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Research paper



Students' Satisfaction of Food Services at the University Cafeteria: a Comparative Study Via PLS Approach

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Abstract

This research investigated the effect of food quality, price fairness, staff performance, and ambience on students' satisfaction of cafeteria food services by comparing responses from Universiti Malaysia Sabah (UMS), Malaysia with Mercu Buana University (MBU), Indonesia. Data was analysed using the Partial Least Squares (PLS) application in SmartPLS computer software version 2.0. Path coefficients from PLS results revealed ambience as the most significant predictor of students' satisfaction of food services at the university cafeteria in both UMS and MBU settings, followed by aspects of staff performance and food quality. It is imperative for university cafeteria operators at both sites to uplift students' satisfaction of food services at their cafeterias by enhancing ambiance such as installing decorations that project a warm and cosy environment. The result of these findings could be utilised as guidelines for the respective university management to incorporate elements that could improve food services in their cafeterias thus increasing the satisfaction of their users (students).

Keywords: *Food Quality; staff; price fairness; ambience; students' satisfaction.*

1. Introduction

The current era is witnessing an expansion in consumer spending power. University undergraduates are part of this upward trend, and as spending power increases, so too their expectations for dining experiences and choices (1). Euromonitor International (2007) attributes the food service sector economic growth to a rise in both living standards and consumer income. The university cafeteria, an integral component of a student's university life, is established to cater to a diverse range of age, nationality, race, life experiences, and economic and social status backgrounds. These elements in turn have a critical role in determining their levels of satisfaction and can be factors that determine the student's patronage of the eating establishment (1).

Previous studies affirm the need for food service operators to firstly consider and understand the factors that affect customer satisfaction in order to effectively market their restaurant or cafeteria. (2) argue that many students consume an assortment of tangible and intangible offerings. Studies that focus on service quality and customer satisfaction in hospitality and food service industries such as those by (3) and (4) reiterate that service quality should be an on-going improvement exercise in order to attract customers and for the business to be sustainable.

2. Literature Review

Customer satisfaction refers to the client's response pertaining to the fulfilment of his expectations of the service or entity, and whether he perceives that the consumption has fulfilled requirements (5, 6). Customer dissatisfaction occurs when there is a 'disconfirmation' that results from contradictions between prior expectations and actual performance (7). The quality of food and the dining experience can be affected due to the reluctance of some students to pay for low quality food service in their campus cafeteria due to the increasing number of such establishments around the university (1, 2). Service quality is an important antecedent factor of the dining experience, which leads to the assertive image of food service production and greater achievement in customer satisfaction at the aggregate market level (8-10). Since accomplishment features, configurations,
perceived quality, genuinely, reliability and aesthetics observed as regular attributes of service quality, (11) suggests that the aspects of food quality, staff, price fairness and ambience, all of are part of the managerial delivery area, should be examined. Customer satisfaction and service quality differ in that the latter is affected not only by the perceptions of the former but also by price, personal and situational factors (12-16)

2.1. Food Quality

Both service and food quality are perceived as essential in understanding customer satisfaction and behavioural intentions (1, 17-19). Food quality is important in order to maximise success in food service settings due to many university students stating that they would only consider dining on campus if the quality of food is improved (20-22). Due attention should be given to the natural, fresh appearance and added nutrition value into food to expand customer satisfaction; Kim & Kim (2004) suggest food quality as a significant variable in the student satisfaction level and plan to repurchase among the students (18).

Food choice is described as the main marketing aspect in the food service industry (23, 24). According to (18), the level of student satisfaction is mainly centred on the food hygiene, variety of food,

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atmosphere and the quality of meals. College students however reported that their eating habits deteriorated during their college years due to the inadequate variety of foods offered in campus dining facilities (25).
Based on the findings of (2) and (26), it would be more cost- productive if the cafeteria or food operator were to introduce healthier and more interesting food choices, variety, diversity, and fresh food into the cafeteria menu monthly. The rising number of non-traditional and non-residential students has led to increased expectations for better meal plans, food service options, and campus dining experiences (1). It is in the context of these that the first hypothesis in this study is established:
H1: Food quality has a positive impact on students' satisfaction of food services at the university cafeteria.

2.2. Staff

There are some critical between cafeteria staff and students interaction in this respect - staff responsiveness on providing accurate information on service time, availability to requests or ability to accommodate specific requests, and helpful service – is a contributory element towards increased levels of satisfaction among users of the school cafeteria (27, 28). In this study, cafeteria staff quality in terms of staff friendliness, responsiveness, politeness and courtesy, hygiene and service turn- over rate is examined.
Yet another important antecedent towards improving customer satisfaction is customer assurance: employees perceived as trustworthy, friendly and knowledgeable provide the type of assurance that could initiate and sustain customer satisfaction in the services provided by the school cafeteria (27). According to (29), 'recovery' relates to staff immediately apologising for mistakes and acting on their customers' complaints; this responsiveness acts positively to increase client satisfaction in their services. Based on this, the second hypothesis is thus formulated:
H2: Staff has a positive impact on students' satisfaction of Food services at the university cafeteria.

2.3. Price Fairness

Price fairness is deemed to have occurred when the overall value and assessment of a product refer on the perceptions of what is received and what is given in return is reciprocal i.e. the customer deems the price that is paid represents value for money (16). This study is supported with the assertion by (4, 16, 19, 30) of there being a positive correlation between price and student satisfaction. In their study in three universities in Hong Kong, the researchers found that price should be set at a reasonable level acceptable by both students and management. The price factor is also a significant attribute in a study by (31).
Reducing the cost of raw material, economies of scale, energy saving programmes, and better cost control could be implemented by universities as many of their students are on a poor income and reliant on government loans or family support. The demand would be for food that is cheap yet nutritional and filling (30). Thus, this study proposes the following third hypotheses:
H3: Price has a positive impact on students' satisfaction of Food services at the university cafeteria.

2.4. Ambience

Ambience is defined as the physical environment and the behaviour of customers that result from their interaction with their setting (32). Additionally, (33) and (34) explain that atmosphere is set up by visual (sight), auditory (hearing), and olfactory (sense) cues that play an critical role in embedding in the customer positive or negative impressions of a service encounter. (17) and (18) point to cleanliness, comfort level and capacity as key attributes in campus food service that significantly affect satisfaction and customer behavioural intentions.

Cafeteria environment factors could also refer to influences within the individual's immediate setting such as package, plate shape, lighting and dining companions (35). This contention is supported by the findings of (2) whereby setting up décor, displays, amenities, and services that cater to customers' desire for comfort, convenience, entertainment and information would stimulate heightened levels of customer satisfaction. Such a university cafeteria would be better emplaced to develop complete community cultures and in the process help create a sense of community through food and dining services.
Other studies found dining environment as a primary influencing factor that determines the satisfaction level of college students together with price, availability of nutritional information, and employee competence (1, 17). Other researchers such as (33), and (36) found that the atmosphere should be compatible with the target market's needs, wants, and expectations in order to create a positive dining experience and encourage repeat visits. Hence, the fourth hypothesis is postulated:
H4: Ambience has a positive impact on students' satisfaction of food services at the university cafeteria.
Based on the aforementioned literature, the proposed theoretical framework of this study is presented below:

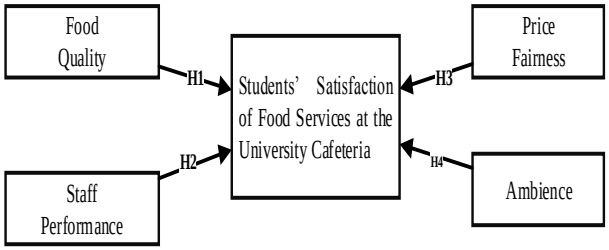


Fig. 1: Proposed Research Framework

3. Methodology

A self-administered survey in the form of a questionnaire was completed by 200 undergraduates each from UMS and MBU. Through the convenience sampling method, 250 sets of questionnaire were distributed to respondents in each of these two universities in November 2016 where the return rate was at 80%. The two- section questionnaire comprised Section A which was related to demographic characteristics of respondents such as age and gender, and Section B, a multi-item set of questions on constructs such as staff performance (five items), food quality (nine items), ambience (six items), price fairness (three items) and students' satisfaction (five items) quantified on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). These variables were adapted from (18, 26, 35, 37). Data was analysed using the Partial Least Squares (PLS) method via the SmartPLS computer programme version 2.0 to investigate the effect of price, food quality, staff performance, and ambience on students' satisfaction of food services at their university cafeteria.

4. Data Analysis

The demographic profile of the respondents in UMS and MBU in terms of their gender and age is presented in Table 1. In UMS 30% of respondents were males and 70% females; in MBU, less than one-third of respondents were males, and females represented two-thirds of the sample. A large portion (99%) of the respondents in UMS was between 21 and 23 years old with the rest less than 20 years of age. In MBU, 63% of the respondents were younger than 20 years old, 35% 21-23 years old, and 2% in the 24-26 year old bracket.

Table 1: Demographic Profile of Respondents

Characteristic		UMS		MBU	
		F	**Percentage (%)**	**F**	**Percentage (%)**
Gender					
	Male	61	30.5	66	33.0
	Female	139	69.5	134	67.0
Age (years)					
	≤ 20	1	0.5	126	63.0
	21-23	199	99.5	70	35.0
	24-26	0	0	4	2.0

4.1. Partial Least Squares

A Partial Least Square-Structural Equation Modelling (PLS-SEM) approach supported by Smart-PLS 2.0 was executed to test the research model via the two-step data analysis of structural and measurement model.

4.2. Measurement Model

The first stage of PLS assessment of measurement model involved the determining of indicator reliability, internal consistency reliability, convergent validity and discriminant validity.

4.3. Reliability and Validity

Cronbach's α and composite reliability were inspected to ascertain indicator reliability and internal consistency reliability of the latent constructs. Table 2 shows that all Cronbach's α and composite reliability exceeded 0.70 (an acceptable threshold as noted by (38) it could thus be inferred that all measures were robust in terms of their reliability.

To evaluate the convergent validity of the current data, standardised factor loadings and average variance extracted (AVE) were analysed, as recommended by (39). In Table 2, all measurement item loadings were found to be above the 0.70 cut-off, after deletion of several poor loading items (40, 41). Indeed, the AVE values of each construct in the model were greater than 0.50. Both results pointed towards a strong confirmation of convergent validity.

Table 2: Reliability and Factor Loadings

Items	UMS				MBU			
	Item Loading	**Cronbach's Alpha**	**Composite Reliability**	**AVE**	**Item Loading**	**Cronbach's Alpha**	**CR**	**AVE**
Food Quality		0.785	0.860	0.606		0.785	0.860	0.606
F5	0.757				0.771			
F6	0.769				0.799			
F7	0.788				0.729			
F8	0.798				0.811			
Staff		0.727	0.844	0.732		0.769	0.811	0.682
S2	0.764				0.796			
S5	0.938				0.855			
Price Fairness		0.714	0.874	0.776		0.714	0.873	0.775
P1	0.908				0.914			
P2	0.853				0.845			
Ambience		0.733	0.802	0.670		0.797	0.782	0.544
A3	Del				0.731			
A4	0.780				0.709			
A6	0.855				0.772			
Student Satisfaction		0.796	0.854	0.595		0.786	0.784	0.548
ST1	0.786				0.765			
ST2	0.778				0.773			
ST3	0.779				Del			
ST4	0.741				Del			
ST5	Del				0.679			

Notes: Del = Deleted; AVE = Average variance extracted

Table 3: Correlation Matrix of UMS Data

Variable	Ambience	Customer satisfaction	Food quality	Price fairness	Staff
Ambience	0.819				
Customer satisfaction	0.517**	0.771			
Food quality	0.314**	0.441**	0.778		
Price fairness	0.197**	0.220**	0.302**	0.881	
Staff	0.230**	0.417**	0.458**	0.361**	0.856

** Correlation is significant at the 0.01 level (2-tailed); diagonal elements (in italic) show the square root of the average variance extracted; off-diagonal elements show the shared variances.

Table 4: Correlation Matrix of MBU Data

Variable	Ambiance	Customer satisfaction	Food quality	Price fairness	Staff
Ambience	0.738				
Customer satisfaction	0.579**	0.740			
Food quality	0.361**	0.390**	0.778		
Price fairness	0.231**	0.259**	0.302**	0.880	
Staff	0.288**	0.357**	0.389**	0.249**	0.826

** Correlation is significant at the 0.01 level (2-tailed); diagonal elements (in italic) show the square root of the average variance extracted; off-diagonal elements show the shared variances.

Table 5: Relationships on Students' Satisfaction of Foodservices at the University Cafeteria

Paths			UMS			MBU		
			Estimate	**S.E.**	**C.R.**	**Estimate**	**S.E.**	**C.R.**
Food Quality	→	Satisfaction	0.198*	0.073	2.705	0.142	0.081	1.750

Paths			UMS			MBU		
			Estimate	S.E.	C.R.	Estimate	S.E.	C.R.
Staff	→	Satisfaction	0.269*	0.075	3.561	0.149*	0.061	2.457
Price Fairness	→	Satisfaction	-0.001	0.059	0.010	0.071	0.066	1.064
Ambience	→	Satisfaction	0.404*	0.063	6.442	0.468*	0.058	8.120

* $p<0.05$

Discriminant validity was evaluated by differentiate the AVE of each factor with the squared correlations among constructs (42). The square roots of the AVEs are shown in the diagonal elements of Table 3 and 4, while off-diagonal elements are indicated in the shared variances. These tables show that discriminant validity of the scales was verified as all shared variances between factors in the model were below the square root of the individual factor AVE, denoting dissimilarity in the constructs. Additionally, in the UMS and MBU contexts, ambiance was found to have the strongest correlation with student satisfaction level with the university cafeteria with UMS r=0.517, p<0.01 and MBU r=0.579, p<0.01 (see Table 3 and 4). This is followed by other aspects such as food quality and staff. However, student satisfaction level with the university cafeteria had the least association with the price fairness factor.

4.4. Structural Model

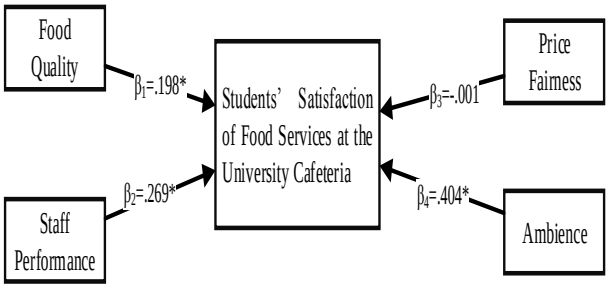
In the second stage of PLS, an assessment of the structural model involves examining its research hypotheses by referring to the standardised beta coefficients and t-values. The R^2 values for the dependent variable were 0.395 and 0.398 for UMS and MBU respectively. The results indicate a strong explanatory power for the model. Specifically, H1 postulates that food quality has a positive impact on students' satisfaction of food services at the university cafeteria. The standardised beta coefficients from the PLS results in Table 5 show that H1 is supported in the UMS context with β_1=0.198, t-value=2.705, p<0.05. However, this situation is not indicated in the MBU setting (β_1=0.142, p>0.05).

In Table 5, staff performance was found to significantly impact students' satisfaction of food services at the university cafeteria with UMS students at β_2=0.269, t-value=3.561 p<0.05 and MBU students at β_2=0.149, t-value=2.457, p<0.05. H2 is therefore proven. However, divergent to what was predicted, H3 ('Price fairness has a positive impact on students' satisfaction of food services at the university cafeteria') was not supported in the UMS context (p>0.05). Data analysis also indicates price fairness as having insignificant results in MBU (p>0.05).

The fourth hypothesis posits that ambiance would positively affect students' satisfaction of food services at the university cafeteria. From Table 5, it is ascertained that H4 was concurred with by both UMS respondents (β_4=0.404, t-value=6.442, p<0.05) and MBU respondents (β_4=0.468, t-value=8.120, p<0.05). Indeed, path coefficients from the PLS results point to ambiance as the most significant predictor of students' satisfaction of food services in their university cafeteria.

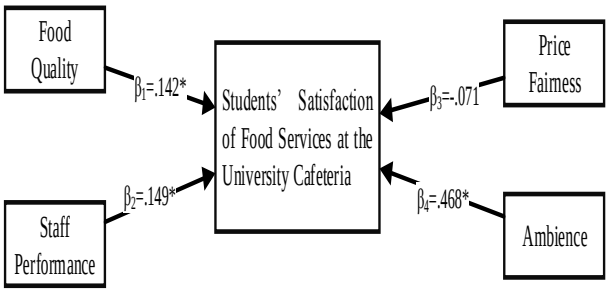
5. Discussion and Conclusion

This study examined the effect of price fairness, food quality, staff performance, and ambience on students' satisfaction of food services provided in their respective university cafeterias by comparing responses from UMS with those from MBU. Figure 2 and 3 illustrate the results of the structural model of students' satisfaction of food services at their university cafeteria.



* $p<0.05$

Fig. 2: Structural Model of UMS Students' Satisfaction



* $p<0.05$

Fig. 3: Structural Model of MBU Students' Satisfaction

The PLS approach revealed food quality to have a significant impact on students' satisfaction of food services at the university cafeteria in UMS context; this was however not the case in MBU. H1 is thus verified for UMS but not for MBU. This appears to corroborate the findings in prior studies e.g. (18, 26, 28, 32) and indicates food quality as having great impact on students' satisfaction of food services at the university cafeteria in UMS. Students would view food services positively if the university cafeteria is perceived as offering special meals and frequent promotions with high quality food in terms of taste and presentation.

Staff performance was found to have a statistically significant impact on students' satisfaction as experienced by both UMS and MBU students (see Figure 2 and 3). H2 is therefore proven; indeed, this factor emerges as the second most important determinant that affects students' satisfaction of food services in both UMS and MBU cafeterias. Students are satisfied with the performance of the cafeteria staff specifically in aspects of friendliness and responsiveness to customers' orders. The results are comparable with the findings of (43), and (44). For this reason, university cafeteria operators should focus on measures to ensure the performance of each staff towards the provision of quality service delivery to their customers is maintained.

A further analysis of the PLS results indicates price fairness as statistically insignificant in the environment of both UMS and MBU; this points toward the rejection of H3. This finding is at variance with previous discoveries e.g. (44, 45). A possible explanation is that since students seem to place minimal concern on the aspect of price fairness, it could be surmised here that the price must be reasonable and acceptable for the portions served at the cafeterias.

For H4, since the results of this study support this relationship, it can be concluded that ambience does have a positive impact on students' satisfaction of the food services provided in both UMS and MBU cafeterias (see Figure 2 and 3). Based on the standardised path coefficients of the structural model, ambiance is found as the most vital predictor of students' satisfaction of food services at the university cafeteria. This finding is in coherence with the existing works of (20, 36, 46) and (35). Students were very much in agreement that there was adequate seating in their cafeteria, and that these seats were comfortable. A point that could be derived here is that there is a need for university cafeteria operators to ensure that the ambience in their café is pleasant and cosy.

From this study, it is evident that the university management in both UMS and MBU must strive to increase the students' satisfaction level on the provision of food services in their university cafeteria. Factors such as ambience, staff performance and food quality are possible areas of improvement in order to increase students' satisfaction on food and service quality in most of the university cafeteria. The R^2 in this study, at 40%, indicates a need to study additional factors, consider distinct food services categories, and utilise larger sample sizes.

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