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When the New Building Is Finally Ready: A Study of Students' Satisfaction

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Abstract

Student satisfaction with the facilities of higher education institutions is known to have a positive impact onto the overall satisfaction with their course. However, different aspects of the facilities are assessed differently, and the satisfaction varies according to the specific context and prior experience. This research assesses student satisfaction in a specific case, namely facilities that have been refurbished and closed for one year and a half. In these facilities, more than 1.400 students usually have classes at post-secondary, bachelor and master level, both during daytime and at night. The courses lectured are business-related. We used a questionnaire-based survey and collected a sample of 494 respondents. We used exploratory factorial analysis and linear regression to understand which were the aspects that influenced most the overall student satisfaction with the new facilities. Results indicate that satisfaction with Classrooms Aesthetics / Size / Furniture, Classrooms Acoustics / Lightening, Temperature, Availability of Sockets, Orientation / Signage and WiFi had a positive impact in the overall satisfaction. More, in some of the dimensions, significant differences were identified according to Gender, Age, Type of Student, Course and Knowledge of the previous facilities.

Keywords: student satisfaction, higher education, facilities, questionnaire, survey, exploratory factorial analysis, linear regression

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1. INTRODUCTION

Student satisfaction with the facilities of higher education institutions is known to have a positive impact onto the overall satisfaction with their course (Haverila, Haverila, McLaughlin, & Arora, 2021; Jawhari, Yampohekya, & Maham, 2022).

However, different aspects of the facilities are assessed differently, and the satisfaction varies according to the specific context and prior experience (Abbas, 2020; Ahmad, 2015; Arslan & Akkas, 2014; Bui, Selvarajah, Vinen, & Meyer, 2021).

This research assesses student satisfaction in a specific case, namely facilities that have been refurbished and closed for one year and a half. In these facilities, more than 1.400 students usually have classes at post-secondary, bachelor and master level, both during daytime and at night. The courses lectured are business-related.

We use a questionnaire-based survey and collect data using a randomized, structured sampling procedure. After validation, the data is analysed using exploratory factorial analysis and linear regression.

This paper is structured as follows. First, we present the literature review. Next, we present the methodology, which includes the conceptual model and the preparation of the questionnaire-based survey. Subsequently, we present the results. We end with the discussion and the concluding remarks.

2. STUDENT SATISFACTION IN HIGHER EDUCATION: WHY SHOULD WE CARE?

Student satisfaction is an important measure to assess and improve quality in higher education (Ahmad, 2015; Yin & Wang, 2015) and also an antecedent to academic success. In particular, the physical space (e.g. campus, classrooms, library, laboratories) may trigger different responses and behaviours and, if not adequate, it may have a negative effect on students' overall experience (Chu, Lee, & Obrien, 2018; Cinkir, Yildiz, & Kurum, 2022; Mei, Aas, & Eide, 2020).

Student satisfaction depends upon different factors, related and unrelated to the teaching and learning experience (Ahmad, 2015; Cinkir et al., 2022; Jarrar et al., 2022) and recent authors point out the necessity to take a holistic approach to quality in higher education (Abbas, 2020; Cinkir et al., 2022; Marimon, Mas-Machuca, Berbegal-Mirabent, & Llach, 2019; Sultan & Wong, 2014).

According to the area of study, geographical location or level of education, the factors that influence student experience and student satisfaction may vary.

For instance, students in China have been found to value academic freedom (Yin & Wang, 2015), life satisfaction, curricula coherence and learning facilities (Chen, Fan, & Jury, 2017), while students in Thailand value responsiveness, empathy and facility (Darawong & Sandmaung, 2019). Turkish students value life satisfaction and university identification (Arslan & Akkas, 2014) and in Cyprus, while facilities are nicely evaluated, students aim to change university due to the geographical location and more attractive options elsewhere (Mehtap-Smadi & Hashemipour, 2011). In Spain, facilities are not so important and what matters most is the quality of the curriculum (Marimon et al., 2019), while in Italy students value utmost the teaching efficiency (Bini & Masserini, 2016). One may argue that cultural / geographical factors seem to be quite relevant.

Facilities, their characteristics, quality and preservation state play an important influence in most cases (Arslan & Akkas, 2014; Cinkir et al., 2022; Jarrar et al., 2022; Pandita & Kiran, 2023) and they are associated with well-being (Bini & Masserini, 2016; Chen et al., 2017) or lack of it (Chu et al., 2018).

As mentioned by Marimon et al. (2019), Arslan and Akkas (2014) and Thomas and Galambos (2004), even when the teaching and learning is the most important antecedent to overall student satisfaction, services and facilities of the higher education institution are needed to provide a good service, sort of a precondition to raise academic satisfaction.

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Considering the importance of the facilities for student satisfaction, several scales include items to assess them and several studies have been developed specifically oriented towards satisfaction of students with the higher education facilities (Abbas, 2020; Bini & Masserini, 2016; Marimon et al., 2019; Potthoff, 2009; Sirgy et al., 2010; Wong & Chapman, 2023).

3. METHODOLOGY

3.1. CONCEPTUAL MODEL

In order to analyse student satisfaction, we chose a specific focus: new facilities opened in 2023 after a one year and a half period of refurbishment in the aftermath of the Covid-19 pandemics, located in Portugal. The students that use these facilities belong to different levels of study, from post-secondary to master level, and have courses in business-related areas, in daytime and by night.

We adjusted the items mentioned by scholars (Haverila et al., 2021; Jawhari et al., 2022; Napitupulu et al., 2017; Potthoff, 2009; Weerashinge, Lalitha, & Fernando, 2018) to the context of the analysed facilities and we obtained the conceptual model presented in Figure 1. The items were organized in three different categories: Classrooms, Study Rooms and Building as a whole.

Based also on the characteristics of the facilities and the students, we chose to collect information about the following variables: gender, age, course, type of student (day or working adult – night).

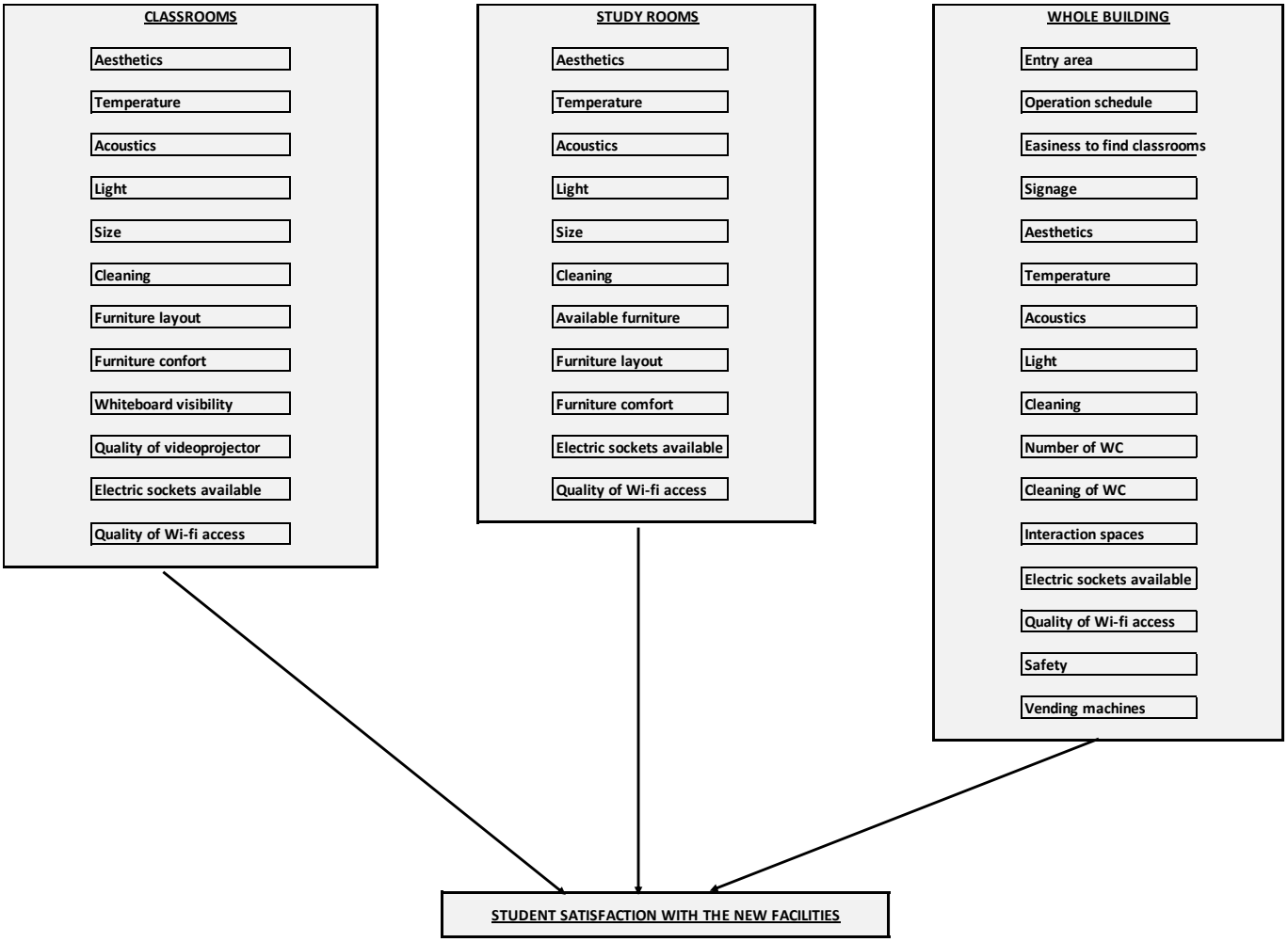

Figure 1 - Conceptual model

Source: own elaboration

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3.2. QUESTIONNAIRE-BASED SURVEY

The survey was next put together. The population under study was composed of all students enrolled in courses at the time of the survey, with 18 years or more, that had classes in the new facilities, a total of approximately 1.400 students.

We developed a questionnaire using the items mentioned in Figure 1, with a 5-point Likert scale, where 1 was totally unsatisfied and 5 was totally satisfied, and additionally we had an option Doesn't Know / Doesn't Answer. We added the variables gender, age, course and type of student. The questionnaire was developed for self-administration, in paper, and was pilot tested with five students before distribution to the population.

We used a random sampling procedure, choosing one class for each year and course, so that all students would have the opportunity to fill in the questionnaire. Naturally, there is a limitation associated to this choice, as students who were not present in class could not fill the questionnaire.

4. RESULTS

Data was collected between April and May 2023, by distributing paper questionnaires to the selected classes, and we obtained a total sample of 494 respondents, representative of the population, with an error margin of 3,55% at 95% confidence level.

4.1. SAMPLE CHARACTERIZATION

Table 2 presents the sample characterization. We did not add in the table the options "Doesn't Know / Doesn't Answer" to increase the readability.

Table 1 – Sample Characterization

Variable	Items	Value (%)
Gender	Male	35,6
	Female	63,4
Age	18-24	81,2
	25-34	8,9
	35-44	5,7
	45-54	3,4
	55 or more	0,6
Working Adult	Yes	30,8
	No	68,0
Knowledge of the previous facilities	Yes	44,7
	No	55,3

Source: own elaboration

4.2. DESCRIPTIVE STATISTICS

All items included in the questionnaire have been analysed based on their mean, standard deviation, skewness and kurtosis. The mean varied between 2,34 (Electric Sockets available in Classrooms) and 4,36 (Safety in the Building). The overall satisfaction of the students with the new building was 3,60.

4.3. EXPLORATORY FACTORIAL ANALYSIS

Next, we applied Principal Component Analysis with Varimax rotation on all items related to Classrooms, Study Rooms and Building as a whole. As indicated in Table 2, KMO and Bartlett's test are within the acceptable values.

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Table 2 – KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,889
Bartlett's Test of Sphericity	Approx. Chi-Square	5.351,237
	df	741
	Sig.	,000

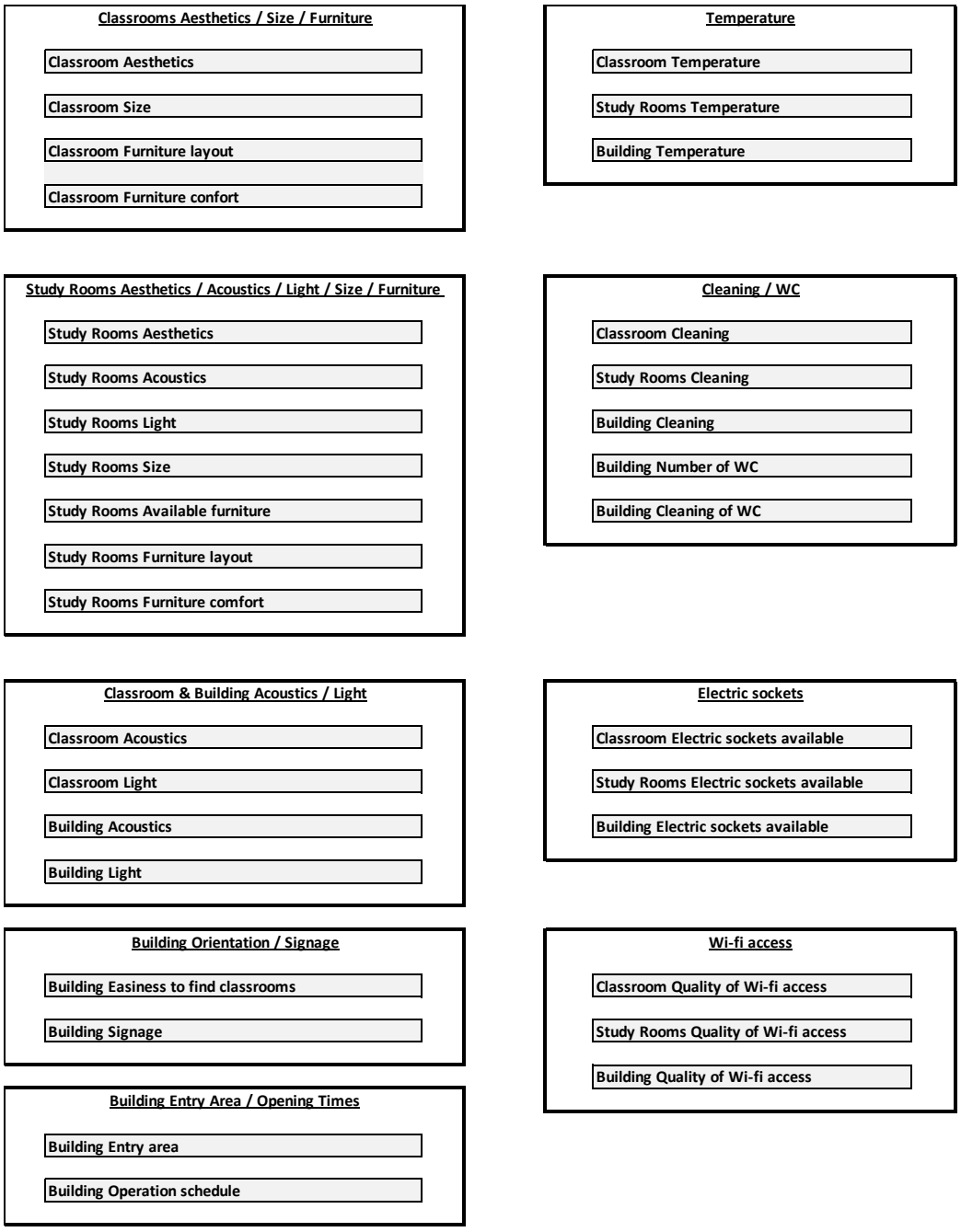

Figure 2 - Factors
Source: own elaboration

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A total of nine factors have been identified (see Figure 2), with 61,02% loadings cumulative percentage. Six items did not reach the minimum value in the rotated component matrix and were eliminated from the study.

The reliability analysis for the nine factors was performed with Cronbach's Alpha and the statistics indicated good or very good reliability of eight factors (see Table 3 for the reliability and factor coding). The factor Building Entry Area / Opening Times was eliminated.

Table 3 – Reliability analysis for the identified factors

Factor	Cronbach's Alpha	Mean
CASF: Classrooms Aesthetics / Size / Furniture	0,714	3,443
SRAALSF: Study Rooms Aesthetics / Acoustics / Light / Size / Furniture	0,864	3,655
CBAL: Classroom & Building Acoustics / Light	0,755	3,991
BOS: Building Orientation / Signage	0,818	3,290
BEO: Building Entry Area / Opening Times	0,381	n.a.
Temp: Temperature	0,862	3,407
CW: Cleaning / WC	0,824	3,895
ES: Electric sockets	0,818	2,771
WIFI: Wi-fi access	0,898	3,744

Source: own elaboration

4.4. LINEAR REGRESSION

We tested the influence of the eight remaining factors onto the Overall Satisfaction of Students with the facilities (OSS), using linear regression with the stepwise model. From the eight factors, only six have a statistically significant impact on OSS, with CW and CASF having no significant impact.

The model obtained has a good adjusted R^2 (0,511) and the Durbin-Watson statistic is within accepted values (see Table 4). The Anova test has a significance below 0,001 (see Table 5). The coefficients are all significant (see Table 6).

Table 4 – Regression model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
6	,719[f]	,517	,511	,4733	,006	5,829	1	487	,016	1,858

Predictors: (Constant), SRAALSF, Temp, ES, CBAL, BOS, WiFi

Dependent Variable: OSS

Table 5 – Anova

Model		Sum of Squares	df	Mean Square	F	Sig.
6		116,790	6	19,465	86,903	<,001[g]
		109,080	487	,224		
		225,870	493			

Dependent Variable: OSS

Predictors: (Constant), SRAALSF, Temp, ES, CBAL, BOS, WiFi

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Table 6 – Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
6	(Constant)	,557	,152		3,672	<,001					
	SRAALSF	,214	,035	,237	6,193	<,001	,543	,270	,195	,677	1,476
	Temp	,171	,027	,232	6,349	<,001	,519	,276	,200	,740	1,350
	ES	,138	,023	,210	6,079	<,001	,439	,266	,191	,828	1,207
	CBAL	,215	,043	,193	4,959	<,001	,515	,219	,156	,654	1,530
	BOS	,082	,025	,117	3,313	<,001	,417	,148	,104	,791	1,265
	WiFi	,060	,025	,082	2,414	,016	,328	,109	,076	,855	1,170

Dependent Variable: OSS

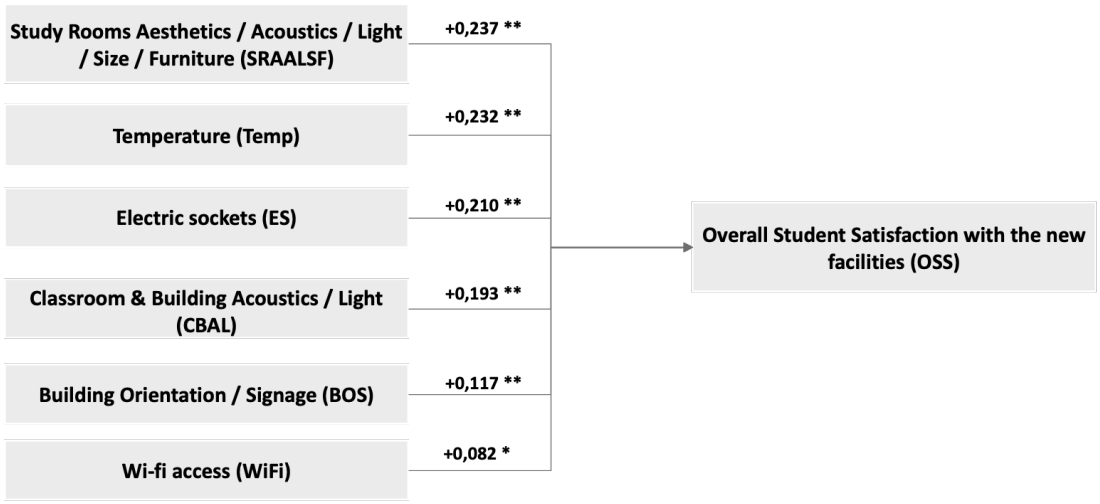

Figure 3 - Empirical model

Therefore, the regression model can be represented visually as indicated in Figure 2 and written as:

OSS = 0,237 * SRAALSF + 0,232 * Temp + 0,210 * ES + 0,193 * CBAL + 0.117 * BOS + 0,082 * WiFi + 3,672

We note that Study rooms characteristics have the strongest impact onto student satisfaction with the new facilities, followed by the temperature and the electric sockets.

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4.5. NON-PARAMETRIC TESTS

Finally, we performed non-parametric tests on the factors included in final model and we identified a set of statistically significant differences, as presented in Table 7.

Table 7 – Results of non-parametric tests

Variable	Non-parametric test	Statistical differences in factors
Gender	Independent Sample Kruskal-Wallis	Temp
Age Groups	Independent Sample Kruskal-Wallis	SRAALSF
Working Student	Independent Sample Kruskal-Wallis	Temp, SRAALSF
Course	Independent Sample Kruskal-Wallis	Temp, SRAALSF, ES, OS, WiFi
Knowledge of the previous building	Independent Sample Mann-Whitney U	SRAALSF, WiFi

5. DISCUSSION AND CONCLUDING REMARKS

The results obtained indicate that overall student satisfaction with the new facilities depends upon the satisfaction with study rooms characteristics, temperature, electric sockets, orientation & signage and WiFi.

As the mean satisfaction with the electric sockets is negative (2,771), one way to improve student satisfaction with the new facilities, independently of gender, age group, type of student or course, is to increase the number of electric sockets in all spaces: classrooms, study rooms and overall building. This is possible due to the infrastructure in place, yet it would require an investment from the management of the new facilities.

Temperature is also a relevant factor to consider, with differences between gender and type of student. The satisfaction with the study rooms have shown differences depending on age group, type of student and knowledge of the previous building.

Students who have known the building before had lower satisfaction levels regarding the study rooms, which points out to another area of improvement for management, yet also show higher levels of satisfaction regarding WiFi quality, an area that is perceived by students to have improved compared with previous facilities.

These findings corroborate results obtained by previous scholars (e.g. Abbas, 2020; Ahmad, 2015; Arslan & Akkas, 2014; Bui et al., 2021) regarding the different aspects of the facilities which are assessed differently, and the fact that satisfaction varies according to the specific context and prior experience.

However, while on one hand the study is particularly relevant for the context where it was applied, having obtained a representative sample which is generalizable to the population (students having classes in the new facilities) and providing managerial implications, on the other hand it is very dependent on the context which limits the theoretical contributions.

In that sense, results may serve as basis for future studies regarding facilities in Mediterranean Europe used by students attending business-related higher education courses, yet they cannot be used to deduct student satisfaction in other populations.

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