

HOMEOWNERS PREFERENCE FOR LOW-COST HOUSING SPATIAL DESIGN MODIFICATION



Abdulazeez U. Raji

Department of Estate Management, Bayero University, Kano, Nigeria.

Corresponding author: auraji.esm@buk.edu.ng

Abstract:

It is evident that low-income group occupying low-cost housing in Malaysia initiate spatial modification of their housing units due to the inevitable nature of changing needs as their family size increases. Housing modifications are primarily aimed at providing better quality of life for the homeowners and improve the functional aspect of the house. Their original home space to some extent does not fully satisfy their immediate or current needs nor provides flexibility to fit with their inevitable changing needs as they evolve. The aim of this research is to establish the socio-economic factors that trigger and motivate homeowners to modify their house. The research employs quantitative research method. Data were collected from 250 respondents using systematic sampling technique. The data was analyzed quantitatively using descriptive statistics analysis. Each sample unit (homeowner) was provided with a questionnaire to obtain information on spatial modifications and key building related characteristics. The findings on the respondent's priority or preferences to spatial modification is "storage utility", "entrance porch", "living room" and "dining area" is given due consideration by homeowners when carrying out spatial modification during the period of occupancy. Findings on the future priority area for spatial modification indicates clearly that the respondent's future priority area to spatial modification is "Kitchen", "entrance porch", "living room", and "dining area" whilst also indicating high priority for "kitchen". Housing developers and other stakeholders should take into consideration the changing needs of homeowners at the design stage by providing some elements of flexibility for homeowners to adapt their homes based on their changing needs.

Keywords: Low-cost housing, spatial design, housing modification,

1.0 INTRODUCTION

Modification is the process or act of alteration. Housing modification can simply be defined as the process of altering and existing design or plan to achieve a desired need. Akalinet *al.* (2008) grouped housing modification into two different types that are intrinsic, which relates to spatial and technical functions, and extrinsic, which refers to aesthetic act. In addition, Marcus & Sarkissian (1986) suggested design guidelines which promotes and encourages residential modification or personalization through territorial expression, added privacy, articulated façade, personal additions, component replacement and entry personalization. However, Abu-Ghazze (2000) defined personalization as a way people modify their environment to make it

distinctly theirs. At the same time high density environments increase the need for privacy which increases the need for people to mark their territory and to create more personalized markings. According to Oulasvirta & Blom (2007), personalization is a normal behavior in human activity such as decorating or beautifying, altering, modifying and adapting. Personalization occurs when there is any modification or addition to the exterior part of the house by the residents, including the garage and the front or back yard (Marcus & Sarkissian, 1986).

Modification of terrace house in Malaysia is increasing day-by-day to satisfy the needs of the homeowners. According to literature, the design concepts have not

changed much ever since terrace housing flourished initially around the 1960s and 1970s; the period which witnessed frenzy in the development of terrace houses in Malaysia in order to meet the excessive demand for urban housing.

Throughout history, people have sought to alter their homes to suit their own personal needs. Most people change their living environment in some way for a number of reasons. However, some of the motivation behind such behavior is well understood to be particularly related to speculation and investments. For example, people upgrade a property to improve the resale value (Abbott *et al.*, 2003). Abbott *et al.* (2003) argue that there are other reasons behind such behavior. Some homeowners claim their motivation is to make their homes more “stylish”. The way in which this is carried out depends on the individual’s understanding of the concept of “stylish”. Although this is likely to differ somewhat between people, there are likely to be social norms within particular social groups which to some extent define the term “stylish” (Abbott *et al.*, 2003).

Understandably, insufficient home space is more likely to be experienced by those in the lower segment of the Malaysian housing sector (i.e. low-cost housing), as evidenced by quite a number of past studies (Husna & Nurizan, 1987; Idrus & Ho, 2008; Abdul Mohit *et al.*, 2010). The low-cost terrace housing (LCTH) built-up area ranges between 720- 750 square feet. Ideally, one would expect such shortcomings less likely to be experienced by residents in the upper segment of the housing in Malaysia, given the fact that the houses in that segment are much larger with a built-up area ranging from 850 square feet to 1200 square feet. However, it is evident that space inadequacy in homes has also been experienced by those in the upper housing segment (Saruwono, 2007). It is argued that insufficient home space

appears to affect a much larger population of dwellers in Malaysian urban housing schemes.

According to Reed (2001) investment in housing is a considerable source of wealth for many individuals. The actual level of such investment is reflected by both the price initially paid for the property, and investment in post-occupancy changes and modifications, such as additional rooms, shaded patios, balconies added by homeowners (Etzion *et al.*, 2001). Generally, it is premised that the investment of property owners in the maintenance and modification of their apartments and houses tackles a range of issues, from poor stock conditions to inferior housing design. As a result, investment programs ranging from large-scale demolition, rebuilding and remodeling of properties (primarily initiated by the federal or local governments and social organizations, in order to improve the quality of life of a target group, mainly low-income population), to small-scale, usually individual or neighborhood grass-root initiatives, such as replacing windows, renewing roofs, installing central heating (Cole & Reeve, 2001).

This paper is aimed at establish homeowner’s preference for spatial housing modification, as this can indicate the extent to which the current practice of post-occupancy changes and spatial modifications in Malaysian low-cost terrace housing has a positive impact on the community. It is noted by Boris *et al.* (2005) that homeowners modify for two major reasons; either to enhance property value or improve performance of utility to accommodate changing occupational needs. In summary, due to the obvious relatively larger extent of changing needs experienced by low-cost owners and their inherent desire for social mobility, hence the need to address the returns to be gained through spatial modification of their homes is crucial.

1.1 LOW-COST HOUSING

INVESTMENT AND MODIFICATIONS

According to Reed (2001) investment in housing is a considerable source of wealth for many individuals. In addition, the actual level of such investment is reflected by both the price initially paid for the property, and investment in post-occupancy changes and modifications, such as additional rooms, shaded patios, balconies, added by the present homeowner and previous ones (Etzion *et al.*, 2001).

Generally, as pointed out by Cole & Reeve (2001), the investment of property owners in the maintenance and modification of their apartments and houses tackles a range of issues, from poor stock conditions to inferior housing design. As a result, investment programs range from large-scale demolition, rebuilding and remodeling of properties (by homeowners in order to improve the quality of life mainly among low-income population), on a small-scale such as replacing windows, renewing roofs, installing central heating (Cole & Reeve, 2001).

Various studies investigated the effects of housing rehabilitation on property values (Simons *et al.*, 1998; Ding *et al.*, 2000). These studies indicate that residential investment in new construction and rehabilitation has, in general, a positive effect on property values, specifically in low-income neighborhoods. However, as Groves and Niner (1998) found out, residential properties in owner-occupied inner-city areas, which had undergone housing

renovation, quickly deteriorate again, and property prices drop. These findings are in line with results of another study conducted in the city of Chicago by McMillen (1996).

Housing deterioration often stems from neighborhood social and environmental factors, such as crime, the concentration of low-income population groups, poor environmental design and a lack of open spaces. These linkages point out limited longitudinal benefits of physical improvements of housing stock through renovation investment. However, by addressing relevant social and environmental improvements in the neighborhood might encourage the residents to invest in the repair, maintenance and improvement of housing (Groves & Niner, 1998; Cole & Reeve, 2001). In addition, Etzion, *et al.* (2001) attribute post-occupancy housing changes and modifications to the inadequacy of the original design, and poor performance of buildings under location-specific climatic conditions. Acknowledging however that micro environmental externalities may also affect the household's motivation either to initiate such changes or to refrain from them.

The above studies refer to general causes of dweller-initiated housing modifications and their socio-economic consequences. However, in Malaysia there seems to be lack of empirical studies that offer any model explaining the linkages between housing values and post-occupancy housing changes using hedonic price model in residential property market.

2.0 RESEARCH METHOD

The sequence in which the study was carried out for achieving the outlined desired objectives is presented in this section. Quantitative technique was used as an approach for systematic empirical investigation of the social phenomenon (Nor, 2009). The study was based on the 1,360

LCTH populations in Batu Pahat, Johor, Malaysia. Data on the listing of low-cost housing estates and units were obtained from the website of Majlis Perbandaran Batu Pahat (Batu Pahat Municipal Council). The number of the units corresponds to the actual number of low-income earners that are in record at Batu Pahat. There are 1,360 low-cost housing

units under the Majlis Perbandaraan Batu Pahat (see Table 1). The sample for 1, 360 low-cost housing (LCTH) units in BatuPahat is 306 units (Saunders *et al.*, 2015) and 306 questionnaires were distributed to get a

substantial pool of data. Ministry of Housing determines the actual low-income groups to be allocated the low-cost housing units (MPBH, 2013).

Table 1: LCH under the Municipal Council in BatuPahat and their respective prices (MPBH,2013; Ubale, 2013).

S/no	Estate	LCH Units	Percentage	Type	Price (RM)
1.	Bandar Baru	476	35.00	1 storey	25, 000.00
2.	Putera Indah	608	44.70	1 storey	25, 000.00
3.	Harmoni	25	1.83	1 storey	25, 000.00
4.	Bintang Emas	10	0.73	1 storey	25, 000.00
5.	Mulia/Raja	17	1.25	1 storey	25, 000.00
6.	Bestari	53	3.89	1 storey	25, 000.00
7.	Siswa Jaya	10	0.73	2 storey	28, 000.00
8.	Rengit Indah	28	2.05	2 storey	28, 000.00
9.	Ria 2	12	0.88	2 storey	28, 000.00
10.	PanchorRiang	4	0.29	2 storey	28, 000.00
11.	Permai	7	0.51	2 storey	28, 000.00
12.	Rengit Ria	7	0.51	2 storey	28, 000.00
13.	Damai II	46	3.38	2 storey	30, 000.00
14.	Permai, Besar	4	0.29	2 storey	35, 000.00
15.	PermaiBesar 2	5	0.36	2 storey	80, 000.00
16.	Mulia Jaya	5	0.36	2 storey	30, 000.00
17.	Gaya I	14	1.02	2 storey	30, 000.00
18.	Gaya II	20	1.47	2 storey	50, 000.00
19.	Manis 5	9	0.66	2 storey	28, 000.00
	TOTAL	1, 360 Units	99.91%	SAMPLE : 306 Units	

However, in Malaysia, the policy postulates that for every housing development project proposed by a developer, 40% must be low cost housing and there is no single housing estate for only low-income earners. All housing estates consists of the two broad categories of low-cost houses, and medium and high cost houses (MPBP, 2013). The low-cost houses are of three categories with respective prices of

RM30000 “2 storey low cost terraces”; RM50, 000 “2 storey low cost terrace” and RM80000 “2 storey low cost terrace” (Jabatan Penilaian dan Perkhidmatan Harta, 2012).

Random sampling was employed in administering questionnaires to target respondents. Structured Questionnaires using Likert scale response technique were used as the design for the research instrument,

wherein 306 questionnaires were distributed in the municipality of Batu Pahat. 250 (82%) questionnaires were returned while 56 (18%) questionnaires were not returned. Based on Saunders *et al.* (2015) for a population of 1500, sample size of 306 is adequate with 5% margin of error and 95% level of confidence.

3.0 RESEARCH RESULTS AND DISCUSSION

In exploring the homeowners housing modification preferences, the research study used ordinal measurement scale where the five-point Likert's scale for measuring the responses of the respondents has been employed. Findings on category of needs that

3.1 Priority area for spatial modification

Priority area of spatial modification that has been undertaken within the period of occupancy counts a lot to this study. According to the survey as shown in Table 2, 81% representing 202 respondents indicates **high priority** was given to *entrance porch* when modification was carried out in the

Ordinal scale of measurement was used. Descriptive statistics analysis was used to achieved the research objective. A reliability test was run on the set data for residents of LCH Batu Pahat Malaysia. The Cronbach's Alpha value of 0.815 shows that the data is statistically reliable.

cause or infringe respondent's to modify their homes during the period of occupancy is presented in this subsection. Research finding of priority area or spatial modification that has been undertaken and future spatial area of modification was given due consideration in this research study and the findings are presented below.

past, whilst 78% representing 195 respondents indicates **high priority** for *bedroom* modification. 47% representing 118 respondents indicates **high priority** for *living room* modification. 84% representing 210 respondents show **high priority** for *dining area* spatial modification, interestingly, 84% representing 210 respondents indicates **high priority** for *kitchen* spatial modification.

Table 2: Priority area for spatial modification that has been undertaken within the period of occupancy

Priority for spatial modification	Very Low	Low	Medium	High	Very High	Mean (x)	Std. Dev.	RII
Entrance porch	0(0%)	10(4%)	5(2%)	202(81%)	33(13%)	4.03	0.55	3
Bedroom	5(2%)	3(1%)	20(8%)	195(78%)	27(11%)	3.94	0.64	6
Living room	5(2%)	13(5%)	5(2%)	118(47%)	109(44%)	4.25	0.88	1
Dining area	0(0%)	3(1%)	5(2%)	210(84%)	32(13%)	4.08	0.43	2
Kitchen	0(0%)	13(5%)	5(2%)	210(84%)	22(9%)	3.96	0.56	5
Toilet	3(1%)	3(1%)	212(85%)	15(6%)	17(7%)	3.16	0.61	8
Storage & utility	0(0%)	0(0%)	8(3%)	237(95%)	5(2%)	4.00	0.22	4
Balcony	50(20%)	48(19%)	125(50%)	16(6%)	11(5%)	2.56	1.02	9
Guest room	5(2%)	3(1%)	45(18%)	178(71%)	19(8%)	3.81	0.67	7

**n=250

Based on the data analysis, 85% representing 212 respondents indicates **medium priority** was given to *toilet* modification, whilst 95% representing 237 respondents considered

storage and utility spatial modification as **high**. On the other hand, 50% representing 125 respondents indicates **medium priority** for *balcony* spatial modification during the

period of occupancy. Interestingly, 71% representing 178 respondents indicates **high priority** for *guest room* spatial modification (refer to Table 2 above) for statistics on the spatial area modification that has been undertaken within the period of occupancy.

The statistical results provide more summary information on the priority area for changing needs. Descriptive statistics of the mean indicates clearly that the respondent's priority to spatial modification that has been

undertaken within the period of occupancy is **high** for “*Entrance porch*”, “*living room*”, “*dining area*” and “*storage and utility room*”. This is based on the statistics that any mean below 3.0 of the Likert scale is considered as *low* whilst mean above 3.0 is considered as *high*; therefore, the majority of the respondents indicate **high priority** for certain areas of spatial modification (refer to Figure 2 below).

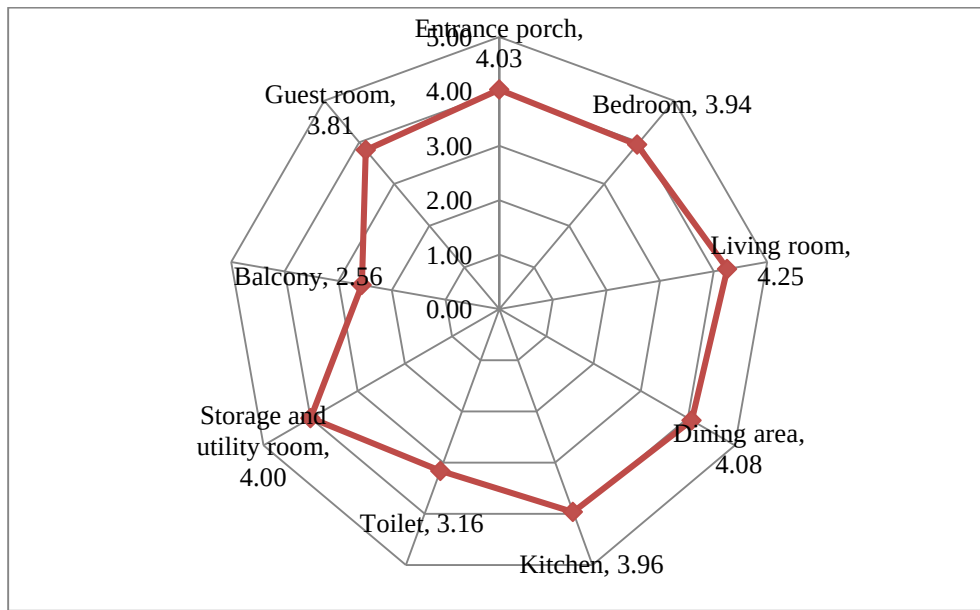


Figure 1: Statistics summary on priority area of changing needs

3.2 Future priority area of spatial modification

Future priority area of spatial modification that would be carried out but within 10-year period of occupancy is highly significant to this study. According to the survey as shown in Table 3, 85% representing 212 respondents indicates **very high priority** to *entrance porch* modification in the future, whilst, 60% representing 150 respondents shows

very high priority to *bedroom* spatial modification. 75% representing 187 respondents indicates **very high priority** for *living room* future modification. On the other hand, 64% representing 160 respondents shows **very high priority** for *dining area* future spatial modification. Interestingly, 54% representing 135 respondents indicates **high priority** for *kitchen* in future spatial modification.

Table 3: Future priority area of spatial modification

Future priority area for spatial modification	Very Low	Low	Medium	High	Very High	Mean (x)	Std. Dev.	RI
Entrance porch	8(3%)	5(2%)	10(4%)	15(6%)	212(85%)	4.67	0.89	1
Bedroom	3(1%)	5(2%)	42(17%)	50(20%)	150(60%)	4.35	0.91	4
Living room	0(0%)	8(3%)	15(6%)	40(16%)	187(75%)	4.62	0.74	2
Dining area	0(0%)	5(2%)	20(8%)	65(26%)	160(64%)	4.52	0.72	3
Kitchen	0(0%)	0(0%)	15(6%)	145(58%)	90(36%)	4.30	0.57	5
Toilet	3(1%)	3(1%)	135(54%)	69(28%)	40(16%)	3.56	0.81	8
Storage & utility	0(0%)	0(0%)	59(24%)	145(58%)	46(18%)	3.94	0.64	7
Balcony	10(4%)	18(7%)	152(61%)	39(16%)	31(12%)	3.25	0.90	9
Guest room	3(1%)	5(2%)	45(18%)	132(53%)	65(26%)	4.00	0.79	6

**n=250

Interestingly, according to this current research survey, it shows that 54% representing 135 respondents indicates **medium priority** to *toilet* future modification whilst, 58% representing 145 respondents considered *storage and utility room* spatial modification in future as **high**. On the other hand, 61% representing 152 respondents indicates **medium priority** for future *balcony* spatial modification whilst, 53% representing 132 respondents indicates **high priority** for future *guest room* spatial modification (refer to Table 3 above) for statistics on the future spatial area modification that would be carried out.

The statistical results provide more summary information on the future priority area of spatial modification by households. Descriptive statistics of the mean indicates clearly that the respondent's future priority to spatial modification is **very high priority** for "Entrance porch", "living room", and "dining area" whilst it indicates **high priority** for "kitchen". This is based on the statistics that any mean below 3.0 of the Likert scale is considered as *low* whilst mean above 3.0 to 4.5 is considered as *high*, whilst 4.5 to 5.0 is considered for this analysis as *very high*. Therefore, the majority of the respondents indicate *high priority* for certain areas of spatial modification (refer to Figure 2 below).

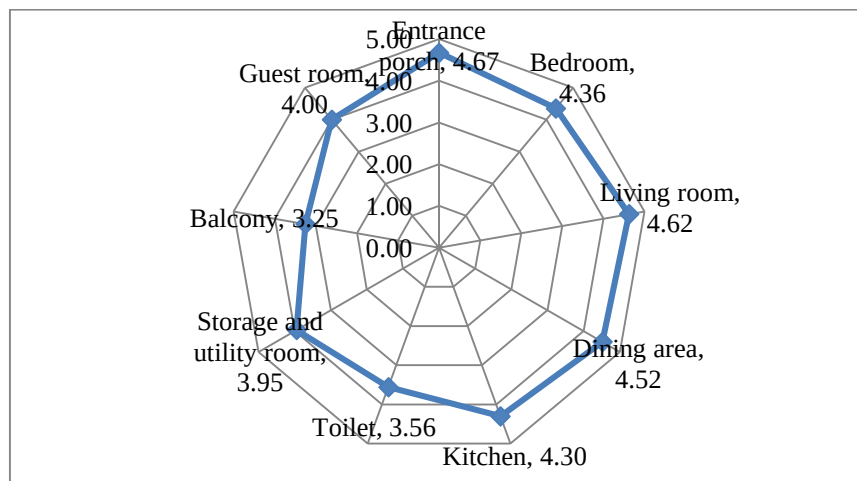


Figure 2: Statistics summary on future priority area of changing needs

4.0 CONCLUSION

Based on the data analysis, as discussed earlier in the previous sections the statistical results on the priority area for spatial modification within the period of occupancy provide more summary information on the spatial priority area and the descriptive statistics of the mean indicates clearly that the respondent's priority or preferences to spatial modification is "storage utility", "entrance porch", "living room" and "dining area" is given due consideration by homeowners when carrying out spatial modification during the period of occupancy.

5.0 ACKNOWLEDGEMENT

This research is fully supported by Graduate Research Incentives (GIPS) with VOT number U197. The author fully

On the other hand, the statistical results on the future priority area for spatial modification indicates clearly that the respondent's future priority area to spatial modification is "Kitchen", "entrance porch", "living room", and "dining area" whilst also indicating high priority for "kitchen". Housing developers and other stakeholders should take into consideration the changing needs of homeowners at the design stage by providing some elements of flexibility for homeowners to adapt their homes based on their changing needs.

acknowledged Universiti Tun Hussein Onn Malaysia for the financial support which has made this important research possible.

REFERENCES

- Abbott, L., Edge, M. & Conniff, A. (2003). Housing Modification and Implication for Future Housing Provision: A Socio-Psychological Investigation. In *ENHR/IAPS Conference*. Stockholm, Sweden
- Abdul Mohit, M., Ibrahim, M. & Rashid, Y. R. (2010). Assessment of residential satisfaction in newly designed public low-cost housing in Kuala Lumpur, Malaysia. *Habitat International*, 34, 18-27.
- Abu-Ghazzeh, T. M. (2000). Environmental Messages in Multiple-family Housing: territory and personalization. *Landscape Research*, 25, 97-115.
- Akalin, A., Yildirim, K., Wilson, C. & Kilicoglu, O. (2008). Architecture and engineering students' evaluations of house façades: Preference, complexity and impressiveness. *Journal of Environmental Psychology*, In Press.
- Boris, P. A., Yakov, O., & Larissa, F. (2005). Factors affecting housing modifications and housing pricing: A case study of four residential neighborhoods in Haifa, Israel. *Journal of Real Estate Research*, 27(4), 371-407.
- Cole, I., & Reeve, K. (2001). Housing and Physical Environment Domain: A Review of the Evidence Base. Center for Regional Economic and Social Research, Sheffield Hallam University, Sheffield.
- Ding, C., Simons, R., & Baku, E. (2000). The effect of residential investment on nearby property values: evidence from Cleveland, Ohio. *Journal of Real Estate Research*, 19(1), 23-48.
- Etzion, Y., Portnov, B. A., Erell, E., Meir, I., & Pearlmuter, D. (2001). An open GIS framework for recording and analysing post-occupancy changes in residential buildings—a climate-related case studies. *Building and Environment*, 36(10), 1075-1090.

- Groves, R. & Niner, P. (1998). A Good Investment? The Impact of Urban Renewal on an Inner-City Housing Market, West Sussex: Policy Press.
- Husna, S. & Nurizan, Y. (1987). Housing provision and satisfaction of low-income households in Kuala Lumpur. *Habitat International*, 11(4), 63-70.
- Idrus, N. & Ho, C. S. (2008). *Affordable and quality housing through the low-cost housing provision in Malaysia*. Paper presented at the Seminar of Sustainable Development and Governance, Toyohashi University of Technology.
- Jabatan Penilaian dan Perkhidmatan Harta (2012). <http://www.jp-ph.gov.my>
- MacLennan, D. & Yong, T. (1996). Economic Perspective on the Structure of Local Housing Systems, *Housing Studies*, 11(3), 387-400.
- Marcus, C. C. & Sarkissian, W. (1986). *Housing as if people mattered: Site design guidelines for medium-density family housing*, Berkeley and Los Angeles, California, University of California Press.
- McMillen, D. P. (1996). One Hundred Fifty Years of Land Values in Chicago: A Nonparametric Approach, *Journal of Urban Economics*, 40, 100-124.
- MPBH (2013) <http://www.mpbp.gov.my/penerbitan>
- Nor, M. A. (2009). Statistical methods in Research. Published by Prentice Hall. Pearson Malaysia Sdn Bhd. Lot 2, Jalan 215 off Jalan Templer 46050 Petaling Jaya, Selangor, Malaysia. Fax: 03-77853435. ISBN: 978-983-3927-95-1
- Oulasvirta, A. & Blom, J. (2007). Motivations in personalization behavior. *Interacting with Computers*, 20, 1-16.
- Portnov, B. A., Fleishman, L., & Odish, Y. (2006). Changes and Modifications in Residential Neighborhoods as a Factor of Housing Pricing: Jerusalem and Haifa as Case Studies. *Journal of Real Estate Literature*, 14(3).
- Reed, R. (2001). The Significance of Social Influences and Established Housing Values, *The Appraisal Journal*, 69(4), 356-61.
- Saruwono, M. (2007). An analysis of plans of modified houses in an urbanized housing area of Malaysia. Unpublished PhD, The University of Sheffield.
- Saunders, M., Lewis, P. & Thornhill A. (2015). *Research Methods for Business Students*. 7th Edition. London: Prentice Hall.
- Simons, R. A., Quercia, R. & Maric, I. (1998). The Value Impact of New Residential Construction and Neighborhood Disinvestment on Residential Sales Prices, *Journal of Real Estate Research*, 15(1/2), 147-62.
- Ubale, M.Y (2013). Comparative study between Malaysian and Nigerian formal low-cost housing policy issues. (Master Thesis Universiti Tun Hussein Onn Malaysia).
- Zangerle, J. A. (1927). *Principles of Real Estate Appraising*, 2nd ed., Cleveland, Ohio: Stanley McMichael.