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FEATURE

Quality of Vegetarian Cafeteria Services and Students' Overall Satisfaction with their University

Darrin Thomas

Abstract. *A major challenge for students at the university level is to adjust to the food provided by the campus' cafeteria, and the adjustment is further complicated when a school offers a vegetarian diet (Hartwell, Edwards, & Brown, 2011). The purpose of this study was to ascertain students' perceptions of vegetarian cafeteria service quality and their overall satisfaction with their university. A survey design using a sample of 100 dormitory students at a Southeast Asia university revealed there was moderate satisfaction with the cafeteria service quality and with the university, but there were concerns with the pricing of the food. There was no difference in the students' perception of cafeteria service quality or their satisfaction with their university when compared by class level, major, meals eaten in the cafeteria per day, or gender. A moderate correlation was found between cafeteria service quality and student satisfaction with their university ($n = 100$, $r = .40$, $p = 0.05$).*

Keywords: cafeteria quality, dormitory students, student satisfaction, vegetarian, survey design, Southeast Asia

Introduction

The university experience is a rite of passage for many young people. Students often leave their homes for the first time to live with their peers in another city or even in a different country (Hendrickson, Rosen, Aune, 2011). With this coming-of-age experience come many unique challenges and obstacles.

One of the major adjustments to university life for many students is dealing with the quality of the cafeteria services (Hartwell et al., 2011). Students have

various eating habits and preferences, and it is the responsibility of the cafeteria services of the university to attempt to provide both nutritious and palatable food for a diverse student body. With little alternative to the food provided on campus, students often have to rely on the cafeteria services to supply them with their daily caloric intake. Added to this the caveat of international students from all over the world, the problem becomes even more challenging.

One unique challenge for some students is to adjust to a diet that is based on principles foreign to them. For example, a school that provides a vegetarian diet would be a unique experience for many students regardless of the country of their origin. Living in such a context may be challenging for them. As such, does this experience with such a diet relate to the students' perception of the food services? In addition, does such an experience with the vegetarian cafeteria food service have any relationship with the students' satisfaction with their university life?

Student satisfaction is a critical component in students' persistence to complete their degree (Schreiner & Nelson, 2014). Many studies have examined student satisfaction (Douglas, Douglas, McClelland, Davies, 2015; Gruber et al., 2012; Schreiner & Nelson, 2014). A closer examination of the impact of students' perceptions of vegetarian cafeteria service quality and their perception of satisfaction with their university has not, however, been examined as closely as other variables such as cross-cultural intelligence, teaching styles, or social integration (Douglas et al., 2015; Rienties, Beusaert, Grohnert, Niemantsverdriet, & Kommers, 2012). Hence, this study was conducted to try to fill this gap in the literature.

Review of the Literature

Meals are an opportunity for students to connect with one another and the school of their studies. As such, food is one aspect of connectedness. Therefore, the diet offered at an institution is a component of wellness as the food people or students eat can have implications in relation to their satisfaction with the place where they chose to study. Therefore, the purpose of this study was to examine international students' views of the quality of vegetarian cafeteria service at their university and its relationship with their perception of their overall satisfaction with their university.

Cafeteria Service Quality

Cafeteria service quality is defined as high quality food that is highly varied, convenient, priced fairly, and has excellent taste (Liang & Zhang, 2009). Abdullah, Mansor, and Naba (2012) determined that the components for defining cafeteria services include food quality, price, and value. Cleanliness is another

descriptor of cafeteria services used in other studies (Ismail & Abiddin, 2009; Kim, Lee, & Yuan, 2012). The quality of a cafeteria is mostly about the nature of the food but also includes such aspects as pricing and cleanliness.

Food services offered on-campus could potentially influence health, which in part can play a role in academic performance (Ibrahim, Abedin, & Sharip, 2015). One study found that students' food choice decline in nutritional quality over the course of their studies (Wansink, Cao, Saini, Shimizu, & Just, 2013). Wansink et al.'s (2013) study did not explore if there was a corresponding change in the students' satisfaction with their university or if their perception of the cafeteria service declined with their choice in food. In addition, the study led to the conclusion that serving only healthy food, such as that which is a part of a vegetarian diet, could prevent this decline in nutritional quality, as students would only have healthier options available to them when they eat in the university cafeteria.

In another study, it was found that there is little difference in the eating habits of students in relation to their academic standing as freshman, sophomore, junior, or senior (Driskell, Kim, & Goebel, 2005). This indicates that there is a possibility that students with similar eating habits may have similar perceptions of cafeteria services as they are having similar experiences concerning the food they are eating. Driskell et al. (2005) did not look at a context that only offered a vegetarian diet.

Wansink et al. (2013) and Driskell et al. (2005) looked at cafeterias that offered both vegetarian and non-vegetarian food. The use of a vegetarian diet can be controversial, as it has led to students refusing to participate in school meals, eating less, and wasting more food (Lombardini & Lankoski, 2013). In addition, a vegetarian diet is an extremely rare lifestyle choice with approximately only 5% of Americans adhering to such a diet (Newport, 2012). If such statistics hold at a university, many students may be surprised to have to live on a vegetarian diet during their university studies.

Another factor to consider besides the challenge of a vegetarian diet is the lack of options for dormitory students. Such students have fewer options in regard to what they can eat as they live on-campus and there are no alternatives to what the cafeteria is offering for meals. In other studies, students could choose to eat or not eat the cafeteria food as they either had transportation, lived off-campus, or there were competing restaurants on-campus (Driskell et al., 2005; Kimathi, Gregoire, Dowling, & Stone, 2009; Wansink et al., 2013). As such, for dormitory students, the quality of the cafeteria services is more important than students who have other options for food as they have fewer choices in what they are able to choose to eat. Therefore, examining their perception of cafeteria services is critical to understanding what concerns they may have about

the quality of the cafeteria food. If the cafeteria quality is not satisfactory, it may lead to disappoint in the dormitory students' satisfaction with the university.

Student Satisfaction

Student satisfaction is the contentment students have that their expectations are met by the university where they study (Hasan, Ilias, Rahman, & Razak, 2008; Kotler & Clarke, 1987). For example, when students come to a university, they make certain goal commitments and expect the university to make certain commitments towards them (Tinto, 1987). By extension, students often have certain expectations about cafeteria service quality such as the taste of the food or the service of the staff; if these expectations are not met, satisfaction could plummet.

The relationship between cafeteria services and student satisfaction is varied in the literature. For example, Sapri, Kaka, and Finch (2009) found that cafeteria service was moderately important to university students in Malaysia. In the context of their study, however, many of the students commuted to school by car, as parking was the top concern in their study. However, Sapri et al. (2009) did not examine how dormitory students were specifically affected by cafeteria services.

In another study, it was found that healthier food options affected customer satisfaction (Kimathi et al., 2009). When healthier options were available, people rated the cafeteria higher in terms of the quality of service. This finding is important since the cafeteria service of this study provides a vegetarian diet, which is viewed as a much healthier diet in comparison to a non-vegetarian diet (Orlich & Fraser, 2014). As such, it is possible that student satisfaction may be stronger because of the healthier diet. Due to the unpopularity of a vegetarian diet, there may be no difference or there may be potential that a healthier diet was detrimental to student satisfaction since the diet is missing meat.

As such, the following questions are examined in this study:

1. What are the perceptions of the students about vegetarian cafeteria services at the university of their studies?
2. What are the students' perceptions of their satisfaction at the university of their studies?
3. What is the relationship between perception of vegetarian cafeteria service quality and student satisfaction with their university among university students?

Methodology

Understanding the role of food services in relation to student satisfaction among international students can potentially help administrators with assisting students to adjust to a university life away from their own culture. In addition, a study that examines this phenomenon could also provide clues in regard to the significance of cafeteria service among international students as it relates to their satisfaction with their school.

Sampling

The participants of this study were students at one university whose cafeteria offered only a lacto-ovo vegetarian diet, which is a vegetarian diet that includes egg and dairy products. Non-random sampling was employed in this study. Specifically, the sampling approach was purposive sampling. Purposive sampling involves the selection of participants based on one or more criteria. For this study, participants needed to be university students at an institution that offered exclusively a vegetarian diet. A more systematic approach to sampling was not possible due to the nature of this study. As such, when purposive sampling is employed, it is recommended to include demographic data of the participants (Fraenkel, Wallen, & Hyun, 2012).

This study had 100 participants who were all residents of the dormitories. Of all the participants, 44% were sophomore, 21% freshman, 19% were seniors, and 15% were juniors. For gender, 70% of the participants were female and 30% were male. The majority of the participants were education majors at 49%. English majors made up 33% followed by Religion, Science, and Business at 7%, 6%, and 4% respectively.

The majority of the students were from the Southeast Asia region (78%). The remaining participants were from North and South Asia at 7% each and America/Europe and Africa at 2%. The majority of the students ate two (42%) or three meals (33%) a day in the cafeteria with 21% of the respondents eating only one meal. The remaining 4% did not complete this item on the survey.

Research Design

A descriptive cross-sectional survey design was employed in this study. The participants responded to 24 items on the instrument that assessed the participants' perception of the cafeteria service as well as their perception of their satisfaction with the university. In addition, the instrument also included demographic items for describing the population.

The instrument, which contains the items in relation to the two variables and demographics, was distributed at the university by the researcher as well as by several lecturers on the campus. Students completed the instrument and

returned them either to the researcher or to the lecturers who were assisting the researcher in the data collection process.

Cafeteria Service Quality Scale. The Cafeteria Service Quality Scale was adapted from Abdullah et al., (2012). The components of this scale were statements that assessed food quality, food variety, convenience, and pricing. Sample statements from this scale include “Most of the food served by the university cafeteria taste good” and “The price of food is acceptable in the university cafeteria.” A Lickert scale scaled was employed with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. The phrase “vegetarian” never appears on the instrument because within the context of this study a vegetarian diet was the only option in terms of food offered in the cafeteria. Inclusion of this term would have been redundant.

A factor analysis was conducted to assess the appropriateness of the scale for the context of this study. The confirmatory factor analysis found four factors that explained 57% of the variance. Factor one described taste, attractiveness of the food, and variety. Items loaded to factor one include “Most of the food served by the university cafeteria taste good” and “There is a wide variety of food available in the cafeteria.” Factor two described food quality. Items that loaded to factor two include “Most of the food served in the university cafeteria is of high quality” and “The ingredients used to prepare the food are fresh.” Factor three described portion size and price. Items loaded to factor three include “The food prices are reasonable for the size of the portions served” and “The price of the food is acceptable in the university cafeteria.” Lastly, factor four described specifically price only in relation to fairness. Items loaded on factor four include “The food is cheap in the university cafeteria” and “The price of the food is fair value for the quality of food that is served. The Cronbach Alpha for the modified 16-item scale was .82.

Student Satisfaction Scale. The Student Satisfaction Scale was adapted from Hasan et al. (2008). The components of this scale were statements that assessed happiness a student had with their decision to enroll at their current university. Sample statements from this scale include “My choice to enroll in this University was a wise one” and “I am happy that I enrolled in this University.” A Lickert scale scaled was employed with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

A factor analysis was conducted to verify the suitability of the scale for the context of the study. The confirmatory factor analysis found one factor that explains 70% of the variance. All items in this factor related to the student’s perception of their decision to study at their current university. The Cronbach’s Alpha for the modified 8-item scale was .93

Data Analysis

Descriptive data was collected in the study. Items such as the mean of the variables as well as individual items were included. In addition, *t* test and ANOVA were conducted to see if there were any differences across sub-groups in order to provide information of the perception of the students when divided by gender, major, class level, and meals per day. Lastly, an assessment of the correlation between cafeteria service quality and student satisfaction was performed.

For the *t* test and ANOVA, the equality of variance was tested with the Levene statistic and the results indicated that the variance was same for cafeteria service quality when comparisons were made by gender ($F = .56$, $p = .45$), major ($F = 1.93$, $p = .11$), meals per day ($F = 1.0$, $p = .37$) and class ($F = .06$, $p = .97$). The variance was also acceptable for student satisfaction when comparisons were made by gender ($F = .06$, $p = .79$), major ($F = .59$, $p = .66$), meals per day ($F = .62$, $p = .53$) and class ($F = .61$, $p = .60$). In addition, a Q-Q plot was assessed to determine if the sample was normally distributed. Figures 1 and 2 show the Q-Q plot for student satisfaction and cafeteria service quality. The results indicate that the assumption of normality was met.

Ethical Concerns

Permission from the university was obtained before data collection began. Students were invited to participate in this study with the knowledge that their participation was voluntary. This procedure is expected when practicing informed consent (Cohen, Manion, & Morrison, 2007). Lastly, this study is a low risk one as there were no concerns of physical or mental harm to those who were part of the study (Shamoo & Resnik, 2009).

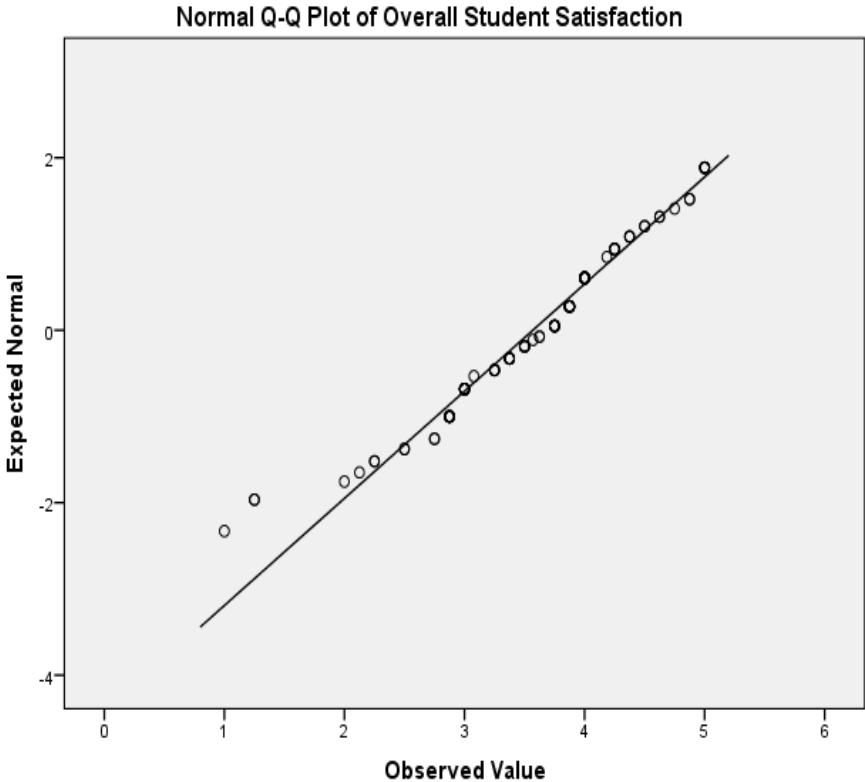


Figure 1. Q-Q plot of student satisfaction

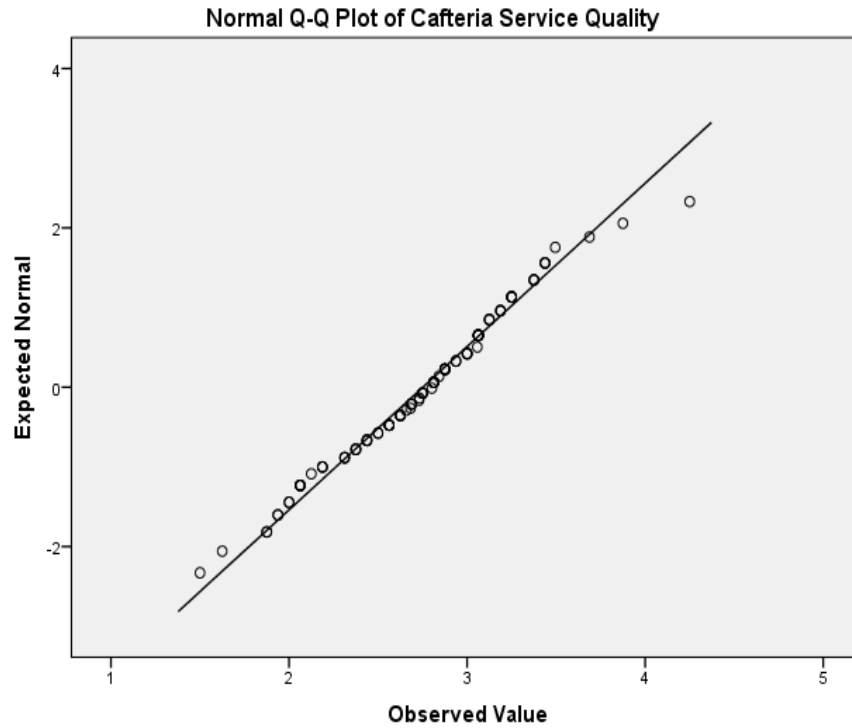


Figure 2. Q-Q plot of cafeteria service quality

Findings

To start with, the descriptive statistics were important to understand the overall overview of student satisfaction. Table 1 indicates the descriptive results of the study.

In relation to cafeteria service quality, the respondents of this study had significant concerns with the pricing of the vegetarian food. The respondents indicate in item 15 that they disagree that food is cheap in the university cafeteria ($M = 1.69$, $SD = .78$). Respondents also disagreed with items 13 and 14 that the price of food is acceptable ($M = 1.99$, $SD = .96$) and that food prices were reasonable ($M = 1.99$, $SD = .88$).

Table 1
Means and Standard Deviation of Survey Items

	M	SD
1. The quality of the food is important to me when dining in at the university cafeteria	4.20	.921
2. Most of the food in the university cafeteria looks attractive	2.72	.964
3. The food in the university cafeteria is low quality	2.92	.928
4. I would recommend to my friends to eat at the university cafeteria	2.48	.990
5. Most of the food served by the university cafeteria taste good	2.47	.936
6. There is a wide variety of food available in the university cafeteria.	2.93	1.018
7. The university cafeteria is clean	3.52	.892
8. The ingredients used to prepare the food are fresh	3.07	.856
9. Most of the food served in the university cafeteria is of high quality	2.86	.853
10. The university cafeteria is open at convenient hours	3.39	.994
11. The food taste bad in the university cafeteria	2.92	.981
12. The university cafeteria offers lots of different dishes to eat	2.71	.913
13. The price of the food is acceptable in the university cafeteria	1.99	.969
14. The food prices are reasonable for the size of the portion served	1.99	.882
15. The food is cheap in the university cafeteria	1.69	.787
16. The price of food is fair value for the quality of food that is served	2.17	.865
17. I am satisfied with my decision to attend this University	3.48	.988
18. If have a choice to do it all over again, I would still enroll at this University	3.26	1.001
19. My choice to enroll in this University was a wise one	3.50	.916
20. I should not have decided to study at this university	3.57	1.056
21. I am happy on my decision to enroll in this University	3.63	.970
22. I made the right decision when I decided to enroll in this University	3.64	.916
23. I am sad that I am studying at this university	3.82	.978
24. I am happy that I enrolled in this University	3.66	.901

The majority of the other items related to cafeteria quality were neutral. For example, respondents were neutral in relation to item 11 about the taste of food ($M = 2.92$, $SD = .98$) and item 2 which assessed the attractiveness of the food ($M = 2.72$, $SD = .96$). In addition, there was no difference in the means of any items related to cafeteria service quality when comparing by year in program (freshman, sophomore, junior, and senior), gender, major (Business, Education, English, Religion, and Science), and meals eaten in the cafeteria each day (1, 2, or 3). Overall, students are mildly satisfied with the vegetarian cafeteria service quality but generally dissatisfied with the price of the food. Since the majority of respondents were from Southeast Asia (78%), the means for region were not compared.

For overall student satisfaction with the university, the respondents indicated mostly neutral to moderately agreeing responses. Item 22 indicated that students moderately agree that they made the right decision to study at their university ($M = 3.64$, $SD = .91$). Respondents also indicated that they were happy they enrolled at their university in item 24 ($M = 3.66$, $SD = .90$). Many students, however, agreed that they are sad to study at their current university ($M = 3.82$, $SD = .978$). There was no difference found in student satisfaction for year in program, gender, major, or number of meals per day eaten in the cafeteria. Overall, respondents are mildly satisfied with their university. Since the majority of respondents were from Southeast Asia, the means for region were not compared.

A scatter plot was developed in order to determine if it was necessary to calculate the correlation between cafeteria service quality and overall student satisfaction with the university. Figure 3 is the scatter plot. The results indicate that there may be a moderate correlation between the two variables.

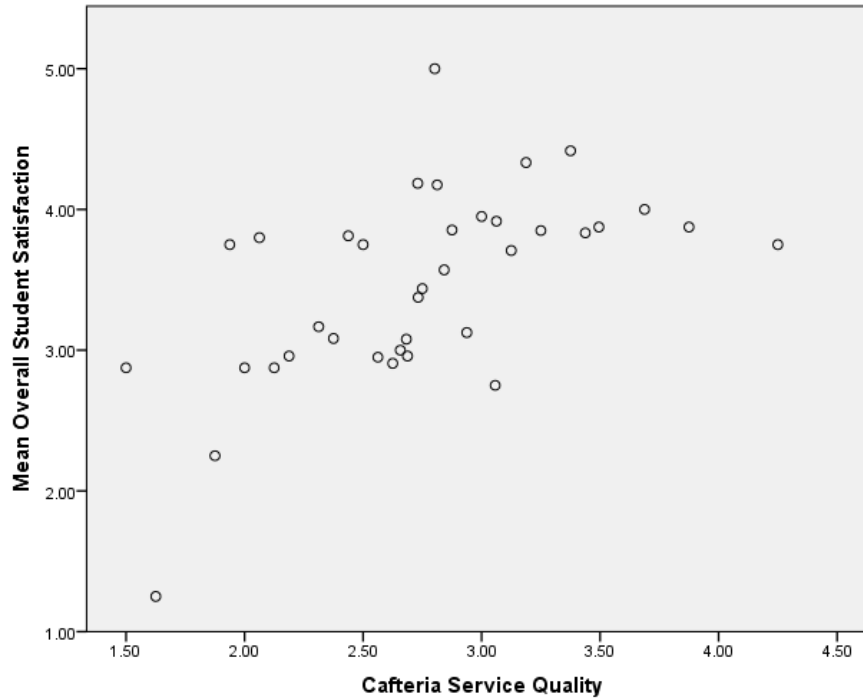


Figure 3. Scatter plot of cafeteria service quality and student satisfaction

To determine if there is a significant correlation between cafeteria service quality and overall student satisfaction with their university, a Pearson correlation was calculated.

Table 2

Correlation of variables

	Cafeteria Service Quality	Student Satisfaction
Cafeteria Service Quality	1	
Student Satisfaction	.40*	1

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

Results indicate that there is a moderate correlation between cafeteria service quality and overall student satisfaction ($r = .40$, $n = 100$, $p = .00$, 95% CI [.22, .58]). This indicates that there is mild a relationship between the variables of this study. Table 2 indicates the results.

Discussion

This study produced several important findings. First, students are moderately satisfied with the vegetarian food services offered in the campus cafeteria. This finding is in contrast with Lombardini and Lankoski's (2013) study in which students were strongly against having just one vegetarian day a week. Lombardini and Lankoski's (2013) study was conducted amongst children while the current study was conducted among young adults. In addition, the contexts were different as the current study was conducted in Southeast Asia while Lombardini and Lankoski's was conducted in Europe. For example, meat consumption in Asia is often half of what it is in Europe (World Health Organization, 2003). After all, many Asians are used to eating more vegetables and less meat (Word Health Organization, 2003). Therefore, switching exclusively to a vegetarian diet is unpleasant but tolerable.

Second, although students reported neutral to moderate satisfaction with the cafeteria quality, there was a concern with pricing. This concern with price is consistent with Abdullah et al. (2012). This sensitivity to price may be because residents of Southeast Asia spend roughly 30% of their income on food while Americans/Europeans spend about 6.5% (Mahapatra, 2014). Since so much more of the yearly budget is dedicated to food expenditures, this makes food prices a sensitive issue for many in Southeast Asia.

Third, the students in this study indicated that they are mostly satisfied with their decision to study at their current university. The level of satisfaction was the same regardless of gender, class level, major, or how often they ate in the cafeteria. The consistency of the satisfaction indicates that there are no extremes in the satisfaction of the students on the campus. They are moderately satisfied. It means that there is no need to differentiate in strategies across groups in order to improve further student satisfaction.

Fourth, there is a moderate relationship between cafeteria service quality and student satisfaction with their university. This indicates that food matters to the students but that it is not everything in terms of their satisfaction with their university. In addition, a moderate correlation as the one found in this study indicates that there is a distinction in the minds of the participants between their satisfaction with their decision to study at their university and the food that is offered there. This finding leads to the conclusion that offering a vegetarian diet is not enough to make many people second-guess their decision to study at such a school.

The food that is offered at a school has an effect on the overall wellness of students and has implications in their ability to connect with their school. This fact has led to some schools choosing to offer a vegetarian diet. Such a diet does not negatively affect a students' satisfaction in the school. The correlation found between cafeteria service quality and student satisfaction was positive. Continued improvements in the quality of food, through a vegetarian diet, could lead to even higher student satisfaction.

These findings lead to the following recommendations. First, the university where this study was conducted should take into account the pricing of the food as this affects perceptions of cafeteria quality. Second, it should support the cafeteria by providing adequate resources for the staff to offer a vegetarian diet that includes a variety of dishes. The staff should use quality ingredients and maintains taste, while still searching to reduce the cost. Last, it is critical that schools understand and realize the relationship between food quality and student satisfaction as it plays a role in students' happiness with their decision to study at the institution.

A study that compares schools that offer a vegetarian diet with schools that do not would be useful to see if there is a difference in the perception of students based on the diet they are exposed to. In addition, combining cafeteria quality with other independent variables that examine student services, such as library quality or student activities, to predict student satisfaction could help schools in evaluating their programs to better assist students. Lastly, a larger study that looks at a vegetarian diet across several vegetarian universities would help in identifying trends among the student body.

This study has some limitations. Purposive sampling is never the first choice in sampling (Fraenkel et al., 2012) in quantitative research. As such, a study that uses another form of sampling would help in improving the validity of the study. In addition, although the sample size was adequate for the two variables of this study, a larger sample size will also help in strengthening the validity. Lastly, the results of this study are limited to the university where the study was conducted.

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Darrin Thomas, PhD
Lecturer
Asia-Pacific International University
dtsac18803@gmail.com