

การพัฒนาประสบการณ์ของนักศึกษา: การศึกษาถึงอำนาจความสะดวก ของสถาบันการศึกษาเอกชนในประเทศไทย

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บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาผลกระทบของสิ่งอำนวยความสะดวกของมหาวิทยาลัยที่มีต่อความพึงพอใจโดยรวมของนักศึกษาต่อมหาวิทยาลัย นักศึกษาคณะบริหารธุรกิจของมหาวิทยาลัยเอกชนจำนวน 237 คน ตอบแบบสอบถามซึ่งสำรวจระดับความพึงพอใจของนักศึกษาที่มีต่อสิ่งอำนวยความสะดวกในด้านต่าง ๆ ของมหาวิทยาลัยและความพึงพอใจโดยรวมต่อมหาวิทยาลัย การวิเคราะห์การถดถอยพหุคูณ (Multiple Regression) ถูกนำมาใช้ทดสอบสมมติฐานที่ว่าสิ่งอำนวยความสะดวกของมหาวิทยาลัยมีอิทธิพลต่อความพึงพอใจโดยรวมของนักศึกษา ผลการศึกษาพบว่าห้องเรียน สิ่งอำนวยความสะดวกด้านเทคโนโลยีและการสื่อสาร รวมถึงบริการด้านอาหารภายในสถาบันการศึกษาส่งผลอย่างมีนัยสำคัญต่อความพึงพอใจโดยรวม นอกจากนี้ยังได้ทดสอบอิทธิพลการกำกับ (Moderation Effect) ของเพศและผลการเรียนของนักศึกษา ผลการศึกษานี้ชี้ว่าระดับความพึงพอใจของนักศึกษาที่มีต่อบริการด้านอาหารนั้นแปรผันตามเพศ ผลของการศึกษานี้สามารถนำไปประยุกต์ใช้ในทางปฏิบัติเชิงการบริหารคือสถาบันการศึกษาเอกชนควรให้ความสำคัญกับการจัดการสิ่งอำนวยความสะดวกมากขึ้นเพื่อที่จะดึงดูดให้นักศึกษาเข้ามาเรียนและรักษาระดับอัตราคงอยู่ของนักศึกษาในศตวรรษที่ 21

คำสำคัญ: การจัดการสิ่งอำนวยความสะดวก, สถาบันการศึกษาเอกชน, ความพึงพอใจของนักศึกษา

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Enhancing Student Experiences: A Study on Campus Facilities at a Private University in Thailand

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Abstract

This study aims to investigate the effect of university facilities on overall student satisfaction in regard to the university. The questionnaires were administered to 237 business students at a private university to assess the level of student satisfaction in regard to various university facilities as well as overall satisfaction in regard to the university. Multiple regression analysis was adopted to test the hypotheses that university facilities can influence overall student satisfaction. The findings reveal that classroom & Information and Communication Technology (ICT) facilities as well as campus food services significantly influence overall student satisfaction. Moreover, the moderating effect of gender and student academic performance were also investigated. The results suggest that the level of student satisfaction in regard to campus food services varied by gender. A managerial implication of this study is that private education institutions should place greater emphasis on facility management to recruit and retain students in the 21st century.

Keywords: Facility Management, Private Educational Institution, Student Satisfaction

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Introduction

The COVID-19 pandemic necessitated a shift to online learning. Since then, many universities have faced declining student enrollment, prompting increased competition globally. To attract and retain students, universities must prioritize physical infrastructure improvements, such as expanded study areas, enhanced technology access, and comprehensive digital resources. Social and recreational spaces should be designed to foster safe interaction and community building, while ensuring that all facilities are accessible and inclusive to meet the diverse needs of the student (Kim, Raza & Seidman, 2019). In this context, the provision of state-of-the-art facilities that can effectively support student learning has become imperative. Many prospective students make their decisions based on the quality of on-site facilities. Over the past decade, higher education institutes have attached great importance to 21st century skills such as teamwork, collaboration, effective communication, and other skills as these skills have become a requirement for students' future careers (Saavedra & Opfer, 2012). Prospective employers are now focusing more on the student's competency rather than their theoretical knowledge in order to ensure that such 21st century skills are learned and practiced by students (Saavedra & Opfer, 2012; Donovan, Green & Mason, 2104).

To develop the 21st century skills of students, facilities are one of the essential factors that support and accommodate the development of student skills (Saavedra & Opfer, 2012; Donovan, Green & Mason, 2014). However, existing facilities may not always adequately support skill development. Enhancing classroom facilities can significantly contribute to long-term academic growth and overall student development (Donovan, Green & Mason, 2014). In addition, Ahmed and Masud (2014) focused on improving user satisfaction in universities, similar to other organizations. To attract and retain students, universities must prioritize student satisfaction (Douglas, Douglas & Barne, 2006). This involves improving facilities in both existing and new buildings to meet student needs. Additionally, high-quality and up-to-date facilities can enhance the quality of education (Moohan, 1993).

The main purpose of this study is to investigate the impact of classroom, Information and Communication Technology (ICT), co-working space, and campus food service facilities on student satisfaction. These facilities are shared resources that contribute to the overall academic and extracurricular experience (Weerasinghe & Fernando, 2017). Additionally, the study examines the moderating effect of gender on the relationship between satisfaction with these facilities and overall student satisfaction. This study makes contributions theoretically and practically. For practitioners, the findings can guide developers,

facility managers, and administrators in prioritizing facility improvements. By identifying the most impactful facilities, university executives and management can allocate resources effectively, optimizing campus infrastructure investments. Ultimately, this study aims to contribute to creating more key approaches for fostering a positive and supportive campus environment, which is crucial for student retention, engagement, and success (Douglas et al., 2006; Saavedra & Opfer, 2012; Donovan, Green & Mason, 2014).

Literature Review

Recently students increasingly view higher education institutions as service providers rather than traditional academic institutions (Weerasinghe & Fernando, 2017). Student satisfaction and feedback are now essential measures of institutional success, leading to increased focus on student experiences, including facilities. Facilities are now recognized as a key factor contributing to the overall value proposition of higher education institutions.

1. Physical and Non-Physical Facilities

There are previous researches that examined the importance of facilities provided by higher education institutions. The purposes of facilities in educational institutions are to provide an appropriate learning environment for students and to enhance teaching and learning efficiency at educational institutions. Moreover, facilities can also be viewed as points of interaction between students and lecturers. The term ‘facility’ is used to describe the majority of an entity’s capital assets, which includes equipment, utilities, buildings, and grounds. Normally, facilities are vital parts of the property of an organization that supports its users to achieve their goals (McGregor & Then, 1999).

Facilities can be categorized into two groups, which are physical and non-physical facilities (Baba, 2002). In educational institutions, the physical facilities are buildings, classrooms, accommodations, administration offices, laboratories, information and communication technology centers, library, wellness center and sport facilities (Abdullahi & Yusoff, 2018). Non-physical facilities like acoustics, lighting, cleanliness, air quality, and ventilation are often omitted by educational institutions. Inadequate management can harm users, leading to issues like sick building syndrome from continued indoor exposure. (Singh, Siahpush & Kogan, 2010).

2. Facilities and Student Satisfaction

Several studies have shown that student satisfaction with core facilities, such as teaching and learning facilities, is a significant factor in overall satisfaction whereas other facility related factors played a minor role (Petruzzellis, d’Uggento & Romanazzi, 2006). The concept of student satisfaction was adapted from

customer satisfaction as students act as the customers of educational institutions. Typically, customer satisfaction is measured by the level of customer expectation and perception of a particular product or service, but overall satisfaction is based on all experiences that the customer had with a specific organization (Bitner & Hubbert, 1994). To understand what students need and expect from an educational institution, there is a growing number of researches that studied the impact of the facilities of educational institutions on student satisfaction. In Italy, Petruzzellis, d'Uggento and Romanazzi (2006) employed the sampling method to recruit students who studied in 12 different faculties at the University of Bari to measure their satisfaction in regard to the university's services and quality in order to determine the reasons why they decided to enroll there. The results shown that Italian students were satisfied with responsiveness, education quality, location, and facilities like lecture halls, laboratories, teaching equipment, accommodation, and internet.

However, these results depended on the year of study and the faculty of the respondent as the needs for internet facilities varied between arts and scientific faculties. In Lebanon, Nasser, Khoury and Abouchdid (2008) found that accommodation, campus life, personal development opportunities, and facilities and services were significant predictors of student satisfaction in Lebanese Catholic higher education institutions. Senior students had lower satisfaction than freshmen. Letcher and Neves (2010) studied the determinants of the overall satisfaction of undergraduate business students by collecting data from 1,212 students who studied in 150 business schools in the United States. In Finland, Kärnä and Julin (2015) investigated the satisfaction of students and staff in regard to the university facilities to analyze which facilities had the greatest impact on the overall satisfaction of students and staff. According to the statistical analysis, the results revealed that the factors related to research and teaching spaces had the highest impact on the overall satisfaction for both students and university staff. In Sri Lanka, the relationship between the university facilities and student satisfaction was studied by Weerasinghe and Fernando (2017). The data were collected from students who studied at four different universities in Sri Lanka using the stratified sampling technique. The results revealed that the lecture room facilities, library facilities, accommodation and entertainment facilities strongly influenced the overall satisfaction of students. Abdullahi and Yusoff (2019) found that both physical and non-physical facilities, including classrooms, laboratories, furniture, heating, cooling, lighting, temperature, and cleanliness, influenced student satisfaction in Nigerian universities.

On the contrary, an opposing perspective can be drawn from a study that investigated the factors influencing student satisfaction in the UK. The research, which surveyed 865 undergraduate students from business and law faculties, revealed that contrary to the increasing emphasis on university facilities, these

were the least important factor in shaping student satisfaction (Douglas et al., 2006). Alternatively, the study found that teaching and learning services were the most critical factor in student satisfaction. In conclusion, UK students value academic quality more than physical infrastructure, even though universities often emphasize facilities as a competitive advantage.

According to a review of the relevant literature, it is apparent that both physical and non-physical facilities are critical factors of overall student satisfaction. These factors incorporate a wide array of learning environments, ranging from campus infrastructure and learning spaces to support services and academic resources. Therefore, the following hypotheses are proposed for further examination and empirical validation.

H1: Classroom facilities have a significant impact on overall student satisfaction

H2: Information and Communication Technology (ICT) facilities have a significant impact on overall student satisfaction

H3: Co-working space facilities have a significant impact on overall student satisfaction

H4: Campus food service facilities have a significant impact on overall student satisfaction

3. Facilities and Student Performance

At the level of higher education, academic achievement, or the learning outcome, can also be measured both at the individual and group level. The grade point average (GPA) is used to examine academic performance at the individual or student level (Jansen, 2004). Temple (2008) ascertained that a suitable building design and internal layout, which are physical elements, could significantly improve both the learning outcome for students and staff satisfaction. Karemera, Reuben, and Sillah (2003) found that students who rated the library facilities highly were more likely to perform better academically than students who rated such facilities with low scores. Their results also revealed that the physical college environment was correlated with student academic performance as well as student satisfaction. The studies of Picus, Marion, Calvo and Glenn (2005) and Bowers and Urick (2011) examined the relationship between the quality of school facilities and student academic performance. The findings showed no correlation between the building's condition and student academic performance. As previously discussed, students prioritize academic quality over physical infrastructure. It is evident from earlier studies that education facilities have a positive impact on student satisfaction and some facilities seem to be related directly to the academic outcome of students. Thus, the hypotheses are as follows:

H5a: The level of student satisfaction in regard to classroom facilities will vary according to the academic performance of students

H5b: The level of student satisfaction in regard to Information and Communication Technology (ICT) facilities will vary according to the academic performance of students

H5c: The level of student satisfaction in regard to co-working space facilities will vary according to the academic performance of students

H5d: The level of student satisfaction in regard to campus food service facilities will vary according to the academic performance of students

4. Facilities and Student Gender

Additionally, gender was identified to be a determinant of student satisfaction. Kwun (2011) found that there was a significant discrepancy in the satisfaction level between male and female students in regard to the campus food service. Thus, the hypotheses are as follows.

H6a: The level of student satisfaction in regard to classroom facilities will vary by gender

H6b: The level of student satisfaction in regard to Information and Communication Technology (ICT) facilities will vary by gender

H6c: The level of student satisfaction in regard to co-working space facilities will vary by gender

H6d: The level of student satisfaction towards campus food service facilities will vary by gender

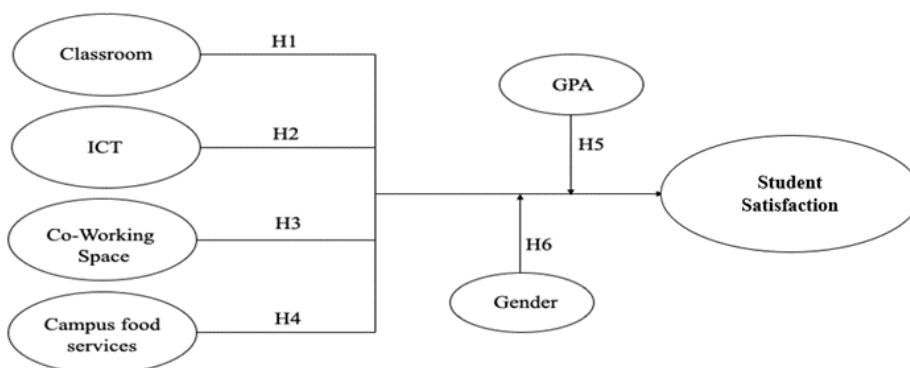


Figure 1: Conceptual Framework

Material and methods

1. Sample and Data Collection

By employing the convenience sampling method, cross-sectional data were collected in various classes at a Thai private university. Convenience sampling, a non-probability method, was chosen for its suitability given the availability of respondents and their willingness to participate at the time of the study.

An online questionnaire, on Google Forms, was randomly distributed to 250 students via QR code. The response rate was 94.8%, with 237 sets of questionnaires administered and returned within a timeframe of 14 working days. According to the descriptive statistics, 61.6% of respondents were female and 38.4% were male. Third-year students represented the majority at 58.23% of respondents whereas 23.63% of the respondents were fourth-year students.

Table 1: Descriptive statistics of sample students

Variables	Descriptive statistics
Gender	Male: 91 (38.4%)
	Female: 146 (61.6%)
Year of study	Freshman: 14 (5.9%)
	Sophomore: 23 (9.7%)
	Junior: 138 (58.2%)
	Senior: 56 (23.6%)
	Over: 6 (2.5%)
Grade Point Average (GPA)	Below 2.00: 9 (3.8%)
	2.00 - 2.50: 86 (36.3%)
	2.51 - 3.00: 60 (25.3%)
	3.01 - 3.50: 33 (13.9%)
	3.51 - 4.00: 49 (20.7%)

2. Measures

The measurement items in the questionnaire were primarily adapted from Weerasinghe and Fernando (2017), with the scales having been previously validated for reliability. The first section of the questionnaire measured student satisfaction in regard to the university facilities with a 5-point Likert scale.

2.1 Classroom facilities:

- 1) Classrooms have good multimedia facilities
- 2) Classrooms have an adequate seating arrangement
- 3) Classrooms are comfortable for learning
- 4) I am satisfied with the cleanliness of classrooms

2.2 Information and Communication Technology (ICT) facilities:

- 1) Computer labs are adequate for students

- 2) Internet access is available for students
- 3) Students can access the computer lab when necessary
- 4) I am satisfied with the services provided by technical staff at the computer lab

2.3 Co-working space facilities:

- 1) University has adequate co-working space for students
- 2) Students can safely discuss group works and other students' matter in the university

co-working space

- 3) I am satisfied with the cleanliness of co-working space of the university

2.4 Campus food service facilities:

- 1) My university has adequate canteens for students
- 2) I am satisfied with the level of cleanliness of the university food service facilities
- 3) I can purchase healthy foods from the university food service facilities
- 4) The food price is fair and affordable for students

In terms of overall student satisfaction, there were four measurement items that were principally adopted from Hanssen and Solvoll (2015). A 5-point Likert scale was utilised, ranging from strongly disagree (1) to strongly agree (5).

1) Based on my experience with the university, I am very satisfied with my choice of education institution.

2) Based on my experience with the university, I will select this university again for my future study.

3) Based on my experience with the university, I will engage in positive word-of-mouth about this university.

4) Based on what I now know, I think I was right when I chose to study at this university.

The second part of the questionnaire survey is in regard to the biodata of respondents e.g., gender, year of study, curriculum of study, and GPA.

Results

1. Reliability

Table 2 shows results of the reliability analysis. All Cronbach's alpha coefficients (α) are greater than 0.7, which means that all items have internal consistency, and the reliability is satisfactory (Nunnally, 1978). The overall student satisfaction score achieved a level of .897, indicating a high degree of

consistency and reliability in the responses. Factor analysis was conducted in the study of Weerasinghe and Fernando (2017) to test the construct validity of the items in the questionnaire.

Table 2: Reliability test.

Variables	Classroom Facilities	ICT Facilities	Co-working space Facilities	Campus food service Facilities	Overall Student Satisfaction
Cronbach's alpha coefficient (α)	0.912	0.884	0.803	0.925	0.897

2. Correlation Analysis

Correlation analysis was used to examine the relationship between student satisfaction with university facilities and overall student satisfaction (SS). Table 3 shows significant positive correlations at the 0.01 level ($p < .001$) between all aspects of university facilities and overall student satisfaction (SS).

Table 3: Correlations

Variables	CR	ICT	CWS	CFS	SS
CR	1	.671**	.636**	.653**	.646**
ICT		1	.622**	.656**	.697**
CWS			1	.641**	.558**
CFS				1	.651**
SS					1

Notes: * p -value $< .05$, ** p -value $< .01$

CR=classroom facilities; ICT=information and communication technology facilities; CWS=co-working space facilities; CFS= campus food service facilities; SS=student's overall satisfaction.

3. Regression analysis

Table 4: Multiple regression result (Dependent variable: overall student satisfaction)

Independent Variables	Beta coefficients and the level of significance	VIF
Classroom facilities	.226**	2.263
ICT facilities	.389***	2.264
Co-working space facilities	.036	2.055
Campus food service facilities	.279***	2.253
R-Square	.576	

Notes: *** $< .001$, ** $< .01$, * $< .05$ Unstandardized beta coefficients are reported

A regression analysis was conducted to test hypotheses 1-4. Hypothesis 1, regarding the positive impact of classroom facilities on overall satisfaction, was supported ($\beta = .226$, $p = .001$). Hypothesis 2, concerning the significant impact of ICT facilities, was also supported ($\beta = .389$, $p = .000$). Hypothesis 3,

regarding the positive impact of co-working spaces, was not supported ($\beta = .036, p = .552$). Hypothesis 4, regarding the positive impact of campus food service facilities, was supported ($\beta = .279, p = .000$).

To ensure that multicollinearity does not exist in the model, a Variance Inflation Factor (VIF) test was conducted to check for multicollinearity. Hair (1998) suggests a VIF limit of 10. Table 4 indicates VIFs between 2.055 and 2.264, confirming no significant multicollinearity. The model's R-squared of 0.576 suggests it explains 57.6% of student satisfaction, with the remaining 42.4% attributed to other factors. To test the moderating effects of student GPA and gender, the moderating effect of GPA was examined first. Table 5 shows VIFs exceeding 10, indicating multicollinearity. Additionally, the F-change was not significant. Therefore, hypotheses 5a-5d, regarding the impact of student GPA on satisfaction with classroom, ICT, co-working, and food service facilities, are not supported.

Table 5: Multiple regression result (Dependent variable: overall student satisfaction, moderator: student GPA)

Model	Independent Variables	Beta coefficients and the level of significance	VIF
A	Classroom facilities	.217**	2.284
	ICT facilities	.386***	2.266
	Co-working space facilities	.031	2.061
	Campus food service facilities	.297***	2.313
	GPA	.047	1.031
	R-Square	.580	

Table 5: continue

Model	Independent Variables	Beta coefficients and the level of significance	VIF
B	Classroom facilities	.099	20.12
	ICT facilities	.593**	18.724
	Co-working space facilities	-.129	15.727
	Campus food service facilities	.349	21.924
	GPA	.044	1.085
	Classroom facilities_x_GPA	.037	22.398
	ICT facilities_x_GPA	-.059	19.939
	Co-working space facilities_x_GPA	.047	16.628
	Campus food service facilities_x_GPA	-.016	20.805
	R-Square	.584	

Notes: *** <.001, ** <.01, * <.05 Unstandardized beta coefficients are reported

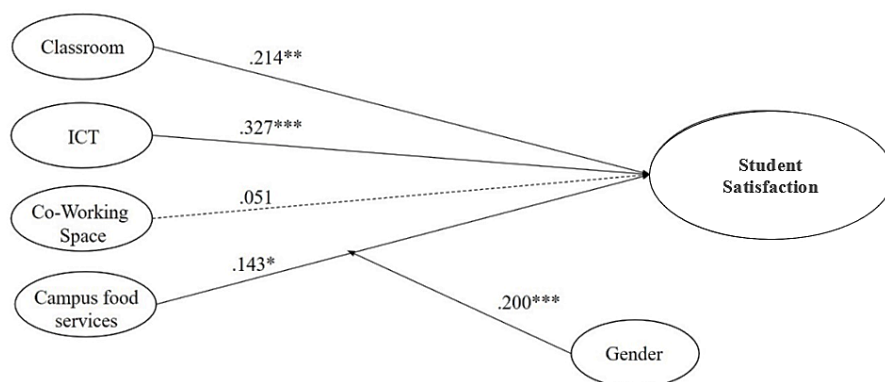
Table 6: Multiple regression result (Dependent variable: overall student satisfaction, Moderator: Student gender)

Model	Independent Variables	Beta coefficients and the level of significance	VIF
A	Classroom facilities	.215**	2.300
	ICT facilities	.386***	2.269
	Co-working space facilities	.044	2.074
	Campus food service facilities	.295***	2.319
	Gender	-.099	1.057
	R-Square	.579	
B	Classroom facilities	.224***	2.303
	ICT facilities	.345***	2.335
	Co-working space facilities	.050	2.076
	Campus food service facilities	.163*	2.933
	Gender	-.120	1.063
	Campus food service facilities x Gender	.268***	1.849
	R-Square	.600	

Notes: *** <.001, ** <.01, * <.05 Unstandardized beta coefficients are reported

Subsequently, another regression analysis was conducted in order to examine whether there was any difference in the level of student satisfaction in regard to various campus facilities and student gender. In other words, student gender was used as a moderator while various campus facilities were used as independent variables. The findings are reported in Table 6. In this model estimation, the variance inflation factors (VIF) were between 1.063 and 2.933, indicating no presence of multicollinearity. The R-squared is 0.579 in model A (Table 6). It can be interpreted that all independent variables included in the regression model can together predict or explain student satisfaction at 57.9 percent. In model B (Table 6), the interaction of campus food service and gender was added to the previous model A. Consequently, model B can predict student satisfaction by another 2.2 percent.

Moreover, the findings reported in Table 6 reject hypothesis 6a, 6b, and 6c i.e., student gender has no influence on the level of student satisfaction in regard to classroom, Information and Communication Technology (ICT), & co-working space facilities. In contrast, the results of the moderation analysis revealed that the level of student satisfaction in regard to campus food service facilities was significantly different between male and female students. Therefore, hypothesis 6d is supported. The results from the regression analysis are visually summarized according to the conceptual model in Figure 2.



Notes: Standardized coefficients are reported.

Solid lines represent significant paths. * $p < .05$; ** $p < .01$; *** $p < .001$.

Figure 2: Results of regression analysis according to the conceptual framework

Discussion & Conclusions

1. General Discussion of the Results

This study explores the relationship between university facilities and student satisfaction, with a particular emphasis on identifying the most influential factors. Results indicate that not all facilities contribute equally. While co-working spaces have limited impact, Information and Communication Technology (ICT) facilities, such as high-quality internet, digital tools, and learning management systems, significantly influence student satisfaction. This aligns with the increasing reliance on digital tools in academic activities. ICT facilities support students' learning, communication, collaboration, and time management (Petruzzellis, d'Uggento & Romanazzi, 2006). The limited impact of co-working spaces may be due to factors like course requirements, limited availability, and the preference for online meetings.

The findings emphasize the necessity for universities to highlight investments in facilities that directly contribute to studying and learning pathways. Fundamental resources like Information and Communication Technology (ICT) facilities play a more significant role in shaping the overall student experience (see Figure 2). In addition, the classroom facilities and campus food services also significantly influenced overall student satisfaction. Classroom facilities are performing to the learning experience, serving as the primary environment where learning and interaction take place. Well-equipped classrooms that feature modern technology, comfortable seating, appropriate lighting, and a conducive learning environment are crucial for enhancing student engagement and academic performance. The findings of this study are

in alignment with the previous studies of Petruzzellis, d'Uggento & Romanazzi (2006), Kärnä and Julin (2014), Weerasinghe and Fernando (2017) and Abdullahi and Yusoff (2018).

Furthermore, the moderating effects of gender and GPA were tested. The results showed that only satisfaction with campus food service facilities differed significantly between genders. Female students were less satisfied with campus food services than male students. This finding highlights the importance of considering gender-specific preferences in providing facilities and services to create a more inclusive and equitable campus environment.

2. Limitations

This study's limitations include a focus on business students and a lack of consideration for varying facility needs across faculties. Future research should involve a wider range of students and assess facility importance by faculty.

3. Recommendations for Future Research

Future research could add control variables that might affect the level of student satisfaction, for example, the time that students spent on each facility, the facility required by students from different faculties, other sets of facilities etc. Moreover, non-physical facilities should also be considered. In addition, longitudinal analysis research could be conducted to compare the level of student satisfaction across time (Kok, Mobach & Omta, 2011; McLaughlin & Faulkner, 2012). This study focused on gender as a moderating factor in understanding student perceptions of university facilities. This would provide a more comprehensive understanding of how gender interacts with other institutional and environmental factors to influence student satisfaction. Additionally, future research should include integrating both quantitative and qualitative data to enrich the findings and offer deeper insights.

4. Managerial Implications

The empirical findings of this study offer beneficial recommendations for university management and facility managers to enhance facility management effectiveness and efficiency. When planning future infrastructure developments, universities should prioritize facilities that significantly impact student satisfaction.

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