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A Comparative Study of Students' Satisfaction Between On-Campus and Off-Campus Accommodation Buildings in Jordan

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ABSTRACT

Student housing plays a critical role in shaping academic performance and well-being, particularly in gender-segregated contexts such as Jordan. This study compares female students' satisfaction with on-campus and off-campus accommodations at Jordan University of Science and Technology (JUST), focusing on three dimensions: room design, building design, and building context. A structured questionnaire with 25 indicators was distributed during the 2022/2023 academic year. The survey was distributed via email and peer networks, with snowball sampling used to extend participation, yielding 281 valid responses. Data were analyzed using Multivariate Analysis of Variance (MANOVA). Results show that off-campus students reported significantly higher satisfaction across all dimensions. The highest scores were recorded for building context, particularly access to medical services, bus stations, and academic facilities, while the lowest ratings were in on-campus housing related to furniture quality, acoustic privacy, and thermal comfort. These findings reveal substantial disparities between university-managed and private housing, underscoring the need for targeted upgrades in on-campus facilities. Despite the limitations of snowball sampling, the study provides evidence-based recommendations for improving the quality, comfort, and contextual integration of student housing in Jordan.

1. INTRODUCTION

Student accommodation represents a critical component of the university experience, shaping students' academic performance, social integration, and overall well-being. Accommodation types vary globally, ranging from traditional corridor-style halls to suite and apartment-style residences [1]. They also differ in location (on-campus vs. off-campus) and management (public vs. private). In Jordan, on-campus housing is directly managed by universities, while off-campus housing is primarily operated by private providers. Students are free to choose their residence, and their choices often reflect perceived quality and satisfaction with the living environment.

The quality of student housing has been shown to influence academic achievement, retention, and mental health outcomes. Studies have found that adequate housing conditions enhance students' academic engagement and personal development [2, 3], while poor facilities undermine well-being and can even increase dropout risks [1, 4]. However, existing research has disproportionately emphasized on-campus accommodations [5-8], with relatively fewer studies addressing the growing role of off-campus housing [9, 10]. This imbalance is particularly relevant in Jordan, where the private sector has increasingly expanded its role in student housing provision without clear regulatory frameworks, raising questions about quality, safety, and accessibility.

Post-occupancy evaluation (POE) remains the most widely used framework for assessing the performance of student housing and the satisfaction of its residents. POE integrates users' experiences into the evaluation of built environments, thereby providing actionable feedback for stakeholders and informing the design of future facilities [11]. Recent POE studies have emphasized the importance of both physical and social dimensions, highlighting that satisfaction is shaped not only by room and building quality but also by contextual factors such as accessibility, safety, and service availability [12, 13].

This study builds on these insights by examining female students' satisfaction with both on-campus and off-campus accommodations at Jordan University of Science and Technology (JUST). Female students are the focus because JUST provides on-campus housing exclusively for women, reflecting cultural norms of gender-segregated housing across Jordan. While previous studies have employed POE frameworks to assess student housing satisfaction (e.g., [1, 7]), this study advances the field in two key ways. First, it introduces a tripartite structure of satisfaction; room design, building design, and building context, empirically validated through exploratory factor analysis (EFA), offering a

statistically grounded reclassification of POE indicators. Second, it situates this analysis in Jordan, where gender-segregated housing systems are under-researched, especially in comparative assessments of private and institutionally managed residences. By focusing exclusively on female students at a leading public university, the study offers culturally specific insights with broader implications for student housing policy in conservative regional contexts.

2. LITERATURE REVIEW

In studies of student accommodation, a range of terms has been used interchangeably, reflecting cultural and geographic contexts. Toyin Sawyerr and Yusof [14] attributed this variation to differences in research traditions and regional practices. For example, "student housing" is widely used in international literature [1, 7, 9], while terms such as "halls of residence" [15], "accommodation buildings" [3, 11] and "student dormitories" [16] are also common. Despite this terminological diversity, the core objective of the literature remains consistent: to evaluate residential quality and its influence on students' experiences.

Khajehzadeh and Vale [17] categorized student accommodation studies into four thematic areas, with the most prevalent examining how physical, functional, and social features of housing shape satisfaction. This strand of research often integrates environmental and behavioral factors to assess the residential experience comprehensively, aligning with the perspective that housing is both a physical setting and a social environment.

2.1 Accommodation and students' satisfaction

Accommodation represents more than shelter for students; it is a space where living and learning intersect [8]. High-quality housing should therefore support both academic and personal development by providing functional, safe, and supportive environments [18]. Existing scholarship affirms that accommodation facilities influence not only student attitudes and academic effectiveness but also retention and loyalty behaviors [2, 12]. As students' needs evolve across educational stages, satisfaction with housing must be understood as a dynamic process, shaped by both tangible design factors and intangible psychological experiences [1, 19].

Numerous studies have linked student satisfaction to diverse factors. For instance, Adegoke et al. [15] examined gender differences in residential satisfaction, while Oke et al. [3] and Smith and Pinkerton [20] considered the influence of nationality and cultural background. Others have explored variations in housing type, such as mid-rise versus high-rise buildings [1] and older versus newer facilities [11]. Research has also highlighted the impact of social and shared spaces: Khajehzadeh and Vale [17] demonstrated that layout influences peer interaction, while Ning and Chen [21] emphasized the importance of social cohesion for satisfaction. Collectively, these findings suggest that accommodation satisfaction is a multidimensional construct, shaped by demographic, cultural, architectural, and social attributes.

2.2 Factors and attributes that affect students' satisfaction

Many previous studies have adopted POE to explore the impact of accommodation performance on student satisfaction. Within this approach, the questionnaire survey is widely recognized as the principal tool for measuring users' perceptions, and it has been extensively employed in studies of residential environments. The POE framework proposed by Preiser et al. [22] structures performance into three dimensions—technical, functional, and behavioral. These dimensions have been adapted in various contexts, with different sets of indicators reflecting specific institutional and cultural conditions.

Beyond performance dimensions, several studies have examined the relationship between housing quality and student behavior. Najib et al. [23] proposed a model linking satisfaction to loyalty behaviors such as prolonged stays, continued residence, and positive recommendations. Their findings highlight the institutional benefits of investing in high-quality housing that fosters a sense of belonging. Conversely, studies on off-campus housing emphasize persistent shortcomings. McGrath and Horton [24] noted that students often tolerated substandard housing in exchange for convenience of location.

The literature also highlights the influence of physical, social, and environmental factors. Nazarpour and Norouzian-Maleki [1] showed that intangible attributes such as aesthetics, natural views, and landscaped surroundings contributed significantly to psychological comfort. Security has consistently emerged as a priority: Simpeh and Adisa [25, 26] reported that students frequently rated safety features such as lighting, surveillance, and emergency readiness below expectations, particularly in urban and gender-segregated contexts.

Taken together, these studies demonstrate that student housing satisfaction cannot be reduced to a single factor but emerges from the interplay of technical, functional, and behavioral attributes, alongside social and environmental considerations. Yet two critical gaps remain. First, most studies focus on on-campus housing, leaving systematic evaluations of off-campus residences underexplored despite their increasing role in higher education. Second, little research has examined Middle Eastern contexts, particularly Jordan, where gender-segregated housing dominates and private-sector provision has expanded without consistent regulation. Addressing these gaps requires comparative research that integrates POE dimensions across both on- and off-campus residences, while considering the cultural and institutional dynamics that shape students' experiences.

2.3 Theoretical framework and research questions

Drawing from the reviewed literature, this study adopts two primary POE dimensions—technical and behavioral—as the foundation of its evaluation framework. These dimensions were operationalized into 25 satisfaction indicators, distributed across three levels of analysis: room design, building design, and building context (Table 1). This multi-level approach reflects the nested structure of residential experience, where satisfaction is influenced by the private environment of the room, the shared qualities of the building, and the external context of the surrounding neighborhood and services.

Based on this framework, the study addresses the following research questions:

Q1. How satisfied are the students with their rented accommodation?

Q2. What are the factors or attributes that affect students' satisfaction with their accommodation?

Q3. Is there a relationship between levels of students' satisfaction and the location of their accommodation?

Q4. At what level does the greatest impact on students' satisfaction appear: the room, the building, or the context?

By structuring the research around these questions, the study systematically evaluates multiple dimensions of satisfaction while addressing the gaps identified in the literature.

Table 1. Satisfaction's indicators

Room's Design Level	1	Furniture quality and arrangement inside the room
	2	Room temperature
	3	Adequacy of personal storage space
	4	Light inside your room
	5	Conversation privacy in room
	6	Room ventilation
	7	Amount of living/study space
Building's Design Level	8	Noise through floor
	9	Privacy within the common space
	10	Maintenance of building finishes
	11	Building appearance
	12	Adequacy of recreation common spaces
	13	Arrangement of rooms in each level
	14	Location and number of stairs
	15	Availability of car parking
	16	Adequacy of laundry room
Buildings Context Level	17	Proximity of Parks
	18	Outdoor noise
	19	Accessibility to recreation facilities
	20	Accessibility to restaurants and commercial services
	21	Accessibility to worship places
	22	Accessibility to library
	23	Accessibility to the academic facilities
	24	Accessibility to bus station
	25	Accessibility to medical services

3. MATERIAL AND METHODOLOGY

3.1 Study area

This study focused on female students at JUST, including those residing in both on-campus and off-campus accommodations. Female participants were chosen because JUST offers on-campus housing exclusively for women, reflecting cultural norms of gender-segregated accommodation in Jordan. This context provides a unique opportunity to examine residential satisfaction within a system where gender, housing type, and institutional policy intersect.

The on-campus accommodation complex is located southeast of the engineering faculties, near the university gym and main cafeteria. It is within a five-minute walk of central campus facilities, including the library, lecture halls, student affairs offices, and administration buildings. The complex comprises ten four-story buildings surrounded by landscaped areas, each with direct street access and dedicated parking (Figure 1).

In contrast, off-campus accommodations are concentrated around Yarmouk University (YU) in Irbid city. These facilities are embedded within active urban neighborhoods and situated along major streets, offering proximity to medical centers, shops, libraries, banks, restaurants, and worship spaces. They also have greater integration with public transportation routes, particularly bus stations, making them more accessible to commuting students. This spatial distribution and integration of off-campus residences is illustrated in Figure 2, highlighting their location within the urban fabric of Irbid compared to the more enclosed design of the on-campus housing.

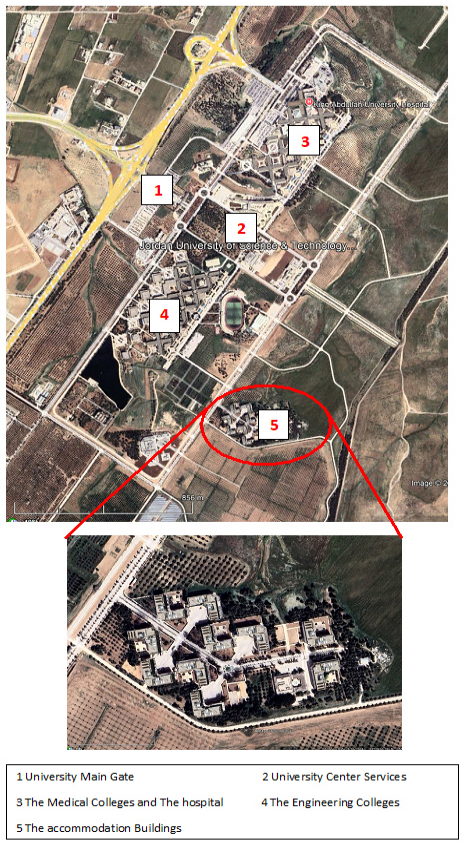

Figure 1. On-campus accommodation general location
Source: Google Map, Modified by Authors

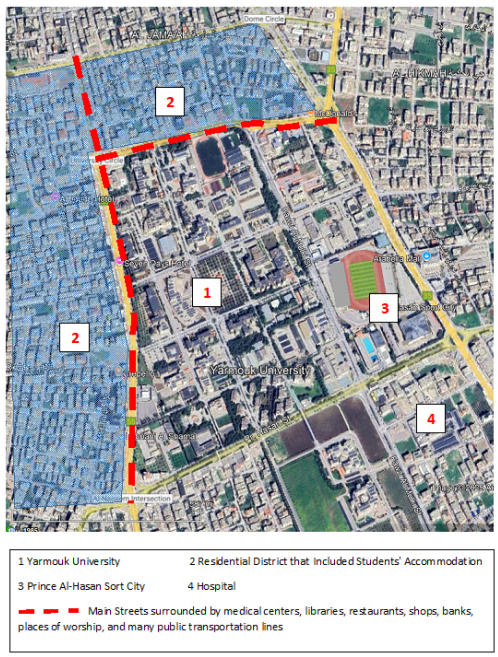

Figure 2. Off-campus accommodations general location
Source: Google Map, Modified by Authors

3.2 Data collection

A quantitative survey approach was employed to capture students' satisfaction with their accommodation. The questionnaire was developed from established POE frameworks [11-13, 22] and adapted to reflect the Jordanian context. It consisted of two sections. The first gathered demographic information, including residence type, age, academic level, and duration of stay. The second section assessed satisfaction using 25 indicators across three levels: room design, building design, and building context.

Responses were measured on a five-point Likert scale (1 = strongly dissatisfied to 5 = strongly satisfied). This scale was chosen for its simplicity and reliability in capturing both direction and intensity of responses [27, 28]. To ensure content validity, the questionnaire was reviewed by two academic experts in building performance evaluation, leading to minor wording adjustments to align technical language with student perceptions.

A pilot study with 30 students was conducted to evaluate clarity, length, and comprehension. Based on participant feedback, revisions were made to simplify terminology and refine the layout. Reliability testing of the pilot data produced Cronbach's alpha values above 0.70 for all subscales, confirming internal consistency [29, 30].

Participants were informed of the study objectives, their right to withdraw at any point, and assurances of anonymity and confidentiality. Informed consent was secured electronically prior to survey completion, ensuring compliance with ethical standards in social research [31].

Data were collected during the Spring and Summer semesters of the 2022/2023 academic year, when students had accumulated sufficient residential experience. The survey was distributed via email and peer networks, with snowball sampling used to extend participation by encouraging initial respondents to share the survey with peers and roommates. While effective for reaching both on-campus and off-campus populations, snowball sampling is a non-probability method and may introduce bias, particularly through overrepresentation of socially connected students [32]. This limitation is acknowledged in the interpretation of findings.

3.3 Sample size and participants

Table 2. Respondents' demographics

Demographic Variables		Freq	(%)
Age (in years)	18-21	207	73.7
	22-25	71	25.2
	Greater than 25	3	1.1
Grade Level	Undergraduate	257	91.5
	Postgraduate	24	8.5
Residence Type	On-campus	138	49.1
	Off-campus	143	50.9
Duration of Stay	Less than 1 year	18	6.4
	1-2 years	148	52.7
	3-4 years	100	35.6
	>= 5 years	15	5.3

As shown in Table 2, the final sample comprised 281 valid responses, nearly evenly divided between students residing on-campus (n = 138, 49.1%) and off-campus (n = 143, 50.9%). The majority of respondents (n = 207, 73.7%) were aged between 18 and 21 years, reflecting the dominant age group in undergraduate programs. A smaller proportion (25.2%) were between 22 and 25 years old, while only 1.1% were over 25, representing postgraduate or returning students. In terms of study level, 91.5% (n = 257) were undergraduates and 8.5% (n = 24) were postgraduates, which corresponds closely with the actual student distribution at Jordanian universities. Regarding length of residence, 6.4% had lived in their current accommodation for less than a year, 52.7% for 1–2 years, 35.6% for 3–4 years, and 5.3% for more than 5 years. This spread ensured representation across both short-term and long-term residents, allowing comparisons between first impressions and sustained experiences.

The adequacy of this sample size was evaluated with reference to established methodological guidelines. According to Cohen [33], MANOVA requires larger sample sizes to ensure sufficient power when testing multiple dependent variables simultaneously. A minimum of 200 participants is typically recommended to detect medium effect sizes ($f^2 = 0.25$) at a significance level of $\alpha = 0.05$ with statistical power of 0.80. In addition, Stevens [34] suggests that sample sizes for MANOVA should exceed 20 times the number of dependent variables, which in this case (four: room design, building design, building context, and overall satisfaction) requires at least 80 participants. The achieved sample of 281 thus exceeded both criteria, providing strong statistical reliability.

From a practical perspective, the sample size is also consistent with recent studies of student housing satisfaction using POE-based surveys, which typically range from 200 to 400 respondents [1, 15, 16]. This comparability enhances the credibility of cross-study interpretations and situates the findings within an established empirical tradition.

Although the sample was sufficient in size and diversity, the use of snowball sampling may have affected representativeness. This method tends to favor socially connected participants, which can lead to overrepresentation of certain groups [32]. According to official statistics, the number of female students at JUST is 17,940, with approximately 1,000 residing on campus. In our sample of 281 participants, 138 were female students living on campus, representing 13.8% of the on-campus female population. Unfortunately, demographic data for students residing off campus are not publicly available, so we were unable to compare our off-campus sample (n = 143) to the broader population. The balance between on-campus and off-campus respondents further strengthens the comparative analysis, ensuring that both housing types are equally represented.

3.4 Data analysis

Data analysis followed a two-stage process. First, descriptive statistics (means, standard deviations, frequencies, and percentages) were computed to summarize demographic characteristics and satisfaction indicators. This provided an overview of patterns in student responses, identifying areas of high and low satisfaction.

Second, Multivariate Analysis of Variance (MANOVA) was used to test for significant differences between on-campus and off-campus students across the three satisfaction levels (room design, building design, and building context), as well as overall satisfaction. MANOVA was chosen because it accounts for correlations among dependent variables and reduces the risk of Type I error that arises when multiple ANOVAs are conducted separately [30, 35]. It also provides greater statistical power when dependent variables are

conceptually related, making it particularly suitable for evaluating multidimensional constructs such as residential satisfaction [36].

EFA was conducted to assess construct validity and identify the underlying structure of students' satisfaction with their accommodation environment. Prior to EFA, sampling adequacy was evaluated using the Kaiser–Meyer–Olkin (KMO) test, which yielded a value of 0.863, indicating commendable adequacy. Bartlett's test of sphericity was significant ($\chi^2 = 7399.52$, df = 300, $p < 0.001$), indicating that the correlation matrix significantly deviates from an identity matrix and is therefore suitable for factor analysis.

Principle component analysis (PCA) using Varimax rotation was applied to extract the latent factors. According to eigenvalues above 1 supported by parallel analysis, three components were extracted. The first explained 27.7% of the total variation, the second one explained 20.1% and the third one explained 16.5%. Jointly explained 64.3% of the total variance. The rotated component matrix showed a clear factor structure, alongside items loading (Table 3).

Factor 1: Satisfaction with Room Design. This factor comprised 7 items reflecting the quality and comfort of participants' personal rooms. The item loadings ranged from 0.549 to 0.693, and the scale demonstrated excellent internal consistency (Cronbach's $\alpha = 0.881$).

Factor 2: Satisfaction with Building Design. This factor included 9 items that captured general features of the building and shared amenities. The item loadings ranged from 0.512 to 0.713, with the scale showing excellent internal consistency (Cronbach's $\alpha = 0.917$).

Factor 3: Satisfaction with Building Context. This factor encompassed 9 items related to the external context of the accommodation, including accessibility and environmental features. Item loadings ranged from 0.461 to 0.671, and the internal consistency was also excellent (Cronbach's $\alpha = 0.826$).

Table 3. Exploratory factor analysis results for students' satisfaction with accommodation (N = 281)

No.	Satisfaction dimensions	Factor Loading 1	Factor Loading 2	Factor Loading 3	Cronbach's Alpha
	Dimension 1: Room's Design				**0.881**
1	Furniture quality and arrangement inside the room	0.693			
2	Room temperature	0.671			
3	Adequacy of personal storage space	0.668			
4	Light inside your room	0.642			
5	Conversation privacy in room	0.620			
6	Room ventilation	0.549			
7	Amount of living/study space	0.555			
	Dimension 2: Building's Design				**0.917**
1	Noise through floor		0.713		
2	Privacy within the common space		0.674		
3	Maintenance of building finishes		0.572		
4	Building appearance		0.512		
5	Adequacy of recreation common spaces		0.606		
6	Arrangement of rooms in each level		0.599		
7	Location and number of stairs		0.551		
8	Availability of car parking		0.523		
9	Adequacy of laundry room		0.606		
	Dimension 3: Building's Context				**0.826**
1	Proximity of parks			0.461	
2	Outdoor noise			0.500	
3	Accessibility to recreation facilities			0.494	
4	Accessibility to restaurants and commercial services			0.466	
5	Accessibility to worship places			0.671	
6	Accessibility to library			0.668	
7	Accessibility to the academic facilities			0.563	
8	Accessibility to bus station			0.487	
9	Accessibility to medical services			0.541	

Table 4. Mean differences in students' satisfaction scores toward their rented accommodation using MANOVA

Dependent Variables	Residence Type	Mean	SD	F-Value	Partial η^2	P-Value
Satisfaction with accommodation room's design	On-campus Off-campus	2.98 3.88	0.73 0.21	203.975	0.422	< 0.001
Satisfaction with accommodation building's design	On-campus Off-campus	2.94 3.82	0.74 0.22	186.910	0.401	< 0.001
Satisfaction towards accommodation building's context	On-campus Off-campus	3.09 3.85	0.80 0.26	117.589	0.297	< 0.001
Overall satisfaction scores	On-campus Off-campus	3.00 3.85	0.16 0.66	192.006	0.408	< 0.001

Note: partial η^2 (0.01) is a small effect, (0.06) is a medium effect, and (0.14) or higher is a large effect

Collectively, these results provide robust evidence of a coherent factor structure and high internal consistency, confirming the appropriateness of the tool for evaluating student housing satisfaction.

To clarify the practical significance of the MANOVA results, partial-eta squared (η^2) was evaluated (Table 4). The coefficients ranged from 0.297 to 0.422, exceeding Cohen's cut points for large effect ($\eta^2 > 0.14$). These results suggest that 29.7 to 42.2% of the variance in participants' satisfaction is explained and attributed to whether they live on-campus or off-campus. In simpler terms, the location of the residence exerts a strong influence on participants' overall satisfaction.

Missing data were handled conservatively: responses with more than 10% missing data were excluded, while minor omissions were addressed using listwise deletion. The final valid responses considered in the study, after exclusion and list wise deletion, were 281. This approach preserved data integrity while minimizing bias [37]. A significance level of $\alpha = 0.05$ was applied for all tests. In addition, effect sizes were reported alongside p-values, following best practice recommendations to provide greater insight into the practical significance of findings [38].

4. RESULT AND DISCUSSION

In Middle Eastern contexts, particularly among female students, housing satisfaction is further shaped by cultural norms, privacy expectations, and spatial autonomy, which add complexity to how residential environments are evaluated [39, 40]. Building on these foundations, this study assesses female students' satisfaction across three levels—room design, building design, and building context—through a comparative analysis of on-campus and off-campus accommodations at JUST.

The analysis integrates descriptive statistics with inferential testing (MANOVA) to examine statistically significant differences between the two residential types. Results are discussed with reference to user-centered design principles and regional planning constraints, highlighting both alignments with international findings and insights specific to Jordan's gender-segregated housing system. The following subsections present empirical results and contextual interpretations in a structured manner, contributing to both practical improvements in student housing and the broader academic discourse on residential environments in higher education.

4.1 Room design satisfaction

The room design dimension, comprising seven indicators, is fundamental to shaping students' daily residential experiences. It encompasses the physical configuration, indoor environmental quality, and the sense of privacy and comfort within the individual living unit. In this study, the overall mean satisfaction with room design was 3.43 (SD = 0.70), reflecting a moderate level of satisfaction. While several aspects were evaluated positively, critical shortcomings were identified in furniture quality and thermal comfort.

As shown in Table 5, the highest-rated indicators were the amount of living and study space (M = 3.54), ventilation (M = 3.53), and conversation privacy (M = 3.53). These results align with prior research that emphasizes spatial adequacy and privacy as central factors in residential satisfaction [7, 41]. The relatively high satisfaction with study areas suggests that accommodations that integrate learning spaces within residential facilities support academic engagement and reduce reliance on overcrowded university libraries [16]. In hot-arid climates such as northern Jordan, students particularly valued natural ventilation and sufficient room area, which contribute to both physical comfort and productivity.

Table 5. Students' satisfaction level regarding their rented accommodation

	Satisfaction Indicators	Mean	SD	Satisfaction Level
	Satisfaction with accommodation room's design	3.43	0.70	Medium
1	Furniture quality and arrangement inside the room	3.30	0.94	Medium
2	Room temperature	3.32	1.01	Medium
3	Adequacy of personal storage space	3.33	0.85	Medium
4	Light inside your room	3.49	0.82	Medium
5	Conversation privacy in room	3.53	1.01	Medium
6	Room ventilation	3.53	0.85	Medium
7	Amount of living/study space	3.54	0.88	Medium
	Satisfaction with accommodation building's design	3.39	0.70	Medium
8	Noise through floor	3.08	0.98	Medium
9	Privacy within the common space	3.24	0.94	Medium
10	Maintenance of building finishes	3.26	0.93	Medium
11	Building appearance	3.31	0.85	Medium
12	Adequacy of common spaces	3.34	0.86	Medium
13	Arrangement of rooms in each level	3.41	0.87	Medium
14	Location and number of stairs	3.57	0.90	Medium
15	Availability of car parking	3.65	0.92	Medium
16	Adequacy of laundry room	3.65	0.80	Medium
	Satisfaction towards accommodation building's context	3.47	0.71	Medium
17	Proximity of Parks	2.78	0.97	Medium
18	Outdoor noise	3.09	0.95	Medium
19	Accessibility to recreation facilities	3.25	1.36	Medium
20	Accessibility to restaurants and commercial services	3.31	1.39	Medium
21	Accessibility to worship places	3.66	0.99	Medium
22	Accessibility to library	3.72	0.98	High
23	Access to the academic facilities	3.76	1.01	High
24	Accessibility to bus station	3.84	0.96	High
25	Accessibility to medical services	3.86	0.99	High

Note: Means' thresholds are: Low (1.00 - 2.33), Medium (2.34 - 3.67), and High (3.68 – 5.00), based on the arithmetic mean of responses on a 5-point Likert scale

The relatively high scores for conversation privacy also highlight the cultural significance of acoustic separation, especially for female students. Privacy is not only a functional attribute but also carries cultural and psychological weight in Arab societies, where discretion and modesty are emphasized [1].

Moderate satisfaction was recorded for adequacy of lighting (M = 3.49) and storage space (M = 3.33). These findings suggest acceptable but suboptimal performance. Proper lighting is essential for study-related activities, supporting visual comfort and circadian regulation, while insufficient storage can lead to clutter and diminished spatial efficiency. Studies have shown that both lighting and storage availability are strong predictors of student well-being and learning productivity [15, 16]. The results indicate that these elements in on-campus housing require targeted improvement, particularly given the small size of many rooms.

The lowest-rated indicators were furniture quality and arrangement (M = 3.30) and room temperature control (M = 3.32). These weaknesses are consistent with findings in international studies, where outdated furniture and poor thermal comfort are recurring causes of dissatisfaction [6, 24]. In the case of JUST, low furniture ratings likely reflect the aging on-campus stock, characterized by inflexible arrangements and durability issues. Similarly, thermal comfort challenges may arise from poor insulation and lack of individualized temperature control. These findings are particularly relevant in Jordan's climate, which exhibits wide seasonal variations, reinforcing the importance of adaptive environmental control systems [12].

Comparative analysis revealed significant differences between on-campus and off-campus students. According to MANOVA results (Table 4), off-campus residents reported significantly higher satisfaction with room design (M = 3.88, SD = 0.21) compared to their on-campus peers (M = 2.98, SD = 0.73), F = 203.975, $p < .001$. This nearly one-point difference on a five-point scale represents a substantial divergence in perceived residential quality. Off-campus accommodations likely benefited from newer construction, greater flexibility for personalization, and enhanced environmental control, factors that align with findings from Najib et al. [23], who argued that autonomy and adaptability contribute to greater satisfaction.

Taken together, these results suggest that while students are moderately satisfied with core aspects of room design, deficiencies in thermal comfort and furniture significantly reduce overall satisfaction. To address these issues, universities should prioritize furniture replacement cycles, introduce ergonomic and flexible layouts, and invest in improved thermal regulation strategies. Allowing students greater control over their immediate living environment, within culturally appropriate limits, could further enhance satisfaction and well-being. Such interventions would not only improve the quality of on-campus housing but also contribute to higher levels of academic engagement and retention.

4.2 Building design satisfaction

The building design dimension, which includes nine indicators, evaluates the broader physical and functional qualities of student accommodation beyond the individual room. These indicators cover circulation, services, cleanliness, and amenities that collectively shape daily residential life. The overall mean satisfaction for building design was 3.39 (SD = 0.70), indicating moderate satisfaction with notable variations across specific attributes.

As shown in Table 5, the highest-rated indicators were building amenities; laundry and car parking (M = 3.65), staircase locations (M = 3.57). These results reflect that meeting some of the basic needs, such as having enough laundry facilities and availability of parking spaces, would increase the residents' satisfaction in accommodation. In particular, the laundry spaces, if well designed with some seating furniture, could provide spontaneous meeting encounters between the residents, which can increase social interaction [1].

Moderate satisfaction was recorded for arrangement of rooms (M = 3.41), and provision of recreational common space within the accommodation (M = 3.49). Similarly, recreational spaces are integral to student well-being, offering opportunities for physical activity, stress relief, and social interaction [8]. Their presence or development increases the overall quality of the residential experience, particularly for long-term residents.

The lowest satisfaction ratings were observed for noise through floor (M = 3.08), privacy (M = 3.24) and building finishes maintenance (M = 3.26). These aspects are increasingly critical to student satisfaction, as privacy is central to both academic and social life. Earlier POE studies, which frequently highlight inadequate maintenance and shared facilities as common sources of dissatisfaction in student housing [7, 24]. In this study, maintenance issues were more prominent in on-campus housing, where aging infrastructure and centralized service provision contribute to slower response times. Similar challenges have been reported in other Middle Eastern university dormitories, where high occupancy rates accelerate wear and place strain on maintenance budgets [13].

Comparative analysis revealed statistically significant differences between the two housing types. MANOVA results (Table 4) showed that off-campus students reported higher satisfaction with building design (M = 3.82, SD = 0.22) than their on-campus counterparts (M = 2.94, SD = 0.74), F= 186.91, $p < .001$. This discrepancy suggests that off-campus facilities, often newer and privately managed, provide better amenities and services compared to the more standardized and resource-constrained on-campus dormitories. These findings are consistent with international studies that associate private-sector involvement in student housing with improved quality, greater responsiveness, and enhanced personalization [1, 23].

Overall, the results indicate that while availability of services, and building layout are strengths of the existing accommodations, persistent weaknesses in quietness, privacy and maintenance, undermine overall satisfaction. Improving these aspects requires targeted strategies such as introducing service-level agreements for maintenance. By aligning physical design with evolving student needs, universities can create more supportive environments that enhance both academic success and social well-being.

4.3 Building context satisfaction

The building context dimension captures how students perceive the relationship between their accommodations and the surrounding environment, including accessibility, proximity to services, and integration with the urban fabric. These attributes extend beyond the physical boundaries of the building, reflecting students' daily mobility, safety, and social interaction. In this study, the overall mean satisfaction with

building context was 3.47 (SD = 0.71), which was higher than both room and building design dimensions, indicating that environmental surroundings play a critical role in shaping residential experience.

As shown in Table 5, the highest-rated indicators included access to medical services (M = 3.86), access to bus station (M = 3.84), and accessibility to university facilities (M = 3.76), Consistent with prior research, proximity to health services and daily amenities significantly enhances students' sense of security and satisfaction [15, 16, 19]. In the Jordanian context, the strong rating of medical accessibility reflects cultural and parental concerns about student well-being, which remain central to housing choices for female students [39]. Public transport plays a crucial role in off-campus housing, where students frequently commute between residential and academic spaces. These results align with international studies linking transit accessibility to improved academic engagement and reduced commuting stress [4].

Moderate satisfaction was recorded for access to library (M = 3.72), to worship places (M = 3.66) and proximity to commercial services such as shops and restaurants (M = 3.76). These findings underscore the importance of functional convenience, particularly for students balancing academic, social, and personal needs. This reflects a shift in global student housing preferences toward mixed-use, service-rich environments that integrate both academic and social amenities [8].

The lowest satisfaction scores were given to proximity of parks (M = 2.78), environmental quality such as noise in surrounding areas (M = 3.09), and accessibility to recreational facilities (M = 3.25). While off-campus areas offer greater access to urban amenities, they also expose students to risks associated with traffic congestion, noise, and variable neighborhood safety standards. These challenges mirror those reported in studies from other Middle Eastern contexts, where urban integration often comes at the expense of environmental control [1]. Recreational access, while moderately rated, remains an area of concern, as students increasingly view leisure spaces as integral to holistic well-being.

Comparative analysis revealed statistically significant differences between on-campus and off-campus students. MANOVA results (Table 4) indicated that off-campus students reported higher satisfaction with building context (M = 3.85, SD = 0.26) compared to their on-campus peers (M = 3.09, SD = 0.80), $F = 117.589$, $p < .001$. This nearly 0.76-point difference highlights the contextual advantage of off-campus housing, which offers stronger connections to urban amenities and transit networks. However, this advantage must be balanced against concerns about neighborhood safety and environmental quality, where off-campus areas often scored lower than expected. These findings reinforce the duality of ff-campus living: greater autonomy and access to services, but with increased exposure to contextual risks.

Overall, the results underscore the cultural and regional specificities of the Jordanian context. For female students, privacy, safety and accessibility to medical facilities emerged as especially decisive factors, reflecting parental concerns and cultural norms surrounding mobility and autonomy [39, 40]. The strong influence of building context also highlights the importance of urban integration, where access to services and transit can offset deficiencies in design. However, this comes with trade-offs: while off-campus housing benefits from contextual advantages, it exposes students to greater risks related to neighborhood safety and environmental quality.

The analysis confirms that student housing satisfaction cannot be fully understood through physical design alone; it is the interplay between micro-level design, meso-level building services, and macro-level contextual integration that shapes the lived experience. Addressing deficiencies at all three levels—through furniture upgrades, proactive maintenance, and collaborative urban planning—would yield more holistic improvements in student housing quality. These findings provide a foundation for targeted interventions by universities, private developers, and policymakers to create more inclusive, safe, and supportive residential environments.

5. CONCLUSIONS AND RECOMMENDATIONS

This study provided a comparative POE of female students' housing satisfaction at JUST, focusing on three dimensions: room design, building design, and building context. The findings highlight moderate overall satisfaction but also reveal statistically significant differences between on-campus and off-campus accommodation. Off-campus students consistently reported higher satisfaction, particularly in relation to room and building design, which can be attributed to the newer construction, more flexible layouts, better furnishings, and greater autonomy available in privately developed facilities. These conditions appear to facilitate personalization and improved thermal comfort, while also offering more responsive maintenance services.

Perhaps the most decisive factor, however, was the broader building context. Students placed considerable value on proximity to medical services, commercial amenities, and campus facilities, alongside reliable transportation links. For female students in particular, privacy, and access to health services emerged as highly influential elements shaping satisfaction. These contextual conditions frequently outweighed deficiencies in room or building design, highlighting the multi-scalar nature of residential satisfaction. The results suggest that accommodation cannot be understood purely as an architectural or managerial entity, but rather as the product of an interaction between micro-level room features, meso-level building services, and macro-level urban integration.

The implications of these findings are significant for university administrators, private housing developers, and policymakers. At the room level, improvements should focus on systematic renewal of furniture, the provision of ergonomic and flexible study environments, and enhanced opportunities for personalization within privacy-respecting guidelines. Thermal comfort should be addressed by introducing more effective systems of temperature regulation and by undertaking modest retrofits such as shading, sealing, and zoned cooling. Adequate lighting and improved storage capacity would further enhance the functionality of student rooms.

At the building level, maintenance services require clear service-level agreements with transparent reporting mechanisms and more responsive scheduling. Acoustic and thermal retrofits, such as corridor soundproofing and improved insulation, should be prioritized alongside the reconfiguration of underused spaces into multipurpose study and recreational facilities. Safety enhancements, including improved lighting, access control, and routine security audits, remain essential, particularly given the cultural and parental sensitivities surrounding female students' housing.

Establishing advisory panels with student representation would also encourage greater resident engagement and provide an avenue for ongoing feedback.

The building context dimension calls for a more integrated approach between the university and the municipality. Enhanced shuttle services, safer pedestrian pathways, and secure bicycle facilities would improve daily mobility. Increasing the availability of on-campus retail, health, and leisure services within walking distance of residences would reduce dependence on external amenities. At the same time, off-campus housing requires closer oversight to ensure neighborhood safety, environmental cleanliness, and reliable urban services. Regulatory frameworks, supported by partnerships between universities, municipal authorities, and private developers, could establish and enforce minimum quality standards for student housing. Such collaborative mechanisms would help balance the contextual advantages of off-campus housing with the need for secure and supportive living environments.

While this study has generated important insights into female students' satisfaction with on-campus and off-campus housing, further work is needed to capture the depth and diversity of student experiences. Future research should adopt mixed-method approaches that combine surveys with interviews, focus groups, and ethnographic observations to explore cultural and behavioral dynamics that quantitative methods alone cannot fully capture. Longitudinal designs would allow researchers to assess the effects of specific interventions, such as furniture renewal or digital infrastructure upgrades, on student satisfaction over time.

Moreover, advanced analytical techniques such as structural equation modeling could help to disentangle the pathways linking contextual factors to perceived safety, well-being, and satisfaction, while multilevel modeling could separate individual and building-level effects. Validating POE instruments in the Jordanian and broader Middle Eastern context is also essential, particularly to ensure that culturally specific factors such as privacy, parental trust, and gender norms are adequately reflected in measurement tools. Expanding the scope of comparative studies to include male students, international students, and students with disabilities, as well as universities across Jordan and the wider region, would provide a more comprehensive picture of housing satisfaction and its determinants.

In conclusion, this study confirms that student housing satisfaction is the product of a complex interplay between design, management, and context. By adopting multi-level strategies that integrate architectural improvements, service quality enhancements, and urban planning interventions, universities and policymakers can significantly improve the residential experiences of female students. Such efforts not only promote higher levels of satisfaction but also contribute to academic engagement, psychological well-being, and long-term student retention.

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