Measuring Satisfaction with Student Housing Facilities

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Abstract: Problem statement: In the past decade, resident satisfaction has been used as an important indicator in evaluating student housing quality and services. This study investigates the level of resident satisfaction with student housing facilities. In particular, it examines the level of student satisfaction with living accommodations at one of the leading universities in Malaysia. **Approach:** The residential satisfaction framework was based on post-occupancy evaluations and has been utilized in previous studies; we expand the framework to address physical and social variables. Face-to-face surveys were conducted with participants who were selected using a cluster sampling technique. **Results:** The results show a mean satisfaction level of 2.61, which indicates that students are generally satisfied with student housing facilities. This score was lower, however, than the results of previous studies. **Conclusion:** By assessing residential satisfaction among students, we hope to provide valuable feedback to housing administrators and facility managers of higher learning institutions, thus enabling them to improve their services and offer better housing facilities in the near future.

Key words: On-campus housing, Closed Circuit Television (CCTV), residential satisfaction, student housing facilities, Post-Occupancy Evaluation (POE), laundry room, dormitory

INTRODUCTION

Assessing and quantifying satisfaction with daily life have recently both been topics of vibrant debate. An individual's life satisfaction can be gauged on the basis of his or her job; self-esteem; relationships; basic physical needs such as food, shelter, clothes and belongings and other factors (Hofstede, 1984; Maslow, 1987; Lotfi et al, 2009). Numerous studies have examined various aspects of satisfaction, including residential satisfaction, customer satisfaction, job satisfaction and environmental satisfaction. Only a limited number of studies, however, have examined residential satisfaction among university students. Few studies explore the physical and social factors that influence residential satisfaction with student housing, for example, Foubert et al. (1998) in the United States and Khozaei et al. (2010) in Malaysia. Kaya and Erkip (2001) also evaluate student satisfaction, focusing on perceptions of room size and crowding in Turkey. In Saudi Arabia, Hassanain (2008) studies the degree of satisfaction in terms of both technical performance (i.e., thermal comfort) and functional performance (i.e., room layout and furniture quality) in sustainable student housing facilities. He uses his findings to develop a model for so-called Post-Occupancy

Evaluation (POE). Meanwhile, Amole (2009a) investigates the characteristics of residence halls in Nigeria that correspond with high levels of residential satisfaction among students. Although the studies by Kaya and Erkip (2001) and Hassanain (2008) were conducted in developing countries, the locations are distinct with respect to the culture and climate found in developing countries in Southeast Asia. The recognize published study based on Southeast Asia, Dahlan et al. (2009) investigate perceptions of thermal comfort in Malaysian on-campus housing rooms. However, as with other studies, Dahlan et al. (2009) adopt a narrow focus on specific aspects of student housing satisfaction, namely, thermal comfort. More recently, Khozaei et al. (2010) scrutinize the correlation between students satisfaction and sense of attachment to that particular student housing. Most previous studies do not address a broad spectrum of satisfaction with student housing and thus, they are unable to provide meaningful guidance for student housing managers and university administrators. For this reason, we devised another study that takes a holistic approach to examining student housing satisfaction in the developing world.

In today's higher learning environment, the demand for modern on-campus housing has increase (Najib and Yusof, 2009; Khozaei et al., 2010). Modern

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student housing facilities are considered essential to cater to student housing needs (Susilawati, 2001; Hassanain, 2008; Najib and Yusof, 2010). Previous studies have identified characteristics that influence resident satisfaction with student housing. Koch *et al.* (1999) and Olujimi and Bello (2009) specify that kitchens, private bathrooms, study lounges and social spaces are considered basic necessities in student housing. Schenke (2008) highlights the value placed on Internet access, either through a network connection or Wi-Fi, in each student's room. Torres-Antonini and Park (2008) cite as essential features communal facilities such as laundry rooms, kitchens, study rooms and television rooms; they also specify the use of carpet and air-conditioning in these rooms. Moreover, Abramson (2009) finds that extra amenities such as ATM machines, parking lots, mini markets, bookstores and cafeterias should also be provided in student housing. The inclusion of these sophisticated student housing features results in a higher level of residential satisfaction (Torres-Antonini and Park, 2008; Abramson, 2009; Khozaei *et al.*, 2010). However, in much of the developing world, equipping all student housings with these sophisticated facilities would be prohibitively expensive and illustrate those students as too demanding. This obstacle has prompted some researchers in the developing world to investigate the actual needs of students. Khozaei *et al.* (2010) postulate that feeling attach to the place can be originated from the overall residential satisfaction. While Dahlan *et al.* (2009) study thermal comfort in non-air-conditioned hostels in tropical climates and find that in a room of less than 50 m^3, one ceiling fan cools the room sufficiently. They also find that a satisfactory indoor climate can be achieved by providing a projected balcony adjacent to the window wall in student housing, but the authors do not analyze student satisfaction with other features provided in student housing. A similar study by Hassanain (2008), which was conducted in the desert climate of Saudi Arabia, finds that students are more satisfied with the indoor temperature during the summer than in the winter. Because of the narrow focus of these studies, another study is needed to evaluate student satisfaction with aspects beyond thermal comfort.

Malaysia is the perfect site for such as study, given the Malaysian government's goal of providing world-class facilities. The government seeks to attract 120,000 international students in 2015 and to promote Malaysia as a regional center of educational excellence (Bernama, 2010). Edsir (2008) notes that Malaysia has maintained an annual increase in international students of 30 percent since 2006, as part of its strategy to become a new contender in global higher education. Providing high-quality living environments for these international students is thus an important inducement for them to live and study in Malaysia. As Amole (2009a) points out, satisfaction with student housing is an important indicator in evaluating the quality of student living environments. Other studies that examine higher learning institutions in Malaysia, such as Sohail *et al.* (2003) and Sapri *et al.* (2009) focus instead on factors that influence student enrollment at higher learning institutions; Yeow *et al.* (2008) discover the preferences of online products and services among students; and Elias *et al.* (2010) examine the association between adjustment behaviour with students' achievement motivation and self-efficacy.

Therefore, the aim of this study is to investigate resident satisfaction with on-campus student housing facilities in Malaysia. This study contributes to the literature by expanding the post-occupancy evaluation model developed by Hassanain (2008) and later employed by Dahlan *et al.* (2009) to include additional variables beyond temperature that are relevant to the tropical climates in the developing world. As a practical contribution, the results provide insights for housing administrators and facility managers at higher learning institutions. This information will enable them to improve their services and to offer better on-campus housing facilities in the near future. The results will also help policy makers develop strategic policies to ensure that Malaysian universities provide world-class on-campus student housing, in keeping with the aforementioned higher education goals of the Malaysian government.

Student housing facilities: The conception of student housing draws upon the model of the conventional family house. For Sixsmith (1986), home is not a single place for each person; rather, a number of places can fill this role simultaneously. Similarly, Klis van der and Karsten (2008) argue that home can be a dual-residence situation in which one dwelling is near the workplace and the other is the family residence (hometown). This concept as referenced by Sixsmith (1986) and Klis van der and Karsten (2008) are comparable to commuter residence. A student, for example, has both a university house close to the college and a home in his or her hometown. Students demand and acquire a second residence (i.e., university housing), where they stay during workdays and this second residence is temporary in nature. Moore (2000) and Barnes *et al.* (2009) suggest that people attach a variety of connotations to their understanding of a house. Thus, Sitar and Krajnc (2008) claim that old houses need to be renovated for

living comfort confirmation, compromise innovative technologies and fulfilled inhabitants needs. The understandings among students of their student housing are similarly diverse. Susilawati (2001) and Khozaei *et al.* (2010) define student housing as a densely building with many rooms in which each room contains several beds. According to this definition, student housing provides sleeping and living quarters, usually without private baths, for a large number of people and such housing is furnished and rented by the bed. Willoughby *et al*. (2009), however, describe student housing as a building that provides lodging and gives students an option to stay on-campus if they have nowhere else to reside. In addition, student housing goes by many names, such as halls of residence (Amole, 2005), student dormitory (Kaya and Erkip, 2001), catered halls (Price *et al.*, 2003), university housing (Bland and Schoenauer, 1966) and hostels (Sohail *et al.*, 2003; Dahlan *et al.*, 2009; Khozaei *et al.*, 2010).

What constitutes student housing facilities? According to Melnikas (1998) and Olujimi and Bello (2009), housing facilities can be defined as rooms furnished with sophisticated amenities, suitable to house social activities and indicative of a certain lifestyle. The major need addressed by such facilities is a dwelling, but we also argue that the desire to interact and socialize with friends or to attain a desired social status may explain why individuals demand some housing facilities. Simply put, student housing facilities can fulfill several needs and desires. The student complex offers rooms that are equipped with complete facilities and services, but the space can also encourage friendships and provide a silent study environment. Student housing offers security and privacy and renting such spaces to students allows university housing administrators to fulfill student needs and aspirations (Najib and Yusof, 2009).

In light of the above discussion, the student housing facilities examined in this study consist of study-bedrooms, washrooms (i.e., bathrooms and laundry rooms), pantry, leisure rooms (i.e., study areas, computer centers, television lounges, meeting rooms and a 'musalla', or prayer room for Muslims) and other support services (i.e., parking lots, cafeterias, mini markets, ATM machines, Closed Circuit Television (CCTV) surveillance systems and security guards). We add 'musalla', or prayer rooms, as an important facility because local authorities require the inclusion of prayer rooms in student accommodations in Malaysia.

Residential satisfaction from the perspectives of students: Some authors argue that students can perform well in their studies if they have good, comfortable living conditions in their student housing (Amole, 2005; Hassanain, 2008). Melnikas (1998) and Sitar and Krajnc (2008) stress that evaluating and renovating of housing is crucial to increase occupant standards of living as well as rectify any defects in the facilities. Thus, resident satisfaction must be ascertained regularly to address student housing needs.

What does residential satisfaction mean, from a student's perspective? The criteria are similar to those used in assessing conventional housing satisfaction. Salleh (2008) and Mohit *et al.* (2010) explain that residential satisfaction is the positive experience expressed by occupants when their home meets their expectations for unit features, housing services and neighborhood facilities. Thus, Foubert *et al.* (1998) and Najib and Yusof (2010) specify that residential satisfaction among students stems from high-quality facilities, positive roommate relationships, strong floor communities and quiet study environments in their living accommodations. However, Kaya and Erkip (2001) contend that student satisfaction is based on having wider and brighter rooms with less noise and stress in the living areas, whereas Amole (2005) claims that students assess residential satisfaction based upon levels of crowding and privacy in their rooms. Thus, we argue that student residential satisfaction is an evaluation of their on-campus living accommodations. In other words, resident satisfaction stems from the perceived quality of housing facilities and services.

One common residential satisfaction measurement used in previous studies is the Post-Occupancy Evaluation (POE). Hassanain (2008) points out that student perceptions can be assessed in terms of both technical (i.e., acoustic and visual comfort) and functional (i.e., room finishes and room layout) requirements. He considers technical and functional performances as two different aspects that can be used to explain student residential satisfaction. In a different approach, Foubert *et al*. (1998), Amole (2009a) and Khozaei *et al.* (2010) investigate beyond the scope of housing facilities and add management as a factor in student satisfaction. They include elements such as hostel rules and fees and the attitudes of hostel employees. Several factors can used to assess overall satisfaction with student housing, including physical variables such as facilities and extra services (Hassanain, 2008); social variables such as student relationships, financial support, crowding and privacy (Frank and Enkawa, 2009) and a combination of these aspects (Foubert *et al.*, 1998; Amole, 2005, 2009a, 2009b; Khozaei *et al.*, 2010). Nevertheless, previous studies have not provided conclusive results regarding student satisfaction in all of these areas.

Both physical and social variables are used to measure student satisfaction with housing facilities in the present study. Availability of a 'musalla', is included as a feature because prayer rooms are required facilities in Malaysian on-campus housing.

MATERIALS AND METHODS

Respondents, location and sampling: This study employs a quantitative data collection technique, namely, a survey. The location chosen for this study is one of Malaysia's oldest leading universities, located in the Northern region. Eight clusters of on-campus housing are located in the study area. Each cluster consists of several housing blocks, with female and male students residing in separate blocks. A majority of the study-bedrooms are designed to accommodate two occupants at a time; at one hostel, the rooms are designed for up to three persons.

A random sample of 290 students was drawn from the residential population. These respondents represent 15% of the population. However, only 164 responses were useful for further analysis. Using a simple random cluster sampling procedure, the respondents were selected from every floor level in female and male blocks in every on-campus housing cluster. This sampling method was chosen according to methods used by Lam *et al*. (1998); Adamchak *et al*. (2000) and Burton *et al*. (2005) because the respondents are already "naturally" clustered into groups (that is, by block and gender). The respondents are 41.5% male and 58.5% female and consist of 74.4% Malays, 20.7% Chinese, 4.3% Indians and 0.6% others (all international). A majority of the students are between 19 and 23 years old (89.6%). Most of the respondents (91.5%) are undergraduate students. On-campus student housing is typically reserved for undergraduates, whereas postgraduates usually prefer to reside off campus.

Instrument and data analysis: The survey forms were distributed face-to-face to the targeted respondents in the study area. The questionnaires consist of two sections. Section 1 consists of 14 profile questions and section 2 includes 107 items addressing student satisfaction with housing facilities. A 4-point Likert scale, ranging from 1 "Strongly Dissatisfied" to 4 "Strongly Satisfied" was used, with no neutral choice so that respondents were forced to show a preference in their answers.

A reliability analysis was conducted for the scaled answers in section 2. According to Foubert *et al.* (1998)

and Khozaei *et al.* (2010), their satisfaction scale shows good internal consistency, with a reported Cronbach's alpha coefficient ranging from 0.52-0.86. Likewise, in the current study, the Cronbach's alpha coefficient ranges between 0.82 and 0.97. The results show that the scale can be considered reliable given our sample, which measured the same residential satisfaction concept.

To quantify student satisfaction with housing facilities, we calculated the mean response for each item in the housing facilities construct. Referring to Hassanain (2008) calculations, we followed the following steps. First, to obtain the average satisfaction mean for every facility, the sum of the response mean for every item was divided by the number of items. Second, to determine the total mean average for student satisfaction with their housing facilities, the sum of values from step 1 was divided by the total number of housing facilities. By adopting the mean calibration as proposed by Hassanain (2008), the mean results were validated as follows:

- If the mean response is below 1.49, this indicates that students are "Strongly Dissatisfied"
- If the mean response is between 1.50 and 2.49, this indicates that students are "Dissatisfied"
- If the mean response is between 2.50 and 3.49, this indicates that students are "Satisfied"
- If the mean response is above 3.50, this indicates that students are "Strongly Satisfied"

RESULTS AND DISCUSSION

The results for each variable are shown in the following tables.

Study-bedroom: The study-bedroom is an essential component that must be provided in all students housing. The study-bedroom is a multi-purpose room that combines study, living and sleeping facilities (Amole, 2005; Hassanain, 2008; Schenke, 2008). Most study-bedrooms are designed to accommodate two people for academic, psychological, social and economic reasons. The results shown in Table 1 indicate that students were mostly "Satisfied" with the provided study-bedroom. However, given the mean of 2.26, they were not satisfied with the wireless Internet access in their rooms. The overall average satisfaction mean for this feature is 2.92, which means students were "Satisfied".

Table 2 shows the results for the evaluation of washroom facilities, which consist of bathrooms and laundry rooms.

Table 1: Satisfaction level for study-bedroom facilities

Items	Mean	Response value
Studying in study-bedroom	3.05	Satisfied
Sleeping in study-bedroom	3.10	Satisfied
Relaxing and resting in study-bedroom	3.08	Satisfied
Number of persons in study-bedroom	3.24	Satisfied
Entertaining friends in study-bedroom	2.99	Satisfied
Privacy in study-bedroom	2.94	Satisfied
Provided amenities	2.94	Satisfied
Wi-Fi in study-bedroom	2.26	Dissatisfied
Security of property in study-bedroom	2.78	Satisfied
Furniture arrangement in study-bedroom	2.96	Satisfied
Color of furniture and finishing in study-bedroom	2.77	Satisfied

*: Satisfaction mean for study-bedroom (alpha = 0.91)

Table 2: Satisfaction level for washroom facilities

Items	Mean	Response Value
Bathroom		
Location of bathroom	2.88	Satisfied
Number of people sharing the bathroom	2.84	Satisfied
Provided amenities	2.89	Satisfied
Bathroom arrangement	3.02	Satisfied
Cleanliness of the bathroom	2.51	Satisfied
Laundry room		
Location of laundry room	2.40	Dissatisfied
Number of people sharing the laundry room	2.50	Satisfied
Provided amenities	2.45	Dissatisfied
Laundry room arrangement	2.56	Satisfied
Cleanliness of the laundry room	2.58	Satisfied

*: Satisfaction mean for washroom (alpha = 0.90)

Table 3: Satisfaction level for pantry facilities

Items	Mean	Response value
Location of pantry	2.62	Satisfied
Number of people sharing the pantry	2.65	Satisfied
Making friends in the pantry	2.50	Satisfied
Provided amenities	2.07	Dissatisfied
Pantry arrangement	2.42	Dissatisfied
Cleanliness of the pantry	2.29	Dissatisfied

*: Satisfaction mean for pantry (alpha = 0.90)

Bathroom: The bathroom must be provided in student housing so that it can serve two adjacent double study-bedrooms or a common bathroom can serve a set of four or five study-bedrooms (Torres-Antonini and Park, 2008). The results shown in Table 2 indicate that students were mostly "Satisfied" with the provided bathroom.

Laundry room: These rooms have become a popular requirement in student housing (Staff, 2007; Beitenhaus, 2009); indeed, students now demand more convenient laundry facilities. Thus, the laundry room must be large enough to accommodate students. The results suggest that students were mostly "Satisfied" with the provided laundry room. However, they were not really satisfied with the location of that room and the provided amenities, given the mean of 2.40 and 2.45, respectively. Dissatisfaction with location is

almost certainly due to improper planning. The overall average satisfaction mean for this feature is 2.67, which means students were "Satisfied".

Table 3 shows the evaluation results for pantry facilities.

Pantry: In student housing, the pantry refers to a kitchen with a dining room. A good pantry must be included in student housing to create a home-like environment. Few researchers clinch that equipping this facility is an inevitable (Olujimi and Bello, 2009; Taha and Sulaiman, 2010). The results shown in Table 3 indicate that the students have ambivalent feelings about the provided pantry. Fifty percent expressed "Satisfied" with the location (mean of 2.62), the number of people sharing (mean of 2.65) and the opportunity to make friends there (mean of 2.50), while the other half were "Dissatisfied" with the provided amenities, the arrangement of the pantry and pantry cleanliness (means of 2.07, 2.42 and 2.29, respectively). The overall average satisfaction mean for this facility is 2.43, meaning that students were "Dissatisfied".

Table 4 shows satisfaction levels for various leisure rooms, including six individual facilities, namely, the study room, computer room, television room, meeting room, lobby and 'musalla'.

Study room: Student housing must cater to student study requirements. From the results shown in Table 4, students showed mixed feelings about the study room. They were "Satisfied" with the location, arrangement and cleanliness of the room but "Dissatisfied" with the space for discussion, the number of people sharing the room and the provided amenities.

Computer room: This room can serve multiple purposes, such as a location to surf the Internet or a place to study. From the results, it seems that this room is not suitable for study given the mean of 2.45. This is also indicated by dissatisfaction with the number of people sharing that room (mean of 2.42). Too many people using a computer room at one time can create noise and crowding, which leads to an uncomfortable study environment. However, the amenities provided are quite satisfactory, with a mean of 2.56.

Television room: This room meets the social and recreational needs of students. From the results, students were "Satisfied" with the provided television room. The results also prove that the television room is

Table 4: Satisfaction level for leisure room facilities

Items	Mean	Response value
Study room		
Location of study room	2.53	Satisfied
Having discussions in study room	2.39	Dissatisfied
Number of people	2.42	Dissatisfied
sharing the study room		
Provided amenities	2.43	Dissatisfied
Study room arrangement	2.55	Satisfied
Cleanliness of the study room	2.61	Satisfied
Computer room		
Location of computer room	2.45	Dissatisfied
Studying in computer room	2.45	Dissatisfied
Number of people sharing	2.42	Dissatisfied
the computer room		
Provided amenities	2.56	Satisfied
Computer room arrangement	2.55	Satisfied
Cleanliness of the computer room	2.53	Satisfied
Television room		
Location of TV room	2.63	Satisfied
Making friends in TV room	2.71	Satisfied
Number of people	2.68	Satisfied
sharing the TV room		
Provided amenities	2.50	Satisfied
TV room arrangement	2.53	Satisfied
Cleanliness of the TV room	2.76	Satisfied
Meeting room		
Location of meeting room	2.61	Satisfied
Having discussions in meeting room	2.76	Satisfied
Provided amenities	2.68	Satisfied
Meeting room arrangement	2.61	Satisfied
Cleanliness of the meeting room	2.61	Satisfied
Lobby		
Location of lobby	2.68	Satisfied
Entertaining guests or	2.61	Satisfied
relatives in the lobby		
Provided amenities	2.47	Dissatisfied
Lobby arrangement	2.58	Satisfied
Cleanliness of the lobby	2.63	Satisfied
'Musalla',		
Location of the 'musalla',	2.82	Satisfied
Number of people	2.89	Satisfied
sharing the 'musalla',		
Provided amenities	2.78	Satisfied
'Musalla', arrangement	2.79	Satisfied
Cleanliness of the 'musalla',	2.76	Satisfied

*: Satisfaction mean for leisure room (alpha = 0.98)

a place for socialization; students rate it highly as a place to make friends (mean of 2.71), second only to its rating for cleanliness (mean of 2.76). The lowest satisfaction level reported was for the room's amenities, with a mean of 2.50. A shortage of television room amenities (i.e., sofas or televisions) encourages competition, which is not a desirable scenario for college students in their leisure time.

Meeting room: These rooms provide a venue for student discussions. The results shown in Table 4 indicate that meeting rooms are essential. The highest priority for such rooms is discussion, with a result of 2.76. The rooms are also suitable for presentation because they offer amenities (mean of 2.68) such as microphones and chairs.

Lobby: This common area should have an informal and intimate atmosphere so that students feel comfortable entertaining parents or guests (Bland and Schoenauer, 1966; Ibrahim *et al.*, 2010). The lobby may also be used as a reading area. Table 4 shows that students were mostly "Satisfied" with the lobby. To enhance the lobby's sense of intimacy and comfort, however, the amenities (i.e., sofa set, magazines and newspaper) should be improved; this aspect shows the minimum mean score (2.47), which is indicative of dissatisfaction.

'Musalla': Satisfaction was highest for the number of people sharing the 'musalla', (mean of 2.89), which indicates that the room is large enough to feel comfortable. The lowest satisfaction mean is for cleanliness, which was rated with a mean of 2.76. Given the value students place on hygiene, housing administrators must remain aware of this concern. The overall average satisfaction mean for these facilities is 2.61, showing that the students were "Satisfied".

Support services: Providing additional amenities can add more dimensions and thus more meaning to a student's daily life. Students need enough parking places for their own use (Wallace *et al.*, 2004; Bello and Bello, 2007; Staff, 2007), which will deter them from parking in lecturer parking lots. In addition, access to a cafeteria, mini market or bookshop as well as to a good banking system (ATM machine) is crucial (Abramson, 2009). Services such as elevators, stairs, electricity, fresh water, garbage disposal, fire safety systems, regular maintenance and safety measures (such as 24 h-on-duty security guards) also help students to feel more comfortable (Koch *et al.*, 1999; Curley, 2003; Bello and Bello, 2007; Staff, 2007; Hassanain, 2008; Abramson, 2009; Khozaei *et al.*, 2010). The results in Table 5 show that students were "Dissatisfied" with support services, with mean ranging from 2.19-2.43. They were most "Dissatisfied" with parking; this may be due to limited space in the campus housing area. Students were merely "Satisfied" with the provided cafeterias, mini markets and/or mini bookshops (mean of 2.59) and lifts, stairs, electricity, water supply, garbage disposal and fire safety (mean of 2.70). The overall average satisfaction mean for this element is 2.44, which indicates that students were "Dissatisfied".

Overall satisfaction level: Table 6 shows the level of student satisfaction with each housing aspect. In general, students were "Satisfied", with an overall satisfaction level of 2.61. Specifically, students were "Satisfied" with the study-bedroom (mean of 2.92), washroom (mean of 2.67) and leisure room (mean of 2.61) but were "Dissatisfied" with the pantry (mean of 2.43) and support services (mean of 2.44).

Table 5: Satisfaction level for support service facilities

Items	Mean	Response value
Parking lots	2.19	Dissatisfied
Cafeteria, mini market and mini bookshop	2.59	Satisfied
Public phone and ATM machine	2.30	Dissatisfied
CCTV (closed circuit television) surveillance system	2.42	Dissatisfied
Guards on duty	2.43	Dissatisfied
Lifts, stairs, electrical wiring, water supply, garbage disposal and fire safety	2.70	Satisfied

*: Satisfaction mean for support services (alpha = 0.82)

Table 6: Summary of total satisfaction level for student housing facilities

Type of housing facilities	Mean	Response value
Study-bedroom	2.92	Satisfied
Washroom	2.67	Satisfied
Pantry	2.43	Dissatisfied
Leisure room	2.61	Satisfied
Support services	2.44	Dissatisfied
Overall Satisfaction Level	2.61	Satisfied

CONCLUSION

In the present study, we extend the model developed by Hassanain (2008) to address both physical and social variables and examine the level of student satisfaction with student accommodations. The results show that in general, students in the study are "Satisfied" with the provided housing facilities, as demonstrated by the total average mean score of 2.61. Nevertheless, the present study reveals a low total average mean score when compared to the results of Hassanain (2008) and Amole (2009a), who find total means scores of 2.80 and 2.70, respectively. Specifically, students are "Satisfied" with the provided leisure room (mean of 2.61), washroom (mean of 2.67) and study-bedroom (mean of 2.92). These numbers support the findings of Hassanain (2008) and Amole (2009a), which show that students are "Satisfied" with almost all provided building features. However, students are "Dissatisfied" with two elements, namely, the pantry (mean of 2.43) and support services (mean of 2.44).

We hope that student housing departments use these results to address their perceived shortcomings, particularly in those areas where students were most "Dissatisfied", that is, the pantry and support services. Because the results also show a lower level of satisfaction with the study area in comparison to the results of similar studies in other countries, housing administrators and facility managers at Malaysian institutions of higher learning institutions must improve their services and the quality of their on-campus housing facilities. Policy makers at the ministry level should facilitate this effort, perhaps by supervising the development of student housing and increasing the annual budget so that Malaysia's universities can deliver world-class on-campus student housing.

As in any study, this study has some limitations. In terms of its scope, this study focuses only on one institute of higher education in Malaysia. Caution should be exercised in applying the results to institutions in other countries with a similar climate and culture. In addition, this study focuses on the level of satisfaction and omits factors that influence satisfaction. As Foubert *et al.* (1998) and Khozaei *et al.* (2010) state, identifying the factors that influence satisfaction is a crucial step for student housing administrators and managers. Further research that investigates these factors should add value to current knowledge on student residential satisfaction. Furthermore, the mean scores for items used in the study fall between "Dissatisfied" and "Satisfied". Future related studies should include additional options such as "Slightly Dissatisfied" and "Slightly Satisfied" to pinpoint student sentiments more precisely.

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REFERENCES

Abramson, P., 2009. Living on campus, downsizing residence halls: Space and costs. College Plann. Manage. Mag., 12: 20-27. www.peterli.com/cpm/pdfs/CollegeHousing2009.pdf

Adamchak, S., 2000. A Guide to Monitoring and Evaluating Adolescent Reproductive Health Programs. 1st Edn., FOCUS on Young Adults, Washington, pp: 452.

Amole, D., 2005. Coping strategies for living in student residential facilities in Nigeria. Environ. Behav., 37: 201-219. DOI: 10.1177/0013916504267642

Amole, D., 2009a. Residential satisfaction in students' housing. J. Environ. Psychol., 29: 76-85. DOI: 10.1016/j.jenvp.2008.05.006

Amole, D., 2009b. Residential satisfaction and levels of environment in students' residences. Environ. Behav., 41: 866-879. DOI: 10.1177/0013916508322175

Barnes, B., H. Cao, T. Drab and J. Pearson, 2009. Design of sustainable relief housing in ethiopia: an implementation of cradle to cradle design in earthbag construction. Am. J. Environ. Sci., 5: 137-144. DOI: 10.3844/ajessp.2009.137.144

Beitenhaus, C., 2009. The conveniences of home: Campus kitchens and laundry rooms. College Plann. Manage., 12: 31-32. http://www.peterli.com/cpm/resources/articles/archive.php?article_id=2294

Bello, M. and V.A. Bello, 2007. The influence of consumers behavior on the variables determining residential property values in lagos, Nigeria. A. J. Applied Sci., 4: 774-778. DOI: 10.3844/ajassp.2007.774.778

Bernama, 2010. Malaysian National News Agency

Bland, J. and N. Schoenauer, 1966. University Housing in Canada. 1st Edn., McGill University Press, Canada, pp: 127.

Burton, M.L., M.D. Croce, S.A. Masri, M. Bartholomew and A. Yefremian, 2005. Sampling from the united states census archives. Field Methods, 17: 102-118. DOI: 10.1177/1525822X04270339

Curley, P., 2003. Residence halls: Making campus a home. Am. School Univ., 75: 146-149. http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_&ERICExtSearch_SearchValue_0=EJ676312&ERICExtSearch_SearchType_0=no&accno=EJ676312

Dahlan, N.D., P.J. Jones, D.K. Alexander, E. Salleh and J. Alias, 2009. Evidence base prioritisation of indoor comfort perceptions in Malaysian typical multi-storey hostels. Buil. Environ., 44: 2158-2165. DOI: 10.1016/j.buildenv.2009.03.010

Elias, H., N. Noordin and R.H. Mahyuddin, 2010. Achievement motivation and self-efficacy in relation to adjustment among university students. J. Soc. Sci., 6: 333-339. DOI: 10.3844/jssp.2010.333.339

Foubert, J.D., R. Tepper and D.R. Morrison, 1998. Predictors of student satisfaction in university residence halls. J. College Univ. Student Hous., 21: 41-46. http://okstate.academia.edu/documents/0035/1094/Tepper.pdf

Frank, B. and T. Enkawa, 2009. Economic drivers of dwelling satisfaction: Evidence from Germany. Int. J. Hous. Markets Anal., 2: 6-20. DOI: 10.1108/17538270910939538

Hassanain, M.A., 2008. On the performance evaluation of sustainable student housing facilities. J. Facilities Manage., 6: 212-225. DOI: 10.1108/14725960810885989

Hofstede, G., 1984. The cultural relativity of the quality of life concept. Acad. Manage. Rev., 9: 389-398. www.jstor.org/stable/258280

Ibrahim, F., W.M.W. Harun and M.H.A. Samad, 2010. The waiting space environment: perception by design. Am. J. Eng. Applied Sci., 3: 569-575. DOI: 10.3844/ajeassp.2010.569.575

Kaya, N. and F. Erkip, 2001. Satisfaction in a dormitory building: The effects of floor height on the perception of room size and crowding. Environ. Behav., 33: 35-53. DOI: 10.1177/00139160121972855

Khozaei, F., A.S. Hassan and Z. Khozaei, 2010. Undergraduate students' satisfaction with hostel and sense of attachment to place: Case study of university sains Malaysia. Am. J. Eng. Applied Sci., 3: 516-520. DOI: 10.3844/ajeassp.2010.516.520

Klis van der, M.. and L. Karsten, 2008. Commuting partners, dual residences and the meaning of home. J. Environ. Psychol., 29: 235-245. DOI: 10.1016/j.jenvp.2008.11.002

Koch, D., D. Wesse and R. Stickney, 1999. New trends in campus housing. Facilities Manager Mag., 15: 39-42.

Lam, T.H., S.F. Chung, C.M. Wong and A.J. Hedley, 1998. Respiratory symptoms due to active and passive smoking in junior secondary school students in Hong Kong. Int. J. Epidemiol., 27: 41-48. DOI: 10.1093/ije/27.1.41

Lotfi, S., K. Solaimani, S. Lotfi and K. Solaimani, 2009. An assessment of urban quality of life by using analytic hierarchy process approach (case study: comparative study of quality of life in the North of Iran). J. Soc. Sci., 5: 123-133. DOI: 10.3844/jssp.2009.123.133

Maslow, A.H. and R. Frager, 1987. Motivation and Personality. 3rd Edn., Harper and Row Publishers Inc, USA., pp: 293.

Melnikas, B., 1998. Management and modernization of housing facilities: specific features of central and eastern European countries. Facilities, 16: 326-333. DOI: 10.1108/02632779810233601
Ministry of Information Communication and Culture. http://www.kpkk.gov.my/index.php?option=com_content&view=article&id=293&Itemid=84&lang=en

Mohit, M.A., M. Ibrahim and Y.R. Rashid, 2010. Assessment of residential satisfaction in newly designed public low-cost housing in Kuala Lumpur, Malaysia. Habitat Int., 34: 18-27. DOI: 10.1016/j.habitatint.2009.04.002

Moore, J., 2000. Placing home in context. J. Environ. Psychol., 20: 207-217. DOI: 10.1006/jevp.2000.0178

Najib, N.U. and N.A. Yusof, 2009. A review of student housing facilities in higher learning institution. Proceeding of the 3rd International Conference on Built Environment in Developing Countries (ICBEDC 2009), Dec. 2-3, School of Housing and Building Planning, Malaysia, pp: 1817-1831.

Najib, N.U. and Yusof, N. A., 2010. Identifying Factors Affecting Satisfaction With Student Housing: A Research Framework. Procceding of the 2nd International Postgraduate Conference on Infrastructure and Environment, June 11-12, The Hong Kong Polytechnic University, Hong Kong, pp: 1-2. http://www.polyu.edu.hk/fclu/ipc2010/Site/Download_files/poster.pdf

Olujimi, J.A.B. and M.O. Bello, 2009. Effects of infrastructural facilities on the rental values of residential property. J. Soc. Sci., 5: 332-341. DOI: 10.3844/jssp.2009.332.341

Price, I., F. Matzdorf, L. Smith and H. Agahi, 2003. The impact of facilities on student choice of university. J. Facilities, 21: 212-222. DOI: 10.1108/02632770310493580

Salleh, A.G., 2008. Neighborhood factors in private low-cost housing in Malaysia. Habitat Int., 32: 485-493. DOI: 10.1016/j.habitatint.2008.01.002

Sapri, M., A. Kaka and E. Finch, 2009. Factors that influence student's level of satisfaction with regards to higher educational facilities services. Malaysian J. Real Estate, 4: 34-51.

Schenke, J., 2008. Purdue students prefer to go solo. College Plann. Manage., 11: 62-64. http://www.peterli.com/cpm/resources/articles/archive.php?article_id=1854

Sitar, M. and K. Krajnc, 2008. Sustainable Housing Renewal. American Journal of Applied Sciences, 5(1): 61-66. DOI: 10.3844/ajassp.2008.61.66

Sixsmith, J., 1986. The meaning of home: An exploratory study of environmental experience. J. Environ. Psychol., 6: 281-298. DOI: 10.1016/S0272-4944(86)80002-0

Sohail, M.S., J. Rajadurai and N.A. Rahman, 2003. Managing quality in higher education: A Malaysian case study. Int. J. Educ. Manage., 17: 141-146. DOI: 10.1108/09513540310474365

Staff, 2007. What's coming next? Shaping the future on campus. College Planning and Management. http://www.peterli.com/cpm/resources/articles/archive.php?article_id=1266

Susilawati, C., 2001. Student dormitory development plan with linear programming method. Proceeding of the PRREs 7th Annual Conference, (PRREsAC' 01), Surabaya, Indonesia, pp: 1-8.

Taha, Z. and R. Sulaiman, 2010. Perceived kitchen environment among malaysian elderly. Am. J. Eng. Applied Sci., 3: 270-276. DOI: 10.3844/ajeassp.2010.270.276

Torres-Antonini, M. and N.-K. Park, 2008. Sustainable student campus housing in the US Asia Interior Design Institute Associattion (AIDIA), Seoul, Korea. Int. J. Spatial Design Res., 8: 29-38. http://www.dcp.ufl.edu/files/fa69e3f2-c374-4f64-9.pdf

Wallace, B., B. Maire and A. Lachance, 2004. Aboriginal post-secondary student housing: research summary. saskatoon, bridges and foundations project on urban aboriginal housing. Canada, pp: 1-58. http://datalib.usask.ca/iportal/2005.07.14/WallaceAboriginalStudentHousingAssessmentrevisedfinal.pdf

Willoughby, B.J., J.S. Caroll, W.J. Marshall and C. Clark, 2009. The decline of in loco parentis and the shift to coed housing on college campuses. J. Adolescent Res., 24: 21-36. DOI: 10.1177/0743558408326914

Yeow, P.H.P., A. Khatibi and J. Kuppusamy, 2008. Malaysian students' preferences to online products and services on the internet: An empirical study . J. Soc. Sci., 4: 111-122. DOI: 10.3844/jssp.2008.111.122

Zahran, M.M., 1972. College housing: An arena of involvement and conflict. 1st Edn., Beirut Arab University, Beirut, pp: 130.