added and stirred. Then, using a pipette, 1 mL of the combined material from the first test tube was sucked and transferred to the second test tube, and other dilutions were made in the same manner.

✓ *Pouring on the Plate*

1ml of each test tube dilution was then put on MacConkey agar plates. The plates were then incubated for 36 hours at 35 to 37 degrees Celsius.

✓ *Colony Counting*

After the incubation period, a colony counter was used to count and record the number of bacterial colonies on each plate.

$$\text{Total plate count (cfu/ml)} = \text{dilution factor} \times \text{Volume factor} \times \text{Average number of colonies}$$

➤ *Data Collection and Analysis*

The questionnaire was settled after comprehensive review of literature of different articles and books linked to student's perception and satisfaction level (Fatimah *et al.*, 2011; Ruth and Andrea, 2019) The variables and their relation to each other were also found after deep review of different literature. A questionnaire was then settled with different questions to find out the impression of each variable on student's procurement intentions about environment welcoming products. This questionnaire was cross checked with a few individual and professional and then after clarification, an ultimate questionnaire was settled. The final questionnaire (as shown below) was then circulated among students at hostels mess hall. The process of filling the questionnaire was administered personally to certify quality comeback. Hesitation and non-co-operating behavior were found in many students, which was spoken by inspiring and encouraging them to contribute in study.

➤ *Data Editing and Coding (DEC)*

After collecting a total of 150 questionnaires, they were thoroughly examined for validation of all responses, and it was determined that each questionnaire had been filled out completely and accurately. The next phase was data mining, coding, and eventually entering all of the data into an excel sheet with great care.

**III. RESULTS & DISCUSSION**

A. *Microbial Analysis*

The information was gathered from four female hostels at the University of Agriculture in Faisalabad. The sample size for microbiological analysis was 12 people from all of the hostels. Four samples of water, eight samples of

food, and four samples of crockery were taken from each of the four hostels. In the lab, microbial contamination of tableware, water, food, and the hostel environment were examined. The questionnaire has a sample size of 150 people. A questionnaire was issued to hostel students in order to assess the staff's awareness of food safety and cleanliness culture.

➤ *Water Quality*

Safe drinking water is a crucial aspect in avoiding public health issues. Water samples were obtained from hostels in test tubes and TPC tests was done to determine the sanitary parameters of the water. Total plate count can raise the risk of disorders affecting the stomach and other organs.

• *Total Plate Count of Water*

The results of the ANOVA of TPC (water quality) are shown in Table 4.1 (a). four samples were taken from four different hostels, with the results revealing that the total plate count in each sample differed significantly. As evidenced by the obtained f-value at a threshold of significance of 5%, a significant result was obtained.

In Table 4.1 (b) the findings of the means of all the four samples are presented. The mean readings obtained from all the samples were in range of 405.67±3.31 to 604.67±4.10. Sample collected from R4 had the highest total plate count of 604.67±4.10. While water sample collected from R3 had the least total plate count. Total plate count of collected samples of R1, R2, R3, and R4 were 503.00±4<sup>d</sup> 403.67±3.31<sup>e</sup> 305.67±3.93<sup>f</sup> and 604.67±4.10<sup>b</sup> respectively.

The results were quite similar to those found by Alabi and Adesiyun (1986), who found similar values of total plate count of water samples in a Nigerian university community. They were able to get a maximum total plate count of water quality of 1.9x10<sup>9</sup>.

Table 4.1a Analysis of variance of TPC of water

Source	DF	SS	MS	F-value
Treatment	4	262511	53572.2	3030 **
Error	10	195	15.9	
Total	14	262706		

\*\* - (P value <0.01) highly Significant

\* - (P-value <0.05) Significant

NS - (P value >0.05) Nonsignificant

Table 4.1b Mean values of TPC of water

Treatments	Mean TPC
R <sub>1</sub>	503.00±4 <sup>d</sup>
R <sub>2</sub>	403.67±3.31 <sup>e</sup>
R <sub>3</sub>	305.67±3.93 <sup>f</sup>
R <sub>4</sub>	604.67±4.10 <sup>b</sup>

➤ *Crockery Hygiene*

Because numerous forms of bacteria might be present on tableware and cause food-borne infection, the sanitary conditions of the crockery were checked. After collecting the samples from the hostels, the total plate count was conducted at the laboratory. Their presence may raise the

risk of health problems. Various tableware samples were collected from hostels. The total sample size was four.

• *Total Plate Count of Crockery*

The findings of the ANOVA of TPC of crockery are shown in Table 4.2 (a). The total plate count in various samples differed greatly. Four samples were taken from four hostels; the results showed that the total plate count in different samples varied significantly. As evidenced by the obtained f-value at a threshold of significance of 5%, a significant result was obtained.

In Table 4.2 (b) the findings of the means of all the four samples are presented. The mean readings obtained from all the samples were in range of 23.000±3 to 111.33±3.02. Sample collected from R4 had the highest total plate count of 111.33±3.02. While crockery sample collected from R2 had the least total plate count. Total plate count of collected samples of R1, R2, R3 and R4 were 63.667±3.31, 23.000±3, 51.667±2.21 and 111.33±3.02 respectively.

The results were very similar to those reported by Afunwa *et al* (2019). They were able to get a total plate count of  $9.2 \times 10^2$  at the most. Unsanitary conditions were discovered and must be monitored, as well as crockery washing practices that must be improved. Bacterial contamination of dishes were observed (86.67% and 33.3%) for skimmers, (81% and 27%) for spoons and forks, (79% and 30%) for kebab skewers, (70% and 65%) for pots, and (68% and 23%) for food trays respectively (Marzieh Rakhshkhorshid *et al.*, 2016)

Table 4.2a TPC Analysis of variance of crockery (cfu/25cm<sup>2</sup>)

Source	DF	SS	MS	F-value
Treatment	4	18443.5	3628.59	585 **
Error	10	64.0	5.17	
Total	14	18507.5		

\*\* - (P value <0.01) highly Significant

\* - (P-value <0.05) Significant

NS - (P value >0.05) Nonsignificant

Table 4.2b TPC Mean values of crockery (cfu/25cm<sup>2</sup>)

Treatments	Mean±TPC
R <sub>1</sub>	63.667±3.31 <sup>c</sup>
R <sub>2</sub>	23.000±3 <sup>e</sup>
R <sub>3</sub>	51.667±2.21 <sup>d</sup>
R <sub>4</sub>	111.33±3.02 <sup>a</sup>

➤ *Food Sampling*

To test for microbiological contamination, samples of cooked meat and rice were obtained from the hostels. Each hostel mess hall provided one sample of cooked rice and one sample of cooked meat. TPC was used in the laboratory for food sampling. The overall plate count can raise the risk of a variety of stomach and other organ illnesses.

• *Total Plate Count of Food (Meat Stew)*

The findings of the ANOVA of TPC (meat stew) are shown in Table 4.3 (a). Four samples were taken from four

separate hostels, with the overall plate count in each sample varying substantially. As evidenced by the obtained f-value at a threshold of significance of 5%, a significant result was obtained.

In Table 4.3 (b) the findings of the means of all the four samples are presented. The mean readings obtained from all the samples were in range of 2300.3±2.41 to 5771.3±1.5. Sample collected from R1 had the highest total plate count of 5771.3±1.5. While food sample collected from R4 had the least total plate count. Total plate count of collected samples of R1, R2, R3 and R4 were 5771.3±1.5, 5320.7±2.08, 2398.0±3.20 and 2300.3±2.41 respectively.

The results obtained were nearly identical to those reported by Addo *et al* (2007). The overall plate counts seen in cooked pork stew were below safe ranges, according to the findings. In cooked foods, a total plate count of  $5.6 \times 10^4$  cfu/g is considered safe. Highest bacterial count was observed in the closed area of cafeteria B mean: 214.7 cfu/m<sup>3</sup> (Ayesha *et al.*, 2019)

Table 4.3(a) TPC Analysis of variance of food (meat stew) (cfu/g)

Source	DF	SS	MS	F-value
Treatment	4	4.651E+07	9301416	1266250**
Error	10	79.3333	6	
Total	14	4.651E+07		

\*\* - (P value <0.01) highly Significant

\* - (P-value <0.05) Significant

NS - (P value >0.05) Nonsignificant

Table 4.3(b) TPC Mean values of food (meat stew) (cfu/g)

Treatments	Mean±TPC
R <sub>1</sub>	5771.3±1.5 <sup>a</sup>
R <sub>2</sub>	5320.7±2.08 <sup>c</sup>
R <sub>3</sub>	2398.0±3.20 <sup>d</sup>
R <sub>4</sub>	2300.3±2.41 <sup>e</sup>

• *Total Plate Count of Food (Rice)*

The findings of the ANOVA of TPC of food (rice) are presented in Table 4.4a. Four samples were taken from four separate hostels, with the overall plate count in each sample varying substantially. As evidenced by the obtained f-value at a threshold of significance of 5%, a significant result was obtained.

In Table 4.4 (b) the findings of the means of all the four samples are presented. The mean readings obtained from all the samples were in range of 2300.3±2.41 to 5771.3±1.5. Sample collected from R2 had the highest total plate count of 53004±3.40. While food sample collected from R4 had the least total plate count. Total plate count of collected samples of R1, R2, R3 and R4 were 42005±4.30, 53004±3.40, 37105±4.58 and 40104±3.21 respectively.

The results of the total plate count of cooked rice were very similar to Michael's findings (2008). The total plate count of rice collected ranged from  $2.5 \times 10^3$  to  $2.2 \times 10^7$ . The majority of the rice TPC findings were acceptable and adequate. TPC levels that are too high might cause a variety

of health problems, including stomach problems (RK Gupta et al., 2017).

Table 4.4a Analysis of variance of TPC of food (rice) (cfu/g)

Source	DF	SS	MS	F-value
Treatment	5	1.085E+08	2.169E+07	1.6E+07**
Error	12	160.67	13.222	
Total	17	1.085E+08		

\*\* - (P value <0.01) highly Significant

\* - (P-value <0.05) Significant

NS - (P value >0.05) Nonsignificant

Table 4.4b Mean values of TPC of food (rice) (cfu/g)

Treatments	Mean±TPC
R1	42005±4.30 <sup>b</sup>
R2	53004±3.40 <sup>a</sup>
R3	37105±4.58 <sup>d</sup>
R4	40104±3.21 <sup>c</sup>

**B. Questionnaire**

The questionnaire has a sample size of 150 people. A questionnaire was provided to university hostel students to assess their awareness of food quality and service, as well as the staff's hygiene culture. Statistical tools were used after the data was collected.

➤ *Quality of Food*

Table 4.5(a) shows the participation of all participants according to their perception regarding the quality of food of university mess hall. Questions mentioned in table were asked the participants during collection of data to check their opinion about the quality of food of the university mess hall. According to the table 4.5(a) out of all 150 participants 36.7% respondents for the question “quality and temperature of food is good”, 32.7% for “taste and flavor of food is satisfied”, 37.3% for “the drink is well made hygienically”, 32.6% for “the menu has a good variety of dishes”, 28.3% for “the food is visually attractive”, 30% for “food prepare

in hygienic conditions”, 24% for “should food have enough nutritive value”, on an average 24%-37% students were agreed with the quality of food of university mess hall. In table 4.5(b) descriptive stat such as mean, maximum, minimum, standard deviation (SD), standard error and ranks of the questions according to the respondent’s perceptions, each question statement is rank among 1<sup>st</sup> to 8<sup>th</sup> according to the respondent’s response, maximum number of participants were satisfied with the quality of food. The given table 4.5(b) revealed that the food quality variable “the quality and temperature of food is excellent was ranked 5<sup>th</sup> with (mean value 3.4533, standard deviation 1.1791, standard error 0.0962 and weighted 510), minimum value is 1, maximum value is 5 and total value is 150. “Taste and flavor of food is good.” was ranked 3<sup>rd</sup> with (mean value 3.5666, standard deviation 1.2446, standard error 0.101 and weighted score 525), minimum value is 1, maximum value is 5 and total value is 150. “The drink is well made hygienically.” was ranked order 6<sup>th</sup> with (mean value 3.4266, standard deviation 1.2115, standard error 0.0989 and weighted score 499), minimum value is 1, maximum value is 5 and total value is 150. “The menu has good variety of dishes.” was ranked order 2<sup>nd</sup> with (mean value 3.56, standard deviation 1.2177, standard error 0.106 and weighted score 530), minimum value is 1, maximum value is 5 and total value is 150. “The food is visually attractive.” was ranked order 1<sup>st</sup> with (mean value 3.56, standard deviation 1.2177, standard error 0.0994 and weighted score 535), minimum value is 1, maximum value is 5 and total value is 150. “The food is prepared in hygienical conditions.” was ranked order 4<sup>th</sup> with (mean value 3.38, standard deviation 1.2243, standard error 0.0999 and weighted score 530), minimum value is 1, maximum value is 5 and total value is 150. “Should food have enough nutritive value.” was ranked order 7<sup>th</sup> with (mean value 3.17333, standard deviation 1.3398, standard error 0.1094 and weighted score 475), minimum value is 1, maximum value is 5 and total value is 150.

Table: 4.5(a) Distribution of respondents according to hostels quality of food variables Scale: 1 unsatisfied, 2=moderately satisfy, 3=neutral, 4=satisfied, 5=excellent

Quality of food variables	1		2		3		4		5	
	F	%	F	%	F	%	F	%	F	%
The quality and temperature of is excellent	13	8.7	18	12.0	35	23.3	56	36.7	28	18.7
Taste and flavor of food	10	6.7	26	17.3	24	16.0	49	32.7	41	27.3
The drink is well made hygienically	12	8.0	26	17.3	27	18.0	56	37.3	29	19.3
The menu has a good variety of dishes	12	8.0	25	26.7	28	18.7	37	24.7	48	32.0
The food is visually attractive	8	5.3	26	17.3	32	21.3	42	28.0	42	28.0
Food prepares in hygienic condition	13	8.7	21	14.0	46	30.7	36	24.0	34	22.7
Should food have enough nutritive value	20	13.3	30	20.0	37	24.7	30	20	33	22.0

Table: 4.5(b) Weighted Score, Mean standard deviation and Rank order of the respondents according to the quality of food variables

		N	MIN	MAX	MEAN	SD	SE	WS	Ranked Order
Fo	The quality and temperature of food is excellent	150	1	5	3.45	1.17	0.1	510	5 <sup>th</sup>
F1	Taste and flavor of food	150	1	5	3.56	1.24	0.1	525	3 <sup>rd</sup>
F2	The drink is well made hygienically	150	1	5	3.42	1.21	0.1	499	6 <sup>th</sup>
F3	The drink is well made hygienically	150	1	5	3.56	1.30	0.1	530	2 <sup>nd</sup>

F4	The food is visually attractive	150	1	5	3.57	1.21	0.1	535	1 <sup>st</sup>
F5	Food prepares in hygienic condition	150	1	5	3.38	1.22	0.1	518	4 <sup>th</sup>
F6	Should food have enough nutritive value	150	1	5	3.17	1.33	0.1	475	7 <sup>th</sup>

➤ *Atmosphere of Mess Hall*

Table 4.6(a) shows the participation of all participants according to their perception regarding the atmosphere of university hostel mess hall. Questions mentioned in table were asked the participants during collection of data to check their opinion about the atmosphere of hostel mess hall of the university mess hall. According to the table 4.3 out of all 150 participants 44.7% respondents for the question “There is proper seating arrangement”, 38.0% for “Mess Hall has good atmosphere for students”, 41.3% for “The service hour appropriate”, 33.3% for “The dining area is well organized according to student’s taste”, 34.7% for “The food is presented in well manner”, on an average 33%-48% students were satisfied with the atmosphere of university hostel mess hall.

In table 4.6(b) descriptive stat such as mean, maximum, minimum, standard deviation (SD), standard error and ranks of the questions according to the respondent’s perceptions, each question statement is rank among 1<sup>st</sup> to 8<sup>th</sup> according to the respondent’s response, maximum number of participants were satisfied with the

atmosphere of mess hall. The given table 4.3 revealed that the atmosphere of mess hall variable “There is proper seating arrangement was ranked 1<sup>st</sup> with (mean value 4.1, standard deviation 1.0914, standard error 0.0891 and weighted 615), minimum value is 1, maximum value is 5 and total value is 150. “Mess hall has good atmosphere for student.” was ranked 2<sup>nd</sup> with (mean value 3.98, standard deviation 1.0897, standard error 0.0889 and weighted score 597), minimum value is 1, maximum value is 5 and total value is 150. “The service hour is appropriate.” was ranked order 3<sup>rd</sup> with (mean value 3.9266, standard deviation 1.0874, standard error 0.0887 and weighted score 589), minimum value is 1, maximum value is 5 and total value is 150. “The dining area well organized according to student taste.” was ranked order 4<sup>th</sup> with (mean value 3.74, standard deviation 1.2064, standard error 0.0985 and weighted score 561), minimum value is 1, maximum value is 5 and total value is 150. “The food is presented in well manner.” was ranked order 5<sup>th</sup> with (mean value 3.6666, standard deviation 1.1092, standard error 0.0905 and weighted score 550), minimum value is 1, maximum value is 5 and total value is 150.

Table: 4.6(a) Distribution of respondents according to Atmosphere of hostels mess hall variables Scale: 1 unsatisfied, 2=moderately satisfy, 3=neutral, 4=satisfied, 5=excellent

Atmosphere of hostel mess hall	1		2		3		4		5	
	F	%	F	%	F	%	F	%	F	%
There is proper seating arrangement	6	4.0	12	8.0	10	6.7	55	36.7	67	44.7
Mess hall has good atmosphere for student	6	4.0	12	8.0	18	12.0	57	38.0	57	38.0
The service hour is appropriate	7	4.7	11	7.3	19	12.7	62	41.3	51	34.0
The dining area is well organized according to students’ taste	8	5.3	20	13.3	25	16.7	47	31.3	50	33.3
The food is presented in well-mannered way.	6	4.0	18	12.0	35	23.3	52	34.7	39	26.0

Table: 4.6(b) Weighted Score, Mean standard deviation and Rank order of the respondents according to the atmosphere of hostel mess hall variables

	Variables	N	Min	Max	Mean	SD	SE	WS	Rank order
Fo	There is proper seating arrangement	150	1	5	4.1	1.09	0.089	615	1 <sup>st</sup>
F1	Mess hall has good for students	150	1	5	3.98	1.09	0.0889	597	2 <sup>nd</sup>
F2	The service hour appropriate	150	1	5	3.92	1.08	0.0887	589	3 <sup>rd</sup>
F3	The dining area is well organized according to student’s taste	150	1	5	3.74	1.20	0.0985	561	4 <sup>th</sup>
F4	The food is presented in well-mannered way	150	1	5	3.66	1.10	0.0905	550	5 <sup>th</sup>

➤ *Service Quality*

Table 4.7(a) shows the participation of all participants according to their perception regarding the service quality of university mess hall. Questions mentioned in table were asked the participants during collection of data to check their opinion about the service quality of the university mess hall. According to the table 4.7(a) out of all 150 participants 34.0% respondents for the question “Delivering on promises to do something by a certain time”, 40.0% for “The service is speedy”, 24.0% for “Sauces, napkins, utensils etc. are readily present on the table”, 32.7% for “The order is correct and complete on time”, 38.7% for “The menu is easy to read and students are being served on time”, 32.7% for “

The service is organized and waiting time is reasonable”, 38.0% for “ Sufficient staff is available to provide effective services”, 33.3% for “ Staff is practicing hygiene and complaints are given attention” on an average 32%-40% students were agreed with the service quality of university mess hall.

In table 4.7(b) descriptive stat such as mean, maximum, minimum, standard deviation (SD), standard error and ranks of the questions according to the respondent’s perceptions, each question statement is rank among 1<sup>st</sup> to 8<sup>th</sup> according to the respondent’s response, maximum number of participants were satisfied with the

service quality. The given table 4.7(b) revealed that the service quality variable “Delivering on promises to do something by a certain time was ranked 4<sup>th</sup> with (mean value 3.78, standard deviation 0.95, standard error 0.07 and weighted 566), minimum value is 1, maximum value is 5 and total value is 150. “The service is speedy.” was ranked 5<sup>th</sup> with (mean value 3.68, standard deviation 1.11, standard error 0.09 and weighted score 554), minimum value is 1, maximum value is 5 and total value is 150. “Sauces, napkins, utensils etc. are readily present on the table.” was ranked order 7<sup>th</sup> with (mean value 3.24, standard deviation 1.41, standard error 0.11 and weighted score 485), minimum value is 1, maximum value is 5 and total value is 150. “The order is correct and complete on time.” was ranked order 2<sup>nd</sup> with (mean value 3.84, standard deviation 1.04, standard error 0.084 and weighted score 574), minimum value is 1, maximum value is 5 and total value is 150. “The menu is

easy to read and students are being served on time.” was ranked order 1<sup>st</sup> with (mean value 3.99, standard deviation 1.01, standard error 0.083 and weighted score 600), minimum value is 1, maximum value is 5 and total value is 150. “The service is organized and waiting time is reasonable.” was ranked order 3<sup>rd</sup> with (mean value 3.79, standard deviation 1.04, standard error 0.085 and weighted score 569), minimum value is 1, maximum value is 5 and total value is 150. “Sufficient staff is available to provide effective services.” was ranked order 3<sup>rd</sup> with (mean value 3.83, standard deviation 0.99, standard error 0.081 and weighted score 569), minimum value is 1, maximum value is 5 and total value is 150. “Staff is practicing hygiene and complaints are given attention.” was ranked order 6<sup>th</sup> with (mean value 3.55, standard deviation 1.19, standard error 0.091 and weighted score 525), minimum value is 1, maximum value is 5 and total value is 150.

Table: 4.5(a) Distribution of respondents according to hostels service quality variables Scale: 1=unsatisfied, 2=moderately satisfy, 3=neutral, 4=satisfied, 5=excellent

Service Quality variables	1		2		3		4		5	
	F	%	F	%	F	%	F	%	F	%
Delivering on promises to do something by a certain time	1	.7	11	7.3	48	32.0	51	34.0	39	26.0
The service is speedy	7	4.7	16	10.7	30	20.0	60	40.0	37	24.7
Sauces, napkins, utensils etc. are readily present on the table	28	18.7	17	11.3	33	22.0	36	24.0	36	24.0
The order is correct and complete on time	2	1.3	14	9.3	39	26	46	30.7	49	32.7
The menu is easy to read and students are being served on time	1	0.7	16	10.7	23	15.3	52	34.7	58	38.7
The service is organized and waiting time is reasonable	4	2.7	14	9.3	37	24.7	49	32.7	46	30.7
Sufficient staff is available to provide effective services	4	2.7	12	8.0	36	24.0	57	38.0	41	27.3
Staff is practicing hygiene and complaints are given attention	13	8.7	17	11.3	36	24.0	50	33.3	34	22.7

Table: 4.5(b) Weighted Score, Mean standard deviation and Rank order of the respondents According to the service quality variables

	Variables	N	MIN	MAX	Mean	SD	SE	WS	Rank Order
F0	Delivering on promises to do something by a certain time.	150	1	5	3.78	0.95	0.07	566	4 <sup>th</sup>
F1	The service is speedy	150	1	5	3.68	1.11	0.09	554	5 <sup>th</sup>
F2	Sauces, napkins, utensils etc. are readily present on the table	150	1	5	3.24	1.41	0.11	485	7 <sup>th</sup>
F3	The order is correct and complete on time	150	1	5	3.84	1.04	0.084	574	2 <sup>nd</sup>
F4	The menu is easy to read and students are being served on time	150	1	5	3.99	1.01	0.083	600	1 <sup>st</sup>
F5	The service is organized and waiting time is reasonable	150	1	5	3.79	1.04	0.085	569	3 <sup>rd</sup>
F6	Sufficient staff is available to provide effective services	150	1	5	3.83	0.99	0.081	569	3 <sup>rd</sup>
F7	Staff is practicing hygiene and complaints are given attention	150	1	5	3.55	1.19	0.09	525	6 <sup>th</sup>

➤ Employee Behavior

Table 4.8(a) shows the participation of all participants according to their perception regarding the employee behavior of university mess hall. Questions mentioned in table were asked the participants during collection of data to

check their opinion about the employee behavior of the university mess hall. According to the table 4.8(a) out of all 150 participants 35.3% respondents for the question “employee speaks in an effective manner”, 32.0% for “employees are courteous and friendly”, 33.3% for



“employee washed their hands and dressed properly”, 41.3% for “employee served food in appropriate manner”, 38.0% for “Employee have adequate knowledge about product to give good suggestion” on an average 32%-42% students were agreed with the employee behavior of university mess hall.

In table 4.8(b) descriptive stat such as mean, maximum, minimum, standard deviation (SD), standard error and ranks of the questions according to the respondent’s perceptions, each question statement is rank among 1<sup>st</sup> to 8<sup>th</sup> according to the respondent’s response, maximum number of participants were satisfied with the employee behavior. The given table 4.8(b) revealed that the employee behavior variable “Employee speaks in an effective manner was ranked 1<sup>st</sup> with (mean value 3.9133, standard deviation 0.9894, standard error 0.0807 and weighted 587), minimum value is 1, maximum value is 5

and total value is 150. “Employee are courteous and friendly.” was ranked 2<sup>nd</sup> with (mean value 3.82, standard deviation 1.0236, standard error 0.0835 and weighted score 573), minimum value is 1, maximum value is 5 and total value is 150. “Employee wash their hands and dressed properly.” was ranked order 4<sup>th</sup> with (mean value 3.866, standard deviation 1.0435, standard error 0.0852 and weighted score 553), minimum value is 1, maximum value is 5 and total value is 150. “They served in appropriate manner.” was ranked order 3<sup>rd</sup> with (mean value 3.7533, standard deviation 1.0430, standard error 0.0851 and weighted score 563), minimum value is 1, maximum value is 5 and total value is 150. “Employee have adequate knowledge about product to give good suggestion.” was ranked order 5<sup>th</sup> with (mean value 3.5533, standard deviation 1.0777, standard error 0.0879 and weighted score 533), minimum value is 1, maximum value is 5 and total value is 150.

Table: 4.8(a) Distribution of respondents according to hostels service quality variables Scale: 1=unsatisfied, 2=moderately satisfy, 3=neutral, 4=satisfied, 5=excellent

Employee Behavior	1		2		3		4		5	
	F	%	f	%	F	%	f	%	F	%
Employee speaks in an effective manner	1	0.7	14	9.3	32	21.3	53	35.3	50	33.3
Employee are courteous and friendly	1	0.7	17	11.3	37	24.7	48	32.0	47	31.3
Employee wash their hand and dressed Properly	4	2.7	15	10.0	43	28.7	50	33.3	38	25.3
Served in appropriate manner	4	2.7	17	11.3	29	19.3	62	41.3	38	25.3
Employee have adequate knowledge about product to give good suggestion	4	2.7	22	14.7	45	30.0	45	30.0	34	22.7

Table: 4.8(b)Weighted Score, Mean standard deviation and Rank order of the respondents according to the employee behavior variables

	Variables	N	Min	Max	Mean	SD	SE	WS	Rank order
F0	Employee speaks in an effective manner	150	1	5	3.9133	0.9894	0.0807	587	1 <sup>st</sup>
F1	Employee are courteous and friendly	150	1	5	3.82	1.0236	0.0835	573	2 <sup>nd</sup>
F2	Employee wash their hand and dressed properly	150	1	5	3.6866	1.0435	0.0852	553	4 <sup>th</sup>
F3	Served in appropriate manner	150	1	5	3.7533	1.0430	0.0851	563	3 <sup>rd</sup>
F4	Employee have adequate knowledge about product to give good suggestion	150	1	5	3.5533	1.0777	0.0879	533	5 <sup>th</sup>

➤ Price of Food

Table 4.9(a) shows the participation of all participants according to their perception regarding the price of food which is provided in university mess hall. Questions mentioned in table were asked the participants during collection of data to check their opinion about the price of food of the university mess hall. According to the table 4.9(a) out of all 150 participants 30.0% respondents for the question “prices are not high”, 31.3% for “portion size is available for paid price”, 25.0% for “did bill up to what you planned for today” on an average 25%-31% students were agreed with the price of food of university mess hall.

In table 4.9(b) descriptive stat such as mean, maximum, minimum, standard deviation (SD), standard error and ranks of the questions according to the

respondent’s perceptions, each question statement is rank among 1<sup>st</sup> to 8<sup>th</sup> according to the respondent’s response, maximum number of participants were satisfied with the price of food. The given table 4.9(b) revealed that the price of food variable “prices are not too high was ranked 3<sup>rd</sup> with (mean value 3.2066, standard deviation 1.4759, standard error 0.1205 and weighted 481), minimum value is 1, maximum value is 5 and total value is 150. “Portion size are available for paid price.” was ranked 1<sup>st</sup> with (mean value 3.3866, standard deviation 1.3500, standard error 0.1102 and weighted score 508), minimum value is 1, maximum value is 5 and total value is 150. “Did bill up to what you planned for today.” was ranked order 2<sup>nd</sup> with (mean value 3.2466, standard deviation 1.3899, standard error 0.1134 and weighted score 487), minimum value is 1, maximum value is 5 and total value is 150.

Table: 4.8(a) Distribution of respondents according to hostels service quality variables Scale: 1 unsatisfied, 2=moderately satisfy, 3=neutral, 4=satisfied, 5=excellent

Price of food	1		2		3		4		5	
	F	%	F	%	F	%	F	%	F	%
Price are not too high	31	20.0	22	14.7	17	11.3	45	30.0	35	23.0
Portion size are available for paid price	21	14.0	19	12.7	27	18.0	47	31.3	36	24.0
Did bill up to what you planned for today	24	16.0	23	15.3	30	20.0	38	25.0	35	23.3

Table: 4.8(b) Weighted Score, Mean standard deviation and Rank order of the respondents according to the employee behavior variables

	Variables	N	Min	Max	Mean	SD	SE	WS	Rank order
Fo	Price are not too high	150	1	5	3.2066	1.4759	0.1205	481	3 <sup>rd</sup>
F1	Portion size are available for paid price	150	1	5	3.3866	1.3500	0.1102	508	1 <sup>st</sup>
F2	Did bill up to what you planned for today	150	1	5	3.2466	1.3899	0.1134	487	2 <sup>nd</sup>

**IV. CONCLUSIONS AND DISCUSSIONS**

Each year, tens of thousands of individuals worldwide contract food-borne diseases as a result of consuming contaminated food. An effective food safety management system is required to assure food safety and safe services to clients in the sector. This should not be created for the sake of competency, but rather as a value that must be cultivated across the entire hospitality industry. Foodborne illnesses are widespread, but they can also be avoided. Foods served in restaurants are a key source of infections, according to different investigations and research about the growth in foodborne disease outbreaks and irregular gastrointestinal infections. Foodborne illnesses are widespread, but they can also be avoided. Foods served in hostels are a key source of infections, according to different investigations and research about the growth in foodborne disease outbreaks and irregular gastrointestinal infections. Using an attitude questionnaire, this study assessed employee behaviour and service quality knowledge, as well as the impact of food quality on students' health. The primary goal was to examine hygienic conditions, avoid food contamination, and manage food-borne illnesses and diseases. A study was undertaken in university female hostels to examine knowledge of food quality, service, and price in the mess hall. Microbial analysis was performed to assess the quality of the water, as well as crockery hygiene and food sampling. The data was only collected once, and then statics were used to calculate the percentage of the desired qualities. The highest mean values of TPC observed in water were 604.67±4.10 respectively. The mean readings of TPC of water obtained from all the samples were in range of 405.67±3.31 to 604.67±4.10. The highest mean values of TPC observed for crockery were 111.33±3.02 respectively. The mean readings of TPC of crockery obtained from all the samples were in range of 23.000±3 to 111.33±3.02. and the highest mean values of TPC observed in food samples were 5771.3±1.5 respectively. The mean readings of TPC of meat stew obtained from all the samples were in range of 2300.3±2.41 to 5771.3±1.5. The mean readings of TPC of rice obtained from all the samples were in range of 2300.3±2.41 to 5771.3±1.5. The main purpose of the study was to assess the service quality in university female hostels. Hedonic scale was used in questionnaire to collect data for research.

SERVQUAL model was used for assessing the efficiency of services quality. Questionnaire contain five dimensions. First is quality of food which is important to ensure that students consume good quality of food i.e., good quality of food prepare in hygiene condition. Second one is atmosphere of mess hall which exhibit tangible factors of mess hall and it deals with physical commodities that reflect the image of the organization. Third dimension is service quality that it is about quick service provides to the students for better impact. Fourth dimension is employee behavior which is about the positive and polite behavior with students to meet their expectations. Last one is price which is about provide better quality of food in low price so that students can manage their budget which they decided.

The entire five determinants (quality of food, atmosphere of mess hall, service quality, employee behavior and price) are very significant for the student's satisfaction. As shown in the research those large numbers of participants (40%-45%) were satisfied with the quality of food and service quality. Only small number of people (5%-10%) was unsatisfied with quality of food and service quality of the hostels and (20%-30) was the neutral with quality of food and service quality. The overall conclusion of this study indicated that service quality and quality of food has significant role in the success of hostels. Although hostels have some limitation in understanding the perceptions of each and every student. It is also found that hostels are successful in offering quality of food, atmosphere of mess hall, service quality and employee behavior. Also indicated that student's satisfaction significantly influences by the quality of food and service quality.

According to the results of the water analysis, there was a significant level of total plate count present in the water, which could raise the risk of disease. Crockery examination revealed that a considerable quantity of total plate count was present on crockery, raising the risk of disorders affecting the stomach and other organs. The results of the meal samples revealed that there was a substantial level of total plate count present. The result of questionnaire indicates that the quality of food was good due to hygiene preparation that reduce food born illness risk in consumer and the result of service quality was satisfied by students. As

a result of the statistically significant link observed between overall satisfaction and meal quality, ambience, value for money, food and beverage options, and service quality, there is convincing evidence supporting negative impressions of the foodservice facility. As a result, any good changes to these traits will have a positive impact on the overall happiness of the end users, the pupils, influencing their favorable behaviour.

### RECOMMENDATIONS

- University administration should obtain input from students regarding the cafeteria operators' performance, and they should inform the operators of the comments so that any problems may be resolved quickly. When dealing with cafeteria operators, these viewpoints should be taken into account.
- Mess hall managing operators should concentrate on offering adequate mechanisms to improve food quality at a fair price, as well as the quality of service given in university cafeterias.
- University administration should pay special attention to hiring the best operator, who focuses on the following practices: training employees on the main principles of providing good service; safety and sanitation management programs; ensuring a clean and attractive dining area; providing food items at reasonable prices; and providing a pleasant environment and atmosphere for students.

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