
An empirical study of students' satisfaction towards on-campus foodservice operations

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Abstract - This study focuses to identify the factors that affect students' satisfaction on-campus foodservice in university. The importance of service quality may affect overall service satisfaction about on-campus food service whereby university students and staff are the key customers where they usually dine-in after class hours, socialising with friends, and having options to purchase cheaper prices at university cafeteria. This study is conducted at *Medan Selera Kompleks Tok Gajah*, one of the significant food services in Universiti Teknologi MARA, Pahang Branch. Atmospheric, price fairness, food and beverages variety, and the quality of food and beverages show moderate level of satisfactions among students. The level of satisfaction of food service operations and management are similarly moderate. The service quality has affected students' expectations and perceptions, making them disappointed and choose to order food from outside of campus. Providing nutritious and clean food, varying the menu based on the customer's preferences and demands, reasonable prices, and matching the quality of the food with comfortable and clean dining atmosphere are all significant factors in ensuring customers fulfilment.

Keywords – *atmospheric, price fairness, food and beverages variety, quality of food and beverages, service satisfaction*

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I. Introduction

A foodservice operation or cafeteria is a part of the food industry which serves foods and drinks to customers in return for money (Misiran et al., 2022). University students buy their foods and drinks at on-campus cafeteria as the food service operators offer cheaper, tastier and healthier menus for them compared to off-campus restaurants. Besides students, university staff frequently visit the foodservice operators in student college cafeterias. On-campus foodservice is a gathering spot for all university residents to dine and relax after classes and work at the office. University provides on-campus foodservice or cafeteria for students in addition to lecture room facilities, transportation, and recreational facilities. Most institutions deliver on-campus foodservice where students feel convenient, able to enjoy dining every day as well as to preserve their emotional well-being. After dining, students may stay focused and committed both inside and outside of class.

Since the enrollment of students is unceasingly increasing in tertiary education institutions, the demand for food service also increases, particularly in universities (Raihen et al., 2023). Therefore, it is very critical for foodservice operators to uphold a high quality and closely focus on students' satisfactions (Afroza et al., 2022a). One of the major factors affecting a customer's decision to purchase a particular product is the quality of the service they receive (Mensah et al., 2021). According to Gilbert & Veloutsou (2006), given how closely it is related to customer satisfaction, service quality has a crucial for an organisation's success. Customer loyalty and

retention will increase as the result of strong service quality (Suciptawati et al., 2019), and the success of the business is significantly influenced by the good service quality.

The primary on-campus foodservice in Universiti Teknologi MARA (UiTM) Pahang Branch, Jengka Campus is called *medan selera*. The operating hours of *medan selera* start from 8:00 a.m. to 10:00 p.m. from Monday to Sunday. Many times, students chose to have off-campus dining facilities at *Bandar Tun Razak*. Even though the town is located near their hostels, *medan selera* is where most female students choose to visit to reduce their time to buy foods off the campus. The service quality offered by the on-campus foodservice at *medan selera* in UiTM Pahang Branch has recently been the subject of criticism among the students. The customers who come every day to *medan selera* in UiTM Pahang Branch, are usually the same people consisting of students and staff. Therefore, *medan selera* provider is having less competitive environment, and as a result, they are unconcerned with the need to improve the services to their customers. According to Cha and Seo (2019), student cafeterias have a comparatively poor internal environment in comparison to other restaurants since their client base is generally fixed as student and staff. Thus, this study aims to explore and understand; 1) to measure students' satisfaction level towards on campus foodservice operations, 2) to determine service quality provided by on-campus foodservice operations, and 3) to investigate relationship between factors that can affect students' satisfaction.

II. Literature review

Atmospheric

The atmosphere also plays a vital role in students' satisfaction with the on-campus foodservice. Atmosphere is defined as visual (sight), auditory (hearing), and sensory (senses) that plays a vital role in making the students comfortable with the café's condition (Afroza et al., 2022b; Lin, 2004; Bitner, 1990). According to prior research, a nice cafe atmosphere may improve the students' satisfaction as it influences their emotional condition and acts as a dull mediator between authentic atmospheric and behavioural intentions (Jang et al., 2011).

Food and beverages quality

According to Misiran et al. (2022), food quality refers to the characteristics of foods and beverages such as texture and taste that are acceptable to the customers and food quality being enforced by the Food Safety Act 1990 in the United States. The cleanliness of the foods refers to a condition that does not lead to, or cause any contamination of food with other unpleasant substances such as food waste, soil, dirt or grease (Mohd Amin et al., 2023).

Price fairness

Price fairness is the most important criterion that will affect students' satisfaction towards the food they buy (Klassen et al., 2005). For example, the on-campus foodservice offers different prices for one meal where some days students are charged with a lower price while on the other days, they are being charged with a higher price. This program is ineffective and inefficient to be carried out in since different prices may causing discontent among various economic background students. Additionally, Joung et al. (2016), mentioned that students' satisfaction will influence their positive behavioral intentions based on their perceptions of quality and price fairness.

Food and beverages variety

Food and beverage operations must boost flavour by creating meals that taste great, healthy, and look amazing based on the appearance as form of foods has emotional impacts on customer palates, moods, and emotional well-being (Garg & Kumar, 2017a). Previous research indicates that many institutional food environments still heavily promote energy-dense and nutrient-poor food options (Ahmad Shariff et al., 2023; Serhan & Serhan, 2019). Therefore, it falls on the operators' role to include a diverse range of products in their menus, providing customers with more choices (Ahmad Shariff et al., 2023).

Students' satisfaction through service quality

In research from Kanwar and Sanjeeva (2022), students' satisfaction is a state of mind that results from an assessment of educational process, as well as the resources provided by the educational setting. It is claimed that student satisfaction surveys are crucial because they help institutions to grow and adapt to changes in the higher

education landscape. It is also stated in the study that students are the most important internal evaluators of an institution's performance. Service is a type of performance that is offered by one party to another, and corporeality might be a necessary component of it (Sabir et al., 2014). In addition, an eemotional responses intertwine with the satisfaction equation, as customer feelings during and after the interaction can significantly impact their overall satisfaction (Fatma & Kumar, 2024). When comparing customers' expectations and perceptions of the service being provided, service quality can be investigated as a fact. In other words, superior level of service quality is one of the aspects that can produce customer satisfaction (Osman et al., 2018; Hanefors & Massberg, 2003).

Relationship between service satisfaction and service quality

Service quality and customer satisfaction are important aspects of business since a company's growth is largely dependent on how well it maintains its customers through service and how well they keep their customers satisfied (Zygiaris et al. 2022a; Edward & Sahadev, 2011). Previous studies by Zygiaris et al. (2022b) and Safi and Alagha (2020) found out that service quality and customer satisfaction have a positive relationship. According to previous investigations, various factors emerged from customer satisfaction including the physical infrastructure, service timeliness, hotel staff demeanor, equipment availability, communication methods, responsiveness to customer issues, operational efficiency, data precision, service consistency, speed of problem resolution, attention to detail, staff adaptability, willingness to provide customer assistance, staff conduct, customer safety, politeness, staff competency, personalized customer care, continual service availability, and an understanding of individual guest preferences (Fatma & Kumar, 2024a). This cornerstone also affected socially responsible corporate practices, shareholder values, customer preferences, and business confidence, mainly in developing countries particularly after the phenomenon COVID-19 pandemic (Chan et al., 2023; Magd & Karyamsetty, 2021). To analyse the relationship between this study's independent and dependent variables, the following hypotheses are developed, along with a conceptual framework (Figure 1).

H₀: There is no positive relationship between price fairness and service quality.

H_a: There is a positive relationship between price fairness and service quality.

H₀: Atmospheric of the on-campus foodservice has no significant impact on the service quality.

H_a: Atmospheric of the on-campus foodservice has a significant impact on the service quality.

H₀: The lower the food and beverages variety, the lower service quality of students' satisfaction.

H_a: The higher the food and beverages variety, the higher service quality of students' satisfaction.

H₀: There is no relationship between food and beverages quality and service quality.

H_a: There is a relationship between food and beverages quality and service quality.



Figure 1. Conceptual framework

III. Methodology

This study was taken part by female students who lived in *Kompleks Tok Gajah*, one of hostel in UiTM Pahang Branch, Jengka Campus and experienced campus foodservice operations quality. The questionnaire was distributed to 263 female residents using convenience sampling techniques. The participants were bachelor's degree students from the Faculty of Applied Sciences, Faculty of Business and Management and Faculty of Sport Science and Recreation. The questionnaire for this research contains six sections. Section A addresses students' profiles that evolves around demographic characteristics. Section B until Section E address factors that influence students' satisfaction toward the on-campus foodservice operations. Meanwhile, Section F addresses service quality questions that were adapted from Parasuraman et al. (1985). In term of questions type, this study employed a close-ended question, which provide respondents with a fixed set of options using a 4 Point Likert Scale. The 4-point scale eliminates the neutral option, ensuring respondents a definitive choice and potentially offering clearer data (Gandhi, 2024). Both Bahasa Malaysia and English were utilised in the research to ensure that

respondents completely comprehend the questionnaire and were able to reply. It employed a 4-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (4).

IV. Result and Discussion

Table 1. Normality Test Result

	Price Fairness	Atmospheric	Food and Beverages Quality	Food and Beverages Variety	Service Quality
Mean	2.5627	2.9563	2.6229	2.4163	2.7497
Median	2.5714	3.0000	2.8333	2.5000	2.8333
Skewness	.185	-0.79	-.428	-0.77	-.144
Std. Error of Skewness	.150	.150	.150	.150	.150
Kurtosis	.671	.037	.489	-.174	.843
Std. Error of Kurtosis	.299	.299	.299	.299	.299

Table 1 shows the result of normality test with the score for mean and median for each variable. The numbers were within the range of -3 and +3 for skewness and within the range of -10 and +10 for kurtosis. This indicates the overall findings of the analysis conducted for the study which can be considered normally distributed.

Table 2. Reliability Test Result

Variables	Cronbach's Alpha	N of Items
Price fairness	.73	7
Atmospheric	.84	6
Food and beverage quality	.88	6
Food and beverage variety	.88	6
Service quality	.74	6

Next, Table 2 presents the results of the reliability test. In the areas of price fairness, atmospheric, food and beverage quality, and food and beverage variety, the table presents that Cronbach's alpha is .73, .84, .88, and .88 respectively. Meanwhile, service quality has a Cronbach's alpha of .74. Based on these results, the internal consistency is excellent. Therefore, the items used to measure the variable were considered reliable.

Table 3. Profile of Respondent

	Characteristics	n	%
Age	18-20 years	33	12.5
	21-23 years	201	76.4
	24 and above	29	11.0
Faculty	Applied Sciences	145	55.1
	Business and Management	115	43.7
	Sports and Recreation	8	3.0
Part (Semester)	One	26	9.9
	Two	17	6.5
	Three	43	16.3
	Four	35	13.3
	Five	122	46.4
	Six	18	6.8
	Seven	1	0.4
	Eight	1	0.4

Table 3 displays the respondents' profile findings. The results show that many respondents are from the age of 21-23 years (n = 201, 76.4%), 33 people (12.5%) from the age group of 18-20 years and 29 people (11.0%) are from the age of 24 and above. A total of 145 students (55.1%) from the Faculty of Applied Sciences, 115 students (43.7%) from the Faculty of Business and Management, and 8 students (3.0%) from the Faculty of Sports and Recreation are the respondents in this study. Students from the fifth semester are the highest participants in this study with a total of 122 (46.4%), followed by third semester students (n=43, 16.3%), fourth semester students (n=35, 13.3%), first semester students (n=26, 9.9%), sixth semester students (n=18, 6.8%), second semester students (n=17, 6.5%), seventh and eighth semester students respectively with a total of 1 (0.4%).

Table 4. Descriptive Scores of Students' Satisfaction

	N	Mean	SD
Price Fairness	263	2.56	.463
Atmospheric	263	2.96	.531
Food and Beverages Quality	263	2.62	.559
Food and Beverages Variety	263	2.42	.649

Table 4 shows the descriptive scores of the students' satisfaction towards on-campus foodservice. According to Table 4, three variables have moderately high mean score, namely, atmospheric (M=2.96, SD=.53054), food and beverages quality (M=2.62, SD=.559) and price fairness (M=2.56, SD=.469). Meanwhile, food and beverage variety are moderately low score (M=2.42, SD=.649).

Table 5. Descriptive Scores of Atmospherics

	N	M	SD
I like the decorations in the Medan Selera.	263	2.56	.844
I am pleased with the ambience (eg. feeling, mood) of the Medan Selera.	263	2.68	.817
The cleanliness in the cafeteria is good.	263	2.87	.746
The seats are comfortable.	263	3.26	.594
The noise level is acceptable.	263	3.11	.632
Bright lighting (diffused form of lighting).	263	3.25	.609

Table 5 describes those seats, the lighting, and the noise level in *Medan Selera Kompleks Tok Gajah* are moderately high comfortable (M=3.26, SD=.594), bright (M=3.25, SD=.609), and acceptable (M=3.11). In addition, students also moderately high see poor cleanliness in the cafeteria (M=2.87, SD=.746), feel unpleasant ambience of the on-campus foodservice (M=2.68, SD=.817), and like the decorations at *medan selera* (M=2.56, SD=.844).

Table 6. Descriptive Scores of Price Fairness

	N	M	SD
I am satisfied with the food price that has been set.	263	2.32	.749
I am satisfied with what I received and what I paid for my food and drink.	263	2.40	.697
I often compare food prices with other stalls.	263	3.52	.681
The prices for the food and drinks served are reasonable.	263	2.33	.727
The menu display shows the food prices clearly.	263	2.41	.850
The price I pay is the same as the price on the menu.	263	2.82	.755
Are all foods clearly labelled with prices?	263	2.14	.821

Table 6 describes that students highly compare food prices with other stalls at *Medan Selera Tok Gajah* (M=3.52, SD=.681). Plus, they moderately high think the price they pay is same as the price on the menu (M=2.82, SD=.755). The menu display shows the food prices is less clear (M=2.41, SD=.850), the students are moderately dissatisfied with what they received and they paid for the foods and drinks (M=2.40, SD=.697) and the prices for the food and drinks served are less reasonable (M=2.33, SD=.727). They are also moderately dissatisfied with the food price that has been set by stalls (M=2.32, SD=.749) and the foods are less clearly labelled with prices (M=2.14, SD=.821).

Table 7. Descriptive Scores of Foods and Beverage Variety

	N	M	SD
Does Medan Selera stalls provide variety of food and beverages?	263	2.69	.864
Based on your experience, is their menu varied enough to satisfy every preference?	263	2.26	.884
Were you satisfied with their food variety?	263	2.21	.861
Did you enjoy the selection of beverages they offered?	263	2.58	.747
The choices preferences of foods available allow me to meet my cultural and ethnic preferences.	263	2.38	.777
Does their selection of foods and drinks support a balanced diet and lifestyle as per the food pyramid?	263	2.37	.821

Table 7 describes *medan selera* stalls provide less variety of good and beverages (M=2.69, SD=.864), the students less enjoy the selection of beverages (M=2.58, SD=.747), and the choices preferences of foods available do not meet their cultural and ethnic preferences (M=2.38, SD=.777). The selection of foods and drinks do not support a balanced diet and lifestyle as per the food pyramid (M=2.37, SD=.821), the menu is not varied enough to satisfy every preference (M=2.26, SD=.884), and they are dissatisfied with the food varieties (M=2.21, SD=.861).

Table 8. Descriptive Scores of Foods and Beverage Quality

	N	M	SD
The food and beverages quality are good.	263	2.52	.703
The appearance of food and beverages are good.	263	2.66	.691
The food and beverages served are hygienic.	263	2.62	.709
The taste of food and beverages are good.	263	2.58	.710
The quality of the ingredients used in food and beverages are good.	263	2.65	.681
The food and beverages are always the same quality.	263	2.70	.769

Table 8 describes the food and beverages provided are moderately high different in terms of quality (M=2.70, SD=.769), the appearance of food and beverages is not as good (M=2.66, SD=.691), and the quality of the ingredients used may not be as good (M=2.65, SD=.681). The respondents also mentioned that the food and beverages served are less hygienic (M=2.62, SD=.709). In addition, the taste and quality of food and beverages are also not as good (M=2.58, SD=.710), (M=2.52, SD=.703).

Table 9. Descriptive Scores of Service Satisfaction

	N	Mean	SD
Service Satisfaction	263	2.75	.476

Table 9 displays descriptive scores of service satisfaction towards on-campus foodservice. The table shows moderately high service satisfaction provided by on-campus food operators is M=2.75 (SD=.47608).

Table 10. Descriptive Scores of Service Quality

	N	M	SD
I am satisfied with the overall services of <i>Medan Selera Kompleks Tok Gajah</i> .	263	2.63	.687
The staff are experts in their job related.	263	2.76	.659
The staff are welcoming and friendly.	263	2.83	.680
The overall time taken to purchase food and beverages is not more than 5 minutes.	263	2.15	.878
I am satisfied with the payment method option.	263	3.10	.716
The staff always inform me when my order is ready.	263	3.03	.668

Table 10 describes moderately high satisfaction among the students with the payment method option ($M=3.10$, $SD=.716$), the staff of the stalls seldom inform the buyers when their orders are ready ($M=3.03$, $SD=.668$), and the staff are less welcoming and friendly ($M=2.83$, $SD=.680$). Based on this study, the staff are less experts in their related job ($M=2.76$, $SD=.659$), the students are less satisfied with the overall services ($M=2.63$, $SD=.687$) and the overall time taken to purchase is more than 5 minutes ($M=2.15$, $SD=.878$).

Table 11. Pearson Correlations Among Students Scores

Variable	1	2
Students' Satisfaction	-	
Service Quality	.711**	-

** . Correlation is significant at the 0.01 level (2-tailed).

The table 11 shows the relationship between the students' satisfaction and service quality towards on-campus foodservice ($r= .711$, $p>.001$). It was shown that the relationship between the variables is significant and has a high positive correlation.

Table 12. Pearson Correlations Scores

Variables	1	2	3	4	5
Price Fairness	-				
Atmospheric	.350**	-			
Food and Beverages Quality	.597**	.581**	-		
Food and Beverages Variety	.479**	.422**	.619**	-	
Service Quality	.518**	.479**	.685**	.574**	-

** . Correlation is significant at the 0.01 level (2-tailed).

The table 12 shows the relationship between the price fairness and service quality of students' satisfaction towards on-campus foodservice. There was a significant relationship between these two variables ($r= .518$, $p>.001$). The null hypothesis was rejected since the p-value was less than the significance level of 0.01, the level of significance. There was sufficient evidence to establish that price fairness and service quality have a moderately positive relationship. Next, it was discovered that there was a significant relationship between atmospheric and service quality ($r= .479$, $p>.001$). The atmospheric has a low positive relationship towards the service quality. The p-value is less than the significance level of 0.01, hence the null hypothesis is rejected. It can be concluded that the atmospheric of the on-campus foodservice has a significant impact on service quality. It was also found that there was a significant relationship between the food and beverages variety and service quality ($r= .574$, $p>.001$). Since the p-value is less than the significance level of 0.01 therefore, the null hypothesis is rejected and resulting a moderately positive relationship between food and beverages variety and service quality. The table likewise shows the is a significant relationship between the food and beverages quality and service quality ($r= .685$, $p>.001$). With the p-value is less than the significance level of 0.01, the null hypothesis is rejected. Hence, a moderate positive relationship between food and beverages quality and service quality exists.

Table 13. Model summary of regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.724 ^a	.524	.516	.33105

a. Predictors: (Constant), food and beverage variety, atmospheric, price fairness, food and beverage quality

b. Dependent Variable: service quality

The model explains 52.4% of the variance in service quality, with an adjusted R^2 of 0.524. Food and beverage variety, atmosphere, price fairness, and food and beverage quality contribute to 52.4% of the variation in service quality.

V. Conclusion

The normality data of this study was considered normal, and the reliability test was high. Most of the respondents were female customers since the study was conducted at female hostel and they were customers on-campus foodservice at *Medan Selera Kompleks Tok Gajah*, UiTM Pahang Branch, Jengka Campus. Most of them were at the age of 21 to 23 years old and they were Part (Semester) Five from Applied Sciences program. The students' satisfactions that were related to the atmospheric, price fairness, and food beverages quality were moderately high except for food beverages variety which at moderately low level. In this study, the decorations, the ambience and cleanliness in the cafeteria were less good whereby contributing to moderately high satisfaction towards the atmosphere in the cafeteria. Chang et. al (2014) described cafe atmosphere as the spatial arrangement of the seating, the quality of the interior design and the background music that contribute mostly to students' satisfaction towards the cafe. While providing customers and staff with a comfortable and easy-to-move workspace, ambient light also sets the general ambience of the business operations and cleanliness guarantees that meal selections for students are both safe and healthful.

Smith et al. (2020) mentioned that price fairness and the quantity of food have a positively significant impact on students' overall satisfaction. However, most of the UiTM Pahang Branch female students were disappointed with the food prices that have been set by stalls and the foods were less clearly labelled. The result of a previous study demonstrated that students considered each of the four food-related factors, namely, presentation, colour, pricing and variety critically in making meal decisions (Abd Karim et al., 2023) and further changing their overall satisfaction. Most respondents were dissatisfied with the selection of food and beverages that mismatch the balanced diet and lifestyle as per the food pyramid; the menu given was not varied enough to meet their different preferences; and they were unsatisfied with the food variations. A key element in determining how satisfied customers is with a business is the quality of the food and beverage selection (Garg & Kumar, 2017b) that causing to consumer buying behaviour, a process of selection, purchases and consumption of goods and services to satisfy the demand (Mohd Rasid et al., 2023; Ramya & Ali, 2016). Offering a good selection of food alternatives in university cafeterias will encourage students and employees to dine in and lessen them from looking for other options off-campus from other food service enterprises. If the on-campus foodservice regularly gives promotions and special meals with good quality cuisine in terms of taste and presentation, students would have a favourable opinion of the food services offered (Chang & Mohd Suki, 2018). This action would allow students to enjoy their daily meals perfectly and not getting food poisoning.

The level of overall service satisfaction towards on-campus foodservice in UiTM Pahang Branch was moderately high. The factors contributed to this result were due to staff incompetence in their job related, the overall services were low, and waiting time of purchasing process took more than 5 minutes. According to Misiran et al. (2022), dissatisfaction towards food services will lead the students to refuse having their meals inside campus and choose to buy from outside food outlets or dine out of campus. Therefore, Smith et al. (2020) in Abd Karim et al. (2023) advised to the foodservice operators that must identify factors that help increase customer satisfaction to improve their business performance and sales. The factors could include having staff with the right skill levels, cutting down on wait times, and offering top-notch services for all other services.

The relationship between students' satisfaction and service quality by foodservice operators was high and significant. In addition, the four factors of students' satisfaction have significant correlation towards service quality. There was adequate evidence to conclude that price fairness, food and beverage variety, and food and beverage quality all have a moderate and positive relationship with service quality. However, the atmospheric has a low and positive relationship with service quality. A study by Afroza et al. (2022c), discovered 72.5% service satisfaction experienced by 250 students at public universities in Klang Valley of Malaysia was determined by food quality, price fairness, food quality and atmosphere. Additionally, only 52.4% variances of service satisfaction among UiTM Pahang Branch's students have impacted the foodservice operation service quality. Another 47.6% would determine by other variances such as service quality dimensions (tangibility, reliability, responsiveness, assurance, empathy). Sociologists and psychologists have studied consumer behaviour trends and patterns as lifestyles change (Chan et al., 2023; Dulam, Furuta & Kanno, 2021). This encompasses the product's quality, performance, reliability, and user-friendliness, along with the service's professionalism, helpfulness, and responsiveness ((Fatma & Kumar, 2024).

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Declaration

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