Original Article

Development and validation of the student accommodation preferences instrument (SAPI)*

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ABSTRACT This study believes that one of the most ignored areas in studies pertaining to issues involving college and university students is their preferences toward their accommodation. The lack of scholarly works in this area of study might be due to paucity of theoretical foundation, relevant research instruments, as well as the unidentified underlying factors. The current study is an attempt to fill some part of this vacuum. It developed and examined the reliability and validity of the student accommodation preferences instrument (SAPI). The focus of the study was on campus accommodation at Universiti Sains Malaysia, and the SAPI was conceptualized on the basis of residence hall and home similarities in relation to eight main factors, namely visual, facility, amenity, location, personalization and flexibility in the room, social contact, security and privacy. To assess the construct validity of the instrument, an exploratory factor analysis was conducted using principal components analysis with varimax rotation, by which six factors were extracted. The privacy factor was deleted because of high cross-loading with other factors, whereas the facility and amenity factors were combined. In addition, the combination of personalization and flexibility with some other items formed a new factor, which was labeled convenience of student room. Consequently,

the SAPI was formed with the following factors: facility and amenity, visual, convenience of student's room, location, social contact and security. The total variance explained was 46.55 per cent of the total variance, whereas the internal correlation consistency of measures that was assessed using Cronbach's α yielded a high reliability coefficient for factors from 0.73 to 0.92.

> It is now widely accepted that home provides a sense of identity, a locus of security, and a point of centring and orientation in relation to a chaotic world beyond the threshold. It is also increasingly acknowledged that a sense of being 'at home' is related to health status and well-being … .
> (Rowles and Chaudhur, 2005, p. 3)

INTRODUCTION

The college and university student life in residential settings, whether on campus or off, has been of interest to many researchers for decades (High and Sundstrom, 1977; Lundgren and Schwab, 1979; Case, 1981; Popelka, 1994; Rinn, 2004). As Rinn (2004) asserts, 'the study of college student development often includes students' residences (i.e., residence halls, off-campus apartments, parents' homes, etc.) because of the realization that there are other influences on college student development apart from classroom or classroom-related activities' (p. 67). Scholars have supported the notion that residence hall environment has profound impacts on students (Blimling, 1999; Cross *et al*, 2009). For instance, residence halls might influence students' growth, behavior and even their study performance (Lanasa *et al*, 2007; Araujo and Murray, 2010).

Residence halls have limited space to cater into students' needs such as sleeping, eating, studying and social activities. Therefore, students need to adapt themselves to this new situation that is likely to differ from their respective homes. Given this fact, it has been of interest for researchers to understand how students have adjusted to the residence hall and the coping strategies they have adopted (Amole, 2005), as well as the factors that influence their satisfaction (Thomsen, 2010). Amole's study (2005) attempts to explain the coping strategies that a particular group of students adopted while living in overcrowded university residence halls. She found that students avoided, as far as possible, studying in their room and often decorated their personal spaces to cope with such a stressful environment.

Although there has been quite a significant number of research pertaining to student housing, covering a vast area (such as Hassanain, 2008; Cross *et al*, 2009; Araujo and Murray, 2010), there is a dearth of research on students' housing preferences and very little is known about the students' real needs and requirements. Post-occupancy evaluation surveys can enhance the knowledge about students' perception of their current accommodation; however, it is important to remember that they have limited information to reflect the students' values toward an ideal or desired accommodation. In addition, students might have a stereotypic mental image of the typical residence hall. Assuming a match between the current residence hall life and the students' image, a post-occupancy survey might reflect an overlay satisfaction among the majority of students. But some questions – such as (a) If students had a better choice of accommodation, would they move to their desired residence hall? (b) If they were asked to compare their current
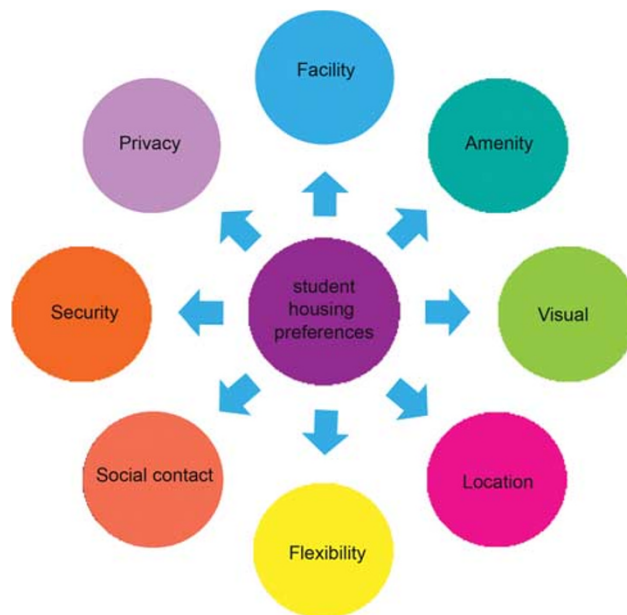
Figure 1: The primary conceptualized factors of the SAPI.

residence hall with a well-designed one, what was their point of view? – need to be answered.

Exploration of students' housing preferences is essential for better understanding of the students' real needs and requirements. However, the literature, methods and research instruments in this area are still underdeveloped. The current study is an attempt to fill a part of this gap by the development and validation of an instrument labeled student accommodation preferences instrument (SAPI).

This instrument is conceptualized on the basis of similarities between residence halls and homes. Only a few studies have concentrated on this concept previously (Robinson, 2004; Thomsen, 2007; Khozaei *et al*, 2010). Thomsen (2007), in her qualitative study 'Home Experiences in Student Housing: About Institutional Character and Temporary Homes', shed light on the influence of architectural aspects of student housing on students' perception of similarity with their homes. Her study reveals that 'the possibility for personalization of private rooms is highly appreciated in order to create a sense of home' p. 577. In addition, Khozaei *et al* (2010) found that physical facilities and comfort, security and privacy were some of the attributes that made the residence hall more similar to their homes from female students' perspective. On the basis of these studies and other related literature, this research will thus look into the similarity of residence halls and homes in terms of eight factors, namely visual, facility, amenity, location, personalization and flexibility in the room, social contact, security and privacy. Figure 1 represents the conceptualized factor for the SAPI, which will later be tested using exploratory factor analysis.

LITERATURE REVIEW

Architects and developers who are involved with housing projects have experienced the diverse tastes, opinions and preferences among their customers. Similarly, real estate agencies are often asked to find suitable properties for people with different personal values, needs and budgets. Home buyers or tenants' varied preferences and choice, as

well as the factors they take into account when choosing a house, have been of keen interest to researchers for decades.

Studies show that the housing preferences were linked to the demographic background of residences, such as gender-role (Devlin's, 1994), family income, age, education, nature of employment organization (Wang and Li, 2006). Jabareen (2005) in his research with study of 1269 residences of Gaza city yielded insight into the role of culture in housing preferences. His study revealed that cultural values such as kinship, religion and attitude toward women can affect housing preferences.

Butler and Steuerwald (1991) indicate that the most desirable scenes for respondents were natural sites (view of mountains, trees and sky). Their study also reveals that not all built environment scenes are considered undesirable, and in some cases people might desire both natural and man-made scenes equally. Nasar (1983) claims that 'people preferred residential scenes which were described as ornate, well kept, open and clear in use' (p. 589). Butler and Biner (1989) argue that the generalization of the notion that people prefer large windows over small, medium or no windows is not true. Cross-cultural studies comparing people of different backgrounds have expanded the knowledge about their possible similarities and differences (Nasar, 1984)

Amole (2005) who studied residence hall of 20 universities in southwest Nigeria found that 'one of the attributes of the bedroom that contributed negatively to satisfaction with the bedroom was privacy'. Some studies (such as Mullen and Felleman, 1990) are concerned with the effects of number of students in dormitory rooms on students' feeling of crowding and control over space. Hall and Willerman (1963) examined the effect of college roommates on one another's grades, study habits and other activities. They came to the conclusion that 'students with high-ability roommates obtain better grades than those with low-ability roommates only if the roommate is later born' p. 294. Mandel *et al* (1980) found significant correlations between light and perceived room size for both sexes. They found that those dormitory rooms that received more sunlight were perceived less crowded.

The studies on residence hall design mostly focus on two main designs: the traditional-style residence hall versus apartments and suite-style living arrangements. In the 1970s, several studies were conducted that focused on different architectural aspects of residence hall and compared suite versus corridor arrangements. The majority of these studies conclude that suites are better than traditional residence halls. The building trend at that time was toward suite as suites reflected people's trends toward certain social climates such as 'smallness, intimacy and support' (Heilweil, 1973, p. 376). Valins and Baum (1973) also compared dormitory-style to suite-style residences. They found that the overcrowded environment of the dormitory in which many students share common facilities forces them into unwanted interactions. This detrimental level of interaction may lead students to become 'hypersensitive to social stimulation and to experience negative affect' p. 437. Brandon *et al* (2008) examined the influence of two residence hall layout on students' interaction. Two main room configurations were studied: traditional residence halls – in which a large number of students (in this study 40 or more) were sharing a common bathroom, and residence halls – in which only a few number of students (four to six) were sharing a bathroom and the room doors opened to a common space. They found that 'residents of traditional halls interact with others more often on a daily basis than do their counterparts in suite style halls' p. 68. In the context of university housing, only a few studies have explored the students' housing preferences, such as Oppewal *et al* (2005). They attempted to investigate the factors that students take into consideration in their choice of accommodation and room type. They found that

factors such as mixed or single gender floor, mixed or single course floor, toilet and shower sharing, view from room, distance from campus, age of building, rent per week were influential factors in student housing preferences. O'Connell *et al* (2006) argue that the most preferred housing attributes among respondents were 'good repair/clean, privacy, near shopping/ bus lines, low rent, and safe neighbourhood' p. 361.

The students' desire for personalization of college residence hall rooms was examined in a research by Hansen and Altman (1976). They found that the majority of students decorated their living spaces soon after arriving on campus. On the basis of how the students had decorated the walls, the researchers managed to tease out evidence pertaining to values, personal interests and personal relationships of the students. Considering student housing as a 'basic reference point for the educational role', Riker and Decoster (2008) determined five main objectives for student housing, which are: 'provision of a satisfactory physical environment through new construction and renovation, adequate care and maintenance of the physical facilities, establishment of guidelines that provide structure for compatible and cooperative community living, development of an interpersonal environment that reflects responsible citizenship and a concern for others, as well as an atmosphere that is conducive to learning, opportunities for individual growth and development' p. 83.

Wang and Li (2006) showed that the location of dwelling and neighborhood attributes might be more important than the attributes of the dwelling itself for home buyers when making decision on buying a house. Location of students' housing is one of many research topics that has received increasing scholarly attention. As Hassanain (2008) asserts, 'the student housing facilities should be located in reasonable proximity (i.e. within short walking distance) to teaching, recreational, food-consuming, and car parking facilities' p. 217.

The importance of security in the hotel industry has been examined vastly in the literature (Enz and Taylor, 2002; Tse and Ho, 2006; Lamminmaki, 2007). Chu and Choi (2000) in the context of Hong Kong hotel industry examined the factors that travellers' (business and leisure) took into account when they selected a hotel. They came to the conclusion that security was perceived important and had a determining factor in hotel selection. Similarly, Shanahan and Hyman (2006) found that 'American tourists typically expect clean rooms at a good price; however, they would offset these expectations for increased security when travelling overseas' (p. 107). All of these findings draw our attention to the importance of security from travelers' point of view. Some environmental characteristics of a place might be linked to fear of crime and insecurity. For instance, living in a large hotel apartment with few residences, barking of stray dogs at night and even the sound of wind can be scary experiences. However, all of these feelings might be different during the daytime, or even when other groups of people occupy the next door unit. The location of hotels also might affect people's perception of security. Enz's (2009) study showed a strong correlation between security and hotel location. 'Urban, suburban, and airport hotels appear to score higher on safety and security than do hotels located along highways, in resorts, or in small metropolitan areas' (p. 555). The door and window locks, the brightness of the surrounding area at night and the control over space also might affect people's perception of security. Milman *et al* (1999) found that 'certain physical and behavioral devices such as deadbolt locks, closed-circuit TV cameras, door viewports, caller screening by telephone operators, locked side entrances into the hotel, and routine visits to the hotel by police provided tourists with a greater sense of safety and security' (p. 371).

The security of students in residence halls might be seen with another lens. Unlike travelers and tourists, students stay at residence halls for at least one semester. The students are, thus, often concerned about their personal properties such as computer, mobile and the possibility of thefts. Before choosing to stay in residence halls, the students might ask: are the residence hall exterior doors locked at night? Do video cameras monitor the main common areas? Is the residence hall located inside or far away from the university campus? Are the doors other than the main entrance closed to increase the level of security? Can strangers enter the residence hall or are only registered guests allowed to enter? Is there any control of those who enter and leave the residence hall? If the students are sure about these questions, they might feel more secure. However, unlike tourists, the residence hall students have very limited choices. In many universities, even the rooms are assigned to students without any consideration of their preferences. Thus, students might experience the feelings of insecurity at different times and places of a residence hall. During public holidays and semester breaks, the majority of students might leave the residence hall. For those who have to continue staying there during breaks with a small number of students, the experience might be scary, especially when they walk at night along the corridors, use the toilets and other public spaces. They may even be bothered by the quietness of their residence halls at such times.

Several studies support the notion that convenient living facilities are determined as the predictor of housing satisfaction (Gea and Hokaob, 2006). Mohit *et al* (2010) posit that residential satisfaction has a high correlation with neighborhood facilities, whereas Salleh (2008) claims that central facilities and educational facilities in the neighborhood are two of the most important predictors of satisfaction for low-cost housing residences in Penang, Malaysia. In fact, provision of proper facilities in residence hall can make the residence hall environment more similar to that of a home. In addition, if students are satisfied with their residence hall, they are less likely to experience depression and mobility problems.

Some scholars have emphasized on the important role of facilities that support students in their residence halls: 'adequate physical facilities that support the educational process contribute in important ways to student learning. Proper lighting, soundproofing, and furnishings, for example, can transform a student room from a mere place to sleep into a most adequate and private study facility. Alternate places to study within the residence hall are most helpful as well as typing rooms, music listening rooms, reference libraries, seminar rooms, classrooms, faculty offices, and other facilities that meet the daily needs of students' (Riker and Decoster, 2008, p. 81). Even though a good deal of attention has centered on the residence halls and their influence on students' perception and reaction, scholarly papers rarely give a complete image of an ideal or even acceptable residence hall. Although some research that does so exists, little has been known about the positive and negative physical aspects of residence halls. Nevertheless, some information can be gleaned about this issue from the studies. For instance, Baum and Davis's study (1980), which focused on 80 dormitories, found that residents of long-corridor floors experienced more crowding and social problems in comparison with residents of short-corridor floors. However, Baum and Davis, as well as other scholars, did not examine whether students prefer short corridors over long corridors or whether all the students in the study have similar definitions of long and short corridors. In fact, there was a lack of related literature, which posed a severe barrier to the development of the SAPI; thus, literature from other disciplines became points of reference whereever applicable.

METHODOLOGY

The development of the SAPI involved several steps as illustrated in Figure 2. The key guiding criterion that was used in the development of the instrument was the assumption that students prefer to live in home-like residence halls rather than those with more institutional characteristics. Through the study of relevant literature, it was conceptualized that residence halls and homes can be similar in terms of eight main factors, namely visual, facility, amenity, location, personalization and flexibility in the room, social contact, security and privacy. Accordingly, student housing preferences were conceptualized primarily with these dimensions. Subsequently, related literature was studied critically to form the pool of items under each factor (Pett *et al*, 2003).

The second step was to ensure the content validity of the instrument. Once the primary draft of the instrument was ready and items were categorized under each construct, it was sent to some experts who were involved with several similar researches at Universiti Sains Malaysia (USM) and other universities. In addition, three undergraduate and three graduate students who were living in one of the residence halls of USM were asked to read and evaluate the instrument. Two statisticians from USM also evaluated the instrument questions. Some items were deleted in this stage based on the recommendations by the experts. These items were identified if they were suitable or applicable in the context of Malaysia (like pet-friendly residence halls). All statements and phrases in the negative forms were changed to positive statements to avoid misunderstanding or confusion among the respondents. On the basis of the feedback from the expert panel, the first version of the instrument was revised, and 69 items out of 74 remained. In addition, the questionnaire included six background questions regarding the students' gender, age, nationality, race, their current hostel and study level.

To pre-test the instrument, the questionnaire was distributed randomly among 70 students, which is around 10 per cent of the sample population (Pett *et al*, 2003).
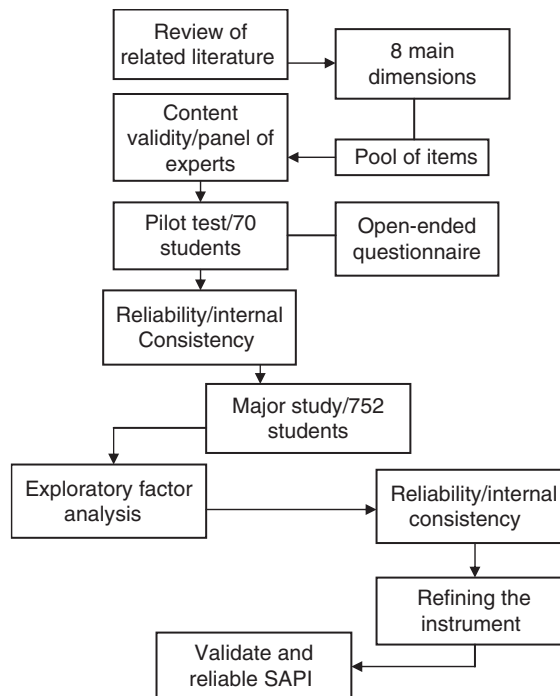

Figure 2:   The process of development of the SAPI.

Table 1: Reliability test for eight factors from the pilot test data

Factor	Number of items	Cronbach's α
Visual preferences	14	0.90
Facilities preferences	20	0.91
Amenities preferences	8	0.85
Location	7	0.83
Flexibility and personalization	4	0.80
Social contact	6	0.71
Security	5	0.83
Privacy	5	0.70

Residence halls at USM were selected for the case study. This University was given APEX (the accelerated program for excellence) status a few years ago by the Ministry of Higher Education. It is assumed that in addition to the improvement and enhancement of academic facilities in the university, students' expectation from the other facilities such as student housing will be increased.

The respondents were asked to choose their answer from a four-point Likert scale that was constructed as follows (a) not at all, (b) very little, (c) mostly and (d) very much. In addition, three open-ended questions were included at the end of questionnaire. The students were asked to write about the attributes that they liked most about their current residence hall, the attributes they did not like and to describe the attributes of a residence hall suitable for an APEX university. Data were analyzed using PASW Statistics 17. The internal consistency of the index was determined through the application of Cronbach's α formula to analyze the data obtained. This yielded a reliability coefficient from 0.70 to 0.91, suggesting evidence for the internal consistency of the items. Table 1 represents the internal consistency of all eight factors from the pilot test data.

The major study consisted of 752 students who were living in USM residence halls first semester 2010–2011. Demographic information of the sample comprising 242 male students (32.2 per cent) and 510 female students (67.8 per cent) was obtained using descriptive analysis. The majority of the respondents (44.0 per cent) were in the age group of 21–23 years. In terms of their nationalities, 88.3 per cent of respondents were Malaysians, followed by Indonesians (8 per cent), Iranian (4.4 per cent), Iraqis (1.1 per cent) and 5.5 per cent from other nationalities. From the total population of respondents, 49.1 per cent were Malays, 36.3 per cent were Chinese, 4.8 per cent were Indians and 9.8 per cent were from other ethnic groups. The majority of the students were undergraduates (83.0 per cent), whereas the rest were graduate students. Table 2 shows the demographic background of the respondents.

EXPLORATORY FACTOR ANALYSIS

To assess the construct validity of the instrument, an exploratory factor analysis was conducted using the principal components analysis with varimax rotation. As previously indicated, it was conceptualized that there are eight major dimensions related to students' housing preferences. The initial analysis extracted six factors that had eigenvalues >1. The Bartlett test of sphericity was significant ($\chi^2 = 8865.203$, $P < 0.000$) and the Kaiser–Meyer–Olkin measure of sampling adequacy was 0.90 (>0.6), indicating sufficient intercorrelations. The total variance explained was 46.55 per cent of total variance. Factors facility and amenity combined under one factor. Accordingly, this factor was labeled facility and amenity preferences and comprised 22 items with the factor loading ranging from 0.340 to 0.717. Table 3 represents the result of the exploratory factor analysis. The privacy factor was deleted because of high cross-loading with other factors. In addition, the combination of personalization and flexibility with some other items

Table 2: Students' demographic background

Variable	Valid per cent
Gender	
Male	32.2
Female	67.8
Age	
18–20 years	41.0
21–23 years	44.0
24–26 years	6.3
27–29 years	3.6
Above 30 years	5.2
Nationality	
Malaysian	88.3
Indonesian	0.8
Iranian	4.4
Iraqi	1.1
Other	5.5
Race	
Malay	49.1
Indian	4.8
Chinese	36.3
Other	9.8
Study level	
Undergraduate	83.0
Master by research	2.5
Master coursework	7.4
PhD	7.0

formed a new factor, which was labeled convenience preferences. This factor comprised 10 items with the factor loading from 0.318 to 703. The factors visual preferences (14 items with the factor loading from 0.418 to 715), location preferences (seven items with the factor loading from 0.541 to 0.735), social contact preferences (six items with the factor loading from 0.464 to 0.576) and security preferences (six items with the factor loading from 0.439 to 0.821) remained as primarily was conceptualized.

Next the reliability of the measures was assessed using the inter-item correlation consistency reliability measures of Cronbach's α. Mean, standard deviation, reliability coefficients and item to total correlation for all six factors are shown in Tables 4–9.

CONCLUSION AND DISCUSSION

This purpose of this study was to develop and examine the reliability and validity of the SAPI. This instrument was developed to be used as a tool for the study of university students' preferences toward their on-campus residence halls. The conceptual framework of this instrument lies in the similarity of residence hall and homes. It was conceptualized that the SAPI can be defined according to eight main preferences factors, namely visual, facility, amenity, location, personalization and flexibility at room, social contact, security and privacy. The sample of the study comprised students from USM, who were residing in campus residence halls. The instrument comprised 69 items and six demographic questions, namely gender, age, nationality, race, the students' current residence hall name and study level. The questionnaire was administrated on 752 students. The exploratory factor analysis was conducted using PASW 17. From this analysis, a total of six factors were extracted, namely facility and amenity, visual, convenience at students' room, location, social contact and security. The total variance explained was 46.55 per cent of

Table 3: Exploratory factor analysis

	Components factor loading (continues)					
	1	*2*	*3*	*4*	*5*	*6*
*Rotated component matrix*ᵃ						
(F7) ATM machine	0.717	—	—	—	—	—
(F11) Photostat and printing services	0.714	—	—	—	—	—
(F6) Water machine	0.690	—	—	—	—	—
F8 storage rooms for unused stuffs	0.625	—	—	—	—	—
F10 small library	0.616	—	—	—	—	—
F1224 hour study room	0.611	—	—	—	—	—
F5 vending machine	0.552	—	—	—	—	—
F4 lift	0.539	—	—	—	—	—
F13 free Internet access	0.539	—	—	—	—	—
F2 laundry with washer and dryer on each floor	0.538	—	—	—	—	—
F15 mirror in the room	0.516	—	—	—	—	—
A7 hot water in the bathroom	0.516	—	—	—	—	—
F17 lockable storage space inside the room	0.515	—	—	—	—	—
F9 visual tour in the website	0.503	—	—	—	—	—
F3 laundry-monitoring system to check the availability of washing machines online	0.499	—	—	—	—	—
A8 fitness room (with treadmill and so forth)	0.498	—	—	—	—	—
F20 small mart	0.495	—	—	—	—	—
F1924 hour taxi for emergency use	0.483	—	—	—	—	—
F16 pin board in the room	0.429	—	—	—	—	—
F18 variety of food in the food stall (Chinese, Malay, Indian)	0.427	—	—	—	—	—
F1 kitchen	0.358	—	—	—	—	—
A1 indoor pool (especially for women)	0.340	—	—	—	—	—
V2 beautiful landscape and surrounding	—	0.715	—	—	—	—
V4 good-looking common areas	—	0.687	—	—	—	—
V3 pleasant view of natural surroundings from the room window	—	0.684	—	—	—	—
V6 clean common areas	—	0.660	—	—	—	—
V7 proper lighting in common areas	—	0.640	—	—	—	—
V1 beautiful exterior and facade	—	0.632	—	—	—	—
V5 beautiful and stylish furniture in TV room and other social spaces	—	0.620	—	—	—	—
V12 good-looking and nice interiors	—	0.613	—	—	—	—
V13 new furniture, or those in good condition	—	0.586	—	—	—	—
V11 proper natural and artificial lighting	—	0.567	—	—	—	—
V10 be new or newly renovated	—	0.541	—	—	—	—
V14 modern and stylish furniture	—	0.530	—	—	—	—
V9 not very narrow corridors	—	0.489	—	—	—	—
V8 short corridors	—	0.418	—	—	—	—
A4 mini refrigerator inside the room	—	—	0.703	—	—	—
A3 air-conditioner in the room	—	—	0.700	—	—	—
P1 the possibility of moving furniture and redecorating the room	—	—	0.678	—	—	—
P2 no heavy and fixed furniture	—	—	0.597	—	—	—
A2 TV cable in the room	—	—	0.571	—	—	—
P3 potential to be divided to study, eating and sleeping spaces	—	—	0.463	—	—	—
A6 carpet	—	—	0.443	—	—	—
P4 the space under the bed to be used as storage	—	—	0.443	—	—	—
F14 big closet in the room	—	—	0.369	—	—	—
A5 water tap inside the room	—	—	0.318	—	—	—
L3 proximity to academic facilities of the university (library)	—	—	—	0.735	—	—
L2 proximity to the bus stop	—	—	—	0.699	—	—
L1 proximity to the school	—	—	—	0.673	—	—
L5 proximity to the local marts	—	—	—	0.652	—	—
L4 proximity to the sport facilities of university	—	—	—	0.631	—	—
L6 proximity to the USM clinic	—	—	—	0.629	—	—
L7 be located inside campus	—	—	—	0.541	—	—
SO3 has a lounge at each floor	—	—	—	—	0.576	—
SO5 locate students of each school on the floor	—	—	—	—	0.571	—
SO2 have a big area for students' gathering	—	—	—	—	0.557	—
SO6 locate undergraduate and postgraduate students on the same floor	—	—	—	—	0.555	—
SO1 twin-sharing room	—	—	—	—	0.502	—
SO4 make each block unique in terms of color material	—	—	—	—	0.464	—
SC3 room doors are equipped with the viewing devices	—	—	—	—	—	0.821
SC4 have friendly staff	—	—	—	—	—	0.821
SC2 require card access to enter the room	—	—	—	—	—	0.730
SC1 require card access to enter the hostel	—	—	—	—	—	0.691
SC5 have faculty members who live in the residence hall	—	—	—	—	—	0.439

Extraction method: principal component analysis.
 Rotation method: varimax with Kaiser normalization.

KMO						0.902

ᵃ*Exploratory factor analysis, using principal components analysis with varimax rotation, extracted six factors.*

Table 4: Reliability test for factor 1, facility and amenity preferences

Item	Item-total statistics			
	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's α if item deleted
F7	66.11	127.14	0.71	0.91
F11	66.21	127.58	0.69	0.91
F6	65.98	130.31	0.67	0.91
F8	66.41	129.15	0.61	0.92
F10	66.48	127.37	0.65	0.91
F12	66.24	129.63	0.57	0.92
F5	66.46	129.65	0.59	0.92
F4	66.34	128.95	0.53	0.92
F13	65.71	134.59	0.52	0.92
F2	66.08	131.09	0.58	0.92
F15	65.91	132.90	0.58	0.92
A7	66.45	128.13	0.57	0.92
F17	65.88	133.58	0.57	0.92
F9	66.61	130.93	0.53	0.92
F3	66.36	130.61	0.54	0.92
A8	66.34	129.88	0.58	0.92
F20	66.29	130.55	0.55	0.92
F19	66.47	130.24	0.54	0.92
F16	66.06	133.23	0.52	0.92
F18	66.01	132.80	0.50	0.92
F1	66.46	131.82	0.44	0.92
A1	66.81	130.42	0.45	0.92
Cronbach's α		0.92		

Table 5: Reliability test for factor 2, visual preferences

Item	Item-total statistics			
	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's α if item deleted
V2	40.24	43.67	0.62	0.87
V4	40.24	43.98	0.58	0.87
V3	40.25	43.16	0.59	0.87
V6	40.00	43.09	0.60	0.87
V7	40.01	43.94	0.57	0.87
V1	40.37	44.19	0.55	0.87
V5	40.61	42.01	0.60	0.87
V12	40.08	43.03	0.63	0.87
V13	40.09	42.89	0.61	0.87
V11	40.00	44.09	0.56	0.88
V10	40.37	43.34	0.53	0.88
V14	40.41	42.51	0.55	0.88
V9	40.37	44.70	0.46	0.88
V8	40.24	45.85	0.34	0.89
Cronbach's α		0.88		

the total variance. Figure 3 represents the dimensions of this instrument. In addition, the reliability of each factor was assessed using the inter-item correlation consistency reliability measures of Cronbach's α. This yielded a high reliability coefficient for factors from 0.73 to 0.92.

The SAPI offers several contributions. First, the SAPI measures various aspects of student housing preferences. Thus, this instrument can be useful to multidisciplinary research such as social science, architecture, management and so forth. In addition, the outcome of a survey using the SAPI can enhance the awareness and knowledge of residence hall operators or organizers with regard to students' needs and priorities.

Table 6: Reliability test for factor 3, convenience at room preferences

	Item-total statistics			
	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's α if item deleted
A4	26.62	29.02	0.69	0.81
A3	26.79	29.17	0.63	0.82
PI	26.78	30.72	0.64	0.82
P2	26.78	31.81	0.56	0.83
A2	26.93	29.98	0.56	0.83
P3	26.49	32.55	0.51	0.83
A6	27.02	30.87	0.48	0.83
P4	26.57	32.34	0.48	0.83
F14	26.48	33.04	0.47	0.83
A5	27.01	31.84	0.42	0.84
Cronbach's α			0.84	

Table 7: Reliability test for factor 4, location preferences

	Item-total statistics			
	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's α if item deleted
L3	20.48	10.63	0.71	0.8
L2	20.47	10.86	0.63	0.8
LI	20.47	10.99	0.62	0.8
L5	20.64	10.85	0.63	0.8
L4	20.83	10.53	0.60	0.8
L6	20.73	10.74	0.61	0.8
L7	20.63	11.57	0.44	0.8
Cronbach's α			0.85	

Table 8: Reliability test for factor 5, social contact

	Item-total statistics			
	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's α if item deleted
SO3	14.21	9.30	0.62	0.66
SO5	14.38	9.25	0.47	0.70
SO2	14.18	9.56	0.57	0.67
SO6	14.68	9.62	0.41	0.72
SOI	14.37	10.21	0.31	0.75
SO4	14.14	9.85	0.50	0.69
Cronbach's α			0.73	

Second, this instrument is one of the rare instruments in the area of student housing studies. Although there are numerous studies on student housing preferences (Kersloot and Kauko, 2004; Reed and Mills, 2007; Malkawi *et al*, 2008), many of them are not applicable in studies related to student housing setting. Another contribution of the SAPI is its flexible nature. It covers the areas in Maslow's theory of hierarchy of needs and thus can be seen to cover a vast set of students' preferences, from a very basic level such as the needs to food to higher levels needs such as the need for amenities such as fitness room. Owing to its flexible nature, other items might be added to this instrument depending on the setting of the particular survey.

Table 9: Reliability test for factor 6, security

	Item-total statistics			
	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's α if item deleted
SC3	12.29	8.08	0.77	0.76
SC4	12.29	8.08	0.77	0.76
SC2	12.47	8.02	0.62	0.80
SC1	12.52	7.98	0.62	0.80
SC5	12.01	10.23	0.41	0.85
Cronbach's α		0.83		

Figure 3: The dimensions of the SAPI.

Although the current study has attempted to cover different aspects of student housing preferences, further enhancement and development is recommended to get a full picture of students' priorities. In addition, the literature is still plagued by conceptual and empirical diversity on similarity of residence hall and home. Future research should examine other facets of students' perception of similarity between residence halls and homes.

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