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RESIDENTS' SATISFACTION ON MAJED SHARARAH PREFABRICATED PROJECT IN ADEN, YEMEN

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ABSTRACT

Residents' satisfaction studies have attracted the attention of researchers worldwide. It is used to indicate how products and services meet or exceed residents' expectations or specified satisfaction goals. This study examined the level of residents' satisfaction towards the design and structure quality of a low cost prefabricated concrete residential project in Aden, Yemen. Data for the research was collected from a structured questionnaire administered through a simple random sampling technique. The survey involved 132 respondents. A total of 120 from 132 questionnaires were successfully retrieved for analysis yielding 91% response rate. Data were analysed using descriptive statistics and cross tabulation in SPSS version 24 to determine the residents' satisfaction by mean scores on a five-point Likert scale. Study findings showed that dwelling features were rated slightly satisfactory by most residents of the project, while structure quality was rated unsatisfactory by most residents of the project.

1. INTRODUCTION

Satisfaction is defined as a feeling of happiness or pleasure achieved (Longman, 2003). With respect to housing studies, it refers to the feeling of contentment buyers receive in buying houses such that it fulfills their needs and wants. Conversely, dissatisfaction is the feeling that emerges when the performance is low compared with the standard quality or due to higher level of defect (Fauzi and Abidin, 2012). Residents' satisfaction is a guide for potential planners, designers, developers, and policymakers who endeavor to provide housing facilities to different number of people (Ukoha and Beamish, 1997).

Prefabrication system is as an effective way for housing projects development around the world, besides it is considered an ideal solution to cover the housing demand due to its many

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characteristics. For example, it is quick in construction, has energy efficiency with low cost, consumes less waste and has Eco-friendly buildings. The prefabricated construction was used in various types of residential constructions at the beginning of the 1980s to cover the demand for housing, especially for the low-income households with convenient repayment system sponsored by the public sector in Aden city, residents have never been asked if living in the prefabricated buildings provided them satisfaction. Thus, this research has chosen Majed Shararah residential project as a case study to find out the residents' satisfaction on dwelling features and structure quality of their apartments and aim to fill such paucity.

2. CASE STUDY

Majed Shararah project is one of the bigger low cost government prefabricated projects that constructed after the independent in the south of Yemen in period of 1980 to 1983 for the low income households. It is located in Al-Mansoura district in Aden, Yemen. It occupies an area of 4 Hectares, Figure 1.

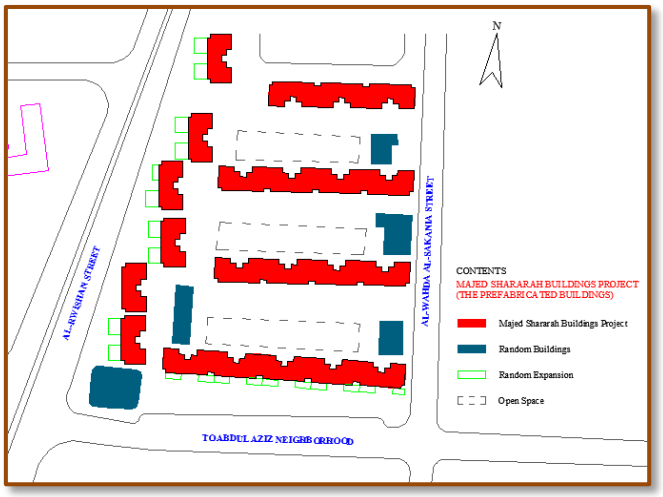

Figure 1: Location of Majed Shararah Buildings Project.

Table 1: The Description of Building System and Its Components (MPWHO, 2017)

Items	Description
Number of Floors	4 Floors
General Structure of the Building	Bearing walls of light prefabricated concrete blocks with prefabricated concrete ceilings
External Walls	Light prefabricated concrete blocks with 30 cm thickness
Interior Walls	Light prefabricated concrete blocks with 30 cm thickness and brick walls with 10 cm thickness
Roofs	Precast reinforced concrete slabs
Floors	Local Mosaic tiles
Windows	Wood and glass
Doors	Compressed wood

This project consists of 24 residential buildings consisting of four floors and 192 apartments. Each apartment consists of two bedrooms, hall, kitchen, bathroom, two balconies and store with a total area of 87.5 m^2. The delivery system is a prefabricated Hungarian system; it was constructed from light concrete walls of volcanic slag (local material). Table 1 presents description of building system of Majed Shararah project and its components.

This project was chosen as a case study, due to many reasons. Firstly, it is an example of the project that was introduced and built to cover the demand for housing especially for the low income households with convenient repayment system sponsored by the public sector. Secondly, the good conditions of the buildings, though they built since 24 years. Thirdly, it is a new trend for housing projects development around the world.

3. METHODOLOGY

This research used quantitative methods to examine the extent of satisfaction levels of residents on the dwelling features and structure quality of their apartments in Majed Shararah project. The quantitative methods have been selected based on the common use of questionnaires in previous studies that investigated the satisfaction levels of residents such as (Ismail et al., 2015; Witchayangkoon et al., 2014).

3.1 QUESTIONNAIRE SURVEY

This study used a questionnaire that consisted of a series of questions (open-ended or closed-ended questions). Total nineteen criteria on dwelling features were asked, including size of living room, size of bedrooms, size of kitchen, size of bathroom, bath and toilet facilities, size of veranda/balcony, rooms arrangement, number of electrical sockets, position of electrical sockets, natural lighting, ventilation, heat and internal temperature, types of finishing materials, safety of stairs, external appearance, density of house, privacy, satisfaction with current house, location of apartment. For structure quality, total thirteen criteria were asked, including leakage/water penetration through walls, uneven floors, poor installation of doors, poor installation of windows, leakage/water penetration through ceiling, cracking of wall, poor installation of tiles, peeling paint, power supply in a house, water supply in a house, drainage facilities, telephone communication, and internet communication. The satisfaction is derived from the five Likert scale questionnaire with

‘1’ for very dissatisfied,

‘2’ for dissatisfied,

‘3’ slightly satisfied,

‘4’ satisfied and,

‘5’ very satisfied.

The questionnaire in the research was distributed to 132 heads occupants by using simple random sampling to acquire more representatives of the population and avoid biases (Kish, 1949). A face-to-face questionnaire survey was conducted with the respondents.

3.2 DATA ANALYSIS

The data collection in this study was analysed by using both the Statistical Package for Social Science (SPSS, version 24) software, and Excel programs. Data were analysed using descriptive statistics (Salleh, 2008) and cross tabulation.

4. DISCUSSION OF RESULT

The analysis is based on the results of 120 respondents who answered the questionnaire successfully from the targeted 132 respondents. The remainder 12 respondents had declined to

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answer the questionnaire. Table 2 the overall mean score for residents' satisfaction on the nineteen items of the design of dwelling features was 3.7, which indicates that the residents slightly satisfied with the overall design of dwelling features of their apartments in the project of Majed Shararah.

Table 2: Satisfaction on design of dwelling features

Items	Satisfaction Level
Size of Living Room	3.94
Size of Bed Rooms	3.87
Size of Kitchen	3.32
Size of Bath Room	3.39
Bath and Toilet Facilities	3.32
Size of Veranda/Balcony	3.74
Rooms Arrangement	3.78
Number of Electrical Sockets	3.78
Position of Electrical Sockets	3.84
Natural Lighting	3.91
Ventilation	4.00
Heat & Internal Temperature	3.63
Types of Finishing Materials	3.33
Safety of Stairs	3.29
External Appearance	3.56
Density of House	3.58
Privacy	3.66
Satisfaction with Current House	3.88
Location of Apartment	4.05

Table 3 the overall mean score for residents' satisfaction on the thirteen items of the structure quality of residential buildings was 2.8, which indicates that the residents dissatisfied with the overall structure quality of the prefabricated residential buildings.

Table 3: Satisfaction on structure quality

Items	Satisfaction Level
Leakage/Water Penetration Through Walls	2.40
Uneven Floors	3.00
Poor Installation of Doors	2.87
Poor Installation of Windows	2.89
Leakage/Water Penetration Through Ceiling	2.27
Cracking of Wall	2.68
Poor Installation of Tiles	2.79
Peeling Paint	2.65
Power Supply in Your House	2.85
Water Supply in Your House	3.17
Drainage Facilities	2.92
Telephone Communication	3.34
Internet Communication	2.94

From Tables 4, 5 and 6 the results indicated that there is a significant positive relationship between dwelling room's arrangement with both of natural lighting, ventilation and heat, and internal temperature.

Table 4: Relation of Satisfaction between Rooms Arrangement * Natural Lighting

		Natural Lighting					Total
		1	2	3	4	5	
Rooms Arrangement	1	-	-	-	-	-	-
	2	0%	33.3%	15%	3.8%	0%	5.8%
	3	100%	0%	20%	19.2%	11.1%	18.3%
	4	0%	66.7%	65%	76.9%	33.3%	67.5%
	5	0%	0%	0%	0%	55.6%	8.3%
Total							100%

Table 5: Relation of Satisfaction between Rooms Arrangement * Ventilation

		Ventilation					Total
		1	2	3	4	5	
Rooms Arrangement	1	-	-	-	-	-	-
	2	0%	0%	25%	3.9%	0%	5.9%
	3	100%	0%	12.5%	20.8%	8.7%	17.6%
	4	0%	100%	62.5%	75.3%	47.8%	68.1%
	5	0%	0%	0%	0%	43.5%	8.4%
Total							100%

Table 6: Relation of Satisfaction between Rooms Arrangement * Heat and Internal Temperature

		Heat and Internal Temperature					Total
		1	2	3	4	5	
Rooms Arrangement	1	-	-	-	-	-	-
	2	0%	0%	20%	2.5%	0%	5.8%
	3	100%	22.2%	16%	17.5%	0%	18.3%
	4	0%	77.8%	64%	70%	50%	67.5%
	5	0%	0%	0%	10%	50%	8.3%
Total							100%

Table 7 the result indicated that there is not a significant negative relationship between current house and drainage facilities. Table 8, the result indicated that there is not a significant positive relationship between current house and leakage/water penetration through ceiling.

Table 7: Relation of Satisfaction between Current House * Drainage Facilities

		Drainage Facilities					Total
		1	2	3	4	5	
Current House	1	0%	0%	5%	0%	0%	0.8%
	2	8.3%	0%	5%	1.9%	0%	3.4%
	3	12.5%	31.6%	25%	18.5%	100%	21.8%
	4	50%	31.6%	55%	66.7%	0%	54.6%
	5	29.2%	36.8%	10%	13%	0%	19.3%
Total							100%

Table 8: Relation of Satisfaction between Current House * Leakage/Water Penetration through Ceiling

		Leakage/Water Penetration through Ceiling					Total
		1	2	3	4	5	
Current House	1	0%	2.6%	0%	0%	0%	0.8%
	2	84.6%	2.6%	0%	0%	0%	3.3%
	3	23.1%	34.2%	5.9%	12.5%	0%	21.7%
	4	41%	42.1%	76.5%	79.2%	100%	55%
	5	28.2%	18.4%	17.6%	8.3%	0%	19.2%
Total							100%

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5. RESULT SUMMARY

The results in table 2 indicate that 89.5% of the residents' were slightly satisfied with most of the dwelling features of their apartments such as size of living room, size of bedrooms, size of kitchen, size of bathroom, bath and toilet facilities, size of veranda/balcony, rooms arrangement, number of electrical sockets, position of electrical sockets, natural lighting, heat and internal temperature, types of finishing materials, safety of stairs, external appearance, density of house and privacy, while that 10.5% of the residents were satisfied with ventilation and location of their apartments.

In contrast results in table 3 which indicate that 76.9% of the residents are dissatisfied with most of the structure quality of their apartments such as leakage/water penetration through walls, poor installation of doors, poor installation of windows, leakage/water penetration through ceiling, cracking of wall, poor installation of tiles, peeling paint, power supply, drainage facilities and internet communication.

In relation of satisfaction between rooms arrangement with both of natural lighting, ventilation and, heat and internal temperature in tables 4, 5 and 6 the results indicates that 76.9%, 75.3% and 70% of the residents respectively were satisfied with room's arrangement, and also were satisfied with natural lighting, ventilation and heat and internal temperature.

In relation of satisfaction between current house with drainage facilities in table 7 the results indicated that 66.7% of the residents were satisfied with their current houses and its drainage facilities, as well, in relation of satisfaction between current house with leakage through ceiling in table 8 the results indicate that 79.2 % of the residents were satisfied with their current houses and leakage/water penetration through the ceiling.

6. CONCLUSION

This study investigated residents' satisfaction on one of the successful prefabricated residential projects in Aden city. A questionnaire survey was used to investigate satisfaction on dwelling feature and structure quality. The research has a total of 132 respondents. Nineteen criteria have been surveyed on dwelling feature and thirteen criteria on structure quality. The findings revealed that the project achieved a relatively small success with regards to the dwelling features while the findings revealed problems in the structural quality associated with poor non-maintenance of these buildings since its establishment in 1982. However, the residents generally still satisfied with their current apartments because they do not have another housing choice.

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8. REFERENCES

Fauzi, S. N. F. M., & Abidin, N. Z. (2012). The relationship of housing defects, occupants' satisfaction and loyalty behavior in build-then-sell houses. Procedia-Social and Behavioral Sciences, 62, 75-86.

Ismail, M., Termizi, N. H. A., & Hassan, A. S. (2015). Satisfaction and Perception of Occupants Towards Highrise Government Apartments Built Using Industrialized Building System in Putrajaya, Malaysia. International Transaction Journal of Engineering, Management, and Applied Sciences and Technologies,6(3), 107-117.

Kish, L. (1949). A procedure for objective respondent selection within the household. Journal of the American Statistical Association, 44(247), 380-387.

Longman, D. (2003). Dictionary of Contemporary English; Eds: Fox, C; E; Murphy, M; Urban, R., and Marwick, K.C; Parson Education Limited; Edinburgh gate, Harlow, England. 2003.

MPWHO (2017). Ministry of Public Works and Highways Office (MPWHO). Office of Public Works and Roads.

Salleh, A. G. (2008). Neighbourhood factors in private low-cost housing in Malaysia. Habitat International, 32(4), 485-493.

Ukoha, O. M., & Beamish, J. O. (1997). Assessment of residents' satisfaction with public housing in Abuja, Nigeria. Habitat international, 21(4), 445-460.

Witchayangkoon, B., Sirimontree, S., Buddhawanna, S., Koonnarittipol, T., Chaninsathapat, T., & Waisurasingha, C. (2014). An after-stay satisfaction survey of residents living in prefabricated concrete structures in Thailand. International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies, V5(2), 87-94. http://tuengr.com/V05/0087.pdf

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