

# CULTURAL ETHICS AND THE MAINTENANCE OF RESIDENTIAL BUILDINGS IN SOUTH EAST NIGERIA

## Case Study of Housing Estate in Owerri

<sup>1</sup>Ogbuagu Obinna Gorge. <sup>2</sup>Nkeleme EmmnuelIfeanyichukwu

<sup>3</sup>Osuagwu Andrew Chima <sup>4</sup>Nwanyaka Anthony Ekene

<sup>5</sup>Ozoh Stanley Chukwudi

<sup>1&2</sup>Department of Building, Federal University of Technology Owerri, Imo State, Nigeria

<sup>3&4</sup>Department of Building, Federal Polytechnic Nekede Owerri, Imo State, Nigeria

<sup>5</sup>Department of Architecture, Federal University of Technology Owerri, Imo State, Nigeria

**Abstract:** The behavior and way of living of group of people is influence by their cultural background and it vary from one place to another. This cultural background influence how people value and handle properties and life. Therefore, this paper sought to identify the causes of poor building maintenance of residential building as well as the relationship between cultural ethic and the building maintenance in South East Nigeria using the World Bank Housing Estate as a case study. The research was pursued using a structured questionnaire administered to the building owners, occupants and government agency works with the area of study. Data from the respondents were analyzed using SPSS version 19.0 and presented using mean and Relative Importance Index (RII) to establish the order of severity. The result revealed among others that; lack funding, people's attitude, lack of maintenance policies for housing estates and Poor leadership are some of the top ranking factors that account for the poor maintenance of the study area. Also from the analysis the F-Value is significant since it is greater than the critical F-value of 4.43 given 4/20 degree of freedom at 0.01 level of significance. Therefore, the hypothesis that there is a significant relationship between cultural ethics and maintenance of residential building was upheld. Consequently, it is recommended that government should enact legislature mandating individual to maintain their properties at regular intervals.

**Key Words:** Cultural ethic, Maintenance, Residential Housing

### I. Introduction

In most developing countries like Nigeria, building maintenance is gaining recognition due to high demand on housing and urbanization. This have influence on the existing facilities and the stock of infrastructural facilities (Odediran et al., 2012; Olagunju, 2012)

There is an increasing demand for the maintenance of most building, especially for primary buildings such as residential buildings, schools, hospitals and universities. This increasing demand have resulted in a corresponding increase in terms of labour, in comparison with those for other construction facilities (Thomas & Pan, 2015).

The life cycle of the building is highly influenced by the maintenance of the building. Maintenance plays a vital role in ensuring the functionality of any building to avoid deterioration or dilapidation over the years of usage.

There is wide recognition of the need for an effective maintenance for a continuous provision of satisfactory level of services and security of the inhabitants and maintaining the building in the desired condition (Kim, Ham & Hyun, 2016).

One of the significant problem of the construction industry worldwide is the occurrence of defects in residential buildings. This defects always generate reworks and extra cost with repairs which are the most evident drawback of the problem and it impact the user or customer satisfaction (Rotimi et al., 2015).

Kunya et al. (2007), observed that there is apparent lack of maintenance culture in Nigeria, and that emphasis is placed on the construction of new buildings for public sector and neglecting the aspect of maintenance which commences immediately the builder leaves the site. This is also corroborated by Olagunju (2012) who opined that there is lack of maintenance set up in Nigeria that can sustain the current inadequate housing provision in the country

While the requirements for good practice in maintenance management of building stock have been established over a considerable period, the achievement of good practice is by no means universal. Maintenance of the built environment impacts on the whole nation. According to Iyagba (2005), it is impossible to produce buildings which are maintenance free, but maintenance work can be minimized by good design and proper workmanship carried out by skilled experts or competent craftsmen using suitable codes of installation, requisite building materials and methods. The housing maintenance frequency in addition to other factors mention is largely influenced by the user attitude and culture especially for occupied residential buildings.

Housing maintenance cost is always influenced by the tenants or residents in numerous aspects. According to El- Haram and Horner (2002), tenant factors that have an impact on the maintenance cost include the expectation of tenants or residents, use of the property, vandalism by the tenants, delay in reporting failures, complete failure to report problems, as well as accessibility to the property. Olubodun (2001) noted that 25 per cent of total maintenance needs could be due to the tenant influence. Thus, participation of tenants and residents in housing management can be considered as a strategy of the landlord in bridging the gap between expensive maintenance management and the legitimate expectation or demand of the tenants (Yip, 2001).

Factors such as the social and cultural manners of people are expected to play a significant role in terms of maintenance work arrangements, because of the link between ownership and occupancy

Culture could therefore be defined as "the shared beliefs and values of a group; the belief, customs, practices, and social behavior of a particular nation or people." Therefore, culture consists of attitudes, values, basic assumptions, customs, arts, lifestyle etc. that shapes the behavior of individuals in a given society. In simple terms, people's culture is the summation of their complete way of life. (Okolie and Okoye 2012)

Consequently, this paper seek to determine establish if there is a significant relationship between cultural ethics and the maintenance of residential buildings in housing estate using World Bank Housing Estate Owerri (WBHE) as a case study.

## **II. literature Review**

### **The Concept of Maintenance**

Maintenance according to BS 3811(1972) is the work done to keep a building in, or restore it to its initial state, or to a currently acceptable standard. BS 3811(1993) defined maintenance as the combination of all technical and administrative actions intended to retain an item in or restore it to a state in which it can be perform its required function. Abdullah and Ken (2008) explain maintenance as an important activity for all types of buildings. Without proper and organized maintenance a building will experience damages in a short period of time. Poor maintenance of building can be connected with the lack of cultural belief in maintenance practice (Okolie and Okoye 2012). Maintenance perception and practice has been significantly affected by cultural practice especially in developing countries, it is a reality of life that maintenance is hardly ever appreciated. Cultural ethics and values are therefore extensively fundamental for maintenance culture development, (Okolie and Okoye 2012). According to Olufunke (2011) without a strong maintenance culture, efforts to infrastructural

development would amount to nothing. It is crucial that the existence of maintenance culture is compulsory in order to sustain the performance and functionality of a building (Nkeleme, 2019).

### **Cultural Influence on the Type and Nature of Residential Buildings in the Area of Study**

Cultural values vary from one society to another and these values have both direct and indirect influences on human habitation. The relevance of this ethics and belief in the determination of housing form and design cannot be over emphasized as this has caused man to reshape his immediate environment so as to meet desires, satisfy certain standards of construction, space arrangement, hygiene and comfort, by so doing becomes a physical expression of man's cultural and social system (Olayiwola, Adeleye and Jiboye, 2006). In Nigeria, the predominant traditional house form is the compound house form, which differs in organization and form with the different ethnic settings that made up the country. These variations are the products of the socio-cultural factors and values peculiar to the different ethnic groups.

However, the influence of colonialism, the dictates of contemporary urban life, development of newer building materials and urbanization have moved house types from traditional form to urban house types especially Nigeria (Atolagbe, 2009). Olayiwola, Adeleye and Jiboye, (2006) offered explanations for this development to cultural contact with foreign civilization, this subsequently affect the socio-cultural values and lifestyles of the people in the determination of housing preference and this can be witness in the study area as the housing form is predominantly one-bedroom, two-bedroom and three-bedroom bungalow with short fences.

## **III. Research Methodology**

### **3.1 Study Area**

World Bank Housing Estate is located in Umuguma town in Owerri West Local Government Area in Imo State, The Estate covered about 25 hectares and each house was designed to accommodate one to two families. Essentially there are three housing types – one-bedroom, two bedroom and three-bedroom bungalow (Igbozuruike, 2004). With the ever increasing migration of low income earners from the surrounding neighborhoods into the towns, and also increase in the number of businesses which increases economic activity the building situation has become very deplorable and therefore, has aggravated the issue of maintenance.

The geographical location covered by the study is World Bank Housing Estate, Owerri Imo state. random sampling was used for data collection. This ensures all the buildings within the population of the study have equal and same chance of being selected. A structured questionnaire was used to solicit responses from building occupants, building owners and building professionals. 100 questionnaires administered. 75 questionnaires were retrieved valid representing about 75% of the total population which is considered sufficient for the study based on the assertion of Moser and Kalton, (1999) that the result of a survey could be considered as biased and little significant if the return rate was lower than 20-30%. Apart from the demographic information about the respondents, questionnaire contains a total of twenty-three statements, three statements on personal responsible for maintenance of residential building, and five (5) each for the following (a) factors affecting maintenance of buildings, (b) causes poor maintenance culture of residential building in world bank housing Estate (c) relationship between cultural ethics and maintenance of residential building and (d) relationship between building maintenance and building performance. In each of the statements, respondents were required to express their opinion on a five point Likert-type scale, where 1 = Strongly Disagree (SD), and 5 = Strongly Agree (SA). Data gathered were analyzed using simple statistical tools such as percentage, frequency and Mean Score Index, where Mean score index is mathematically represented as:

$$MSI = \frac{\sum fx_i}{N}$$

Where, MSI = mean score index of each variable; f = frequency of responses to each rating; X = score or rating given to each variable by the respondents; and N = total number of responses concerning the variable.

While analysis of variance (ANOVA) was used to determine the nature of relationship between cultural ethics and maintenance of residential building and also the relationship between building maintenance and building performance. Data computed from one-way ANOVA are used to form mean squares, one for between group (treatment) and the second for within group (error). Those mean squares are denoted by  $SS_B$  and  $SS_W$

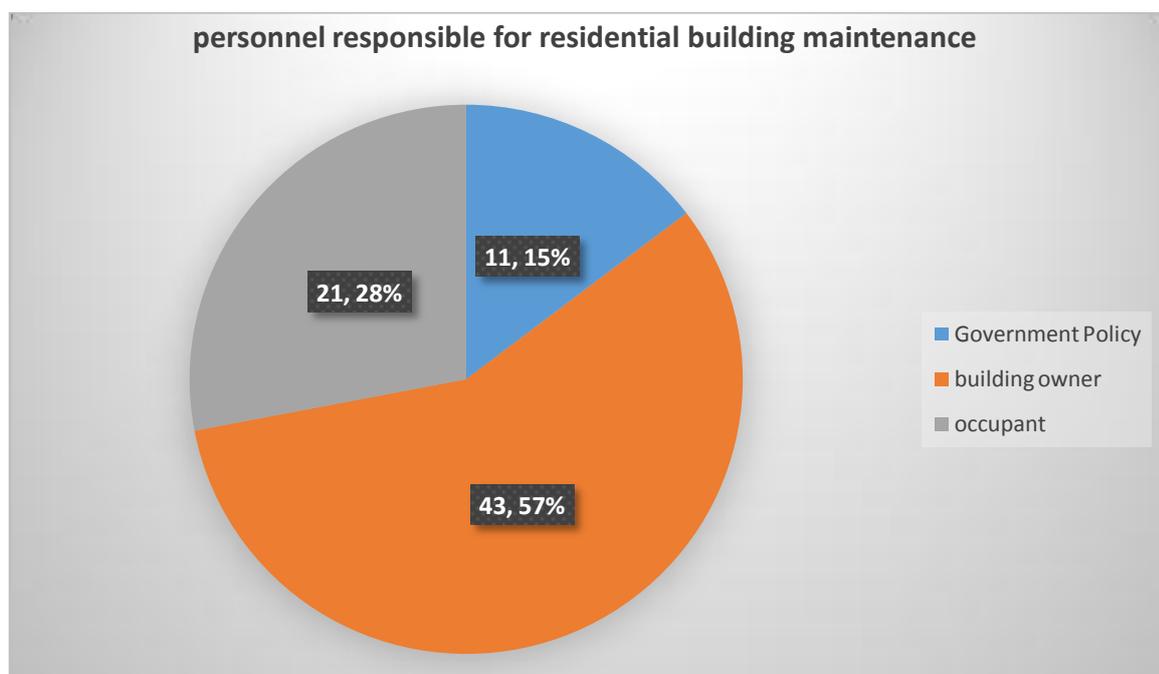
respectively which gives the total sum of square ( $SS_T$ ). the mean squares for between group sum of squares ( $SS_B$ ), is dividing by the associated degree of freedom, also the mean squares for within group ( $SS_W$ ) is divided by the within group degree of freedom while the F-value  $F_{df1,df2}$  is giving as  $\frac{S_B^2}{S_W^2}$

where  $N = \sum n_i$ , degree of freedom (n-1), degree of freedom for error N - k and 1% (0.01) significance level. The analysis and result of the investigation are presented in Table 1- 4.

#### IV. RESULTS AND DISCUSSION

##### Personnel Responsible For the Maintenance of Residential Building

Analysis from fig. 1 shows that most responded are of the opinion that maintenance is personnel the responsibility of the owner of the building with a percentage of 57%, although some respondent think that government with a percentage of 28% can still regulate maintenance using regulations and policies.



**Fig 1 personnel responsible for maintenance of residential building,**  
 Source: Field Survey, 2020.

##### Causes of Poor Maintenance Culture

Analyzing the causes of poor maintenance, findings shows that lack of funds with a mean score of 3.97 is the leading cause of poor maintenance culture, followed by lack of policy from the government with a mean score of 3.88, also peoples attitude with a mean score of 3.31 poses a trait as their indifferent to maintenance is becoming a culture. Surprisingly respondent are of the opinion that they are not ignorant and insensitive to maintenance issues facing residential building.

It is not enough to determine the factors affecting maintenance and causes of poor maintenance of residential building, it is important to establish a relationship between cultural ethics and maintenance of residential building and also if there is any relationship between building maintenance and building performance. This

would help to ascertain the degree of their association and how significance their relationship and/or influence were

**Table 1: Causes of Poor Maintenance Culture in World Bank Housing Estate**

Variables	SA	A	U	D	SD	Mean
Lack of funds	38	15	09	08	05	3.97
Ignorance and indiscipline	26	29	12	05	03	2.06
Lack of Natural Standard for Construction Work	22	24	10	11	08	2.45
Lack of policy	23	29	14	09	-	3.88
Process of Reporting defeat by Occupants	21	37	-	13	04	2.42
Attitudinal Problem	19	23	07	14	12	3.31
Poor leadership	11	12	18	22	12	2.84

Source: Surveyed work, 2020

For further elaboration, the mean values of the causes of the poor maintenance was plotted and the graphical representation is as presented in Fig 2

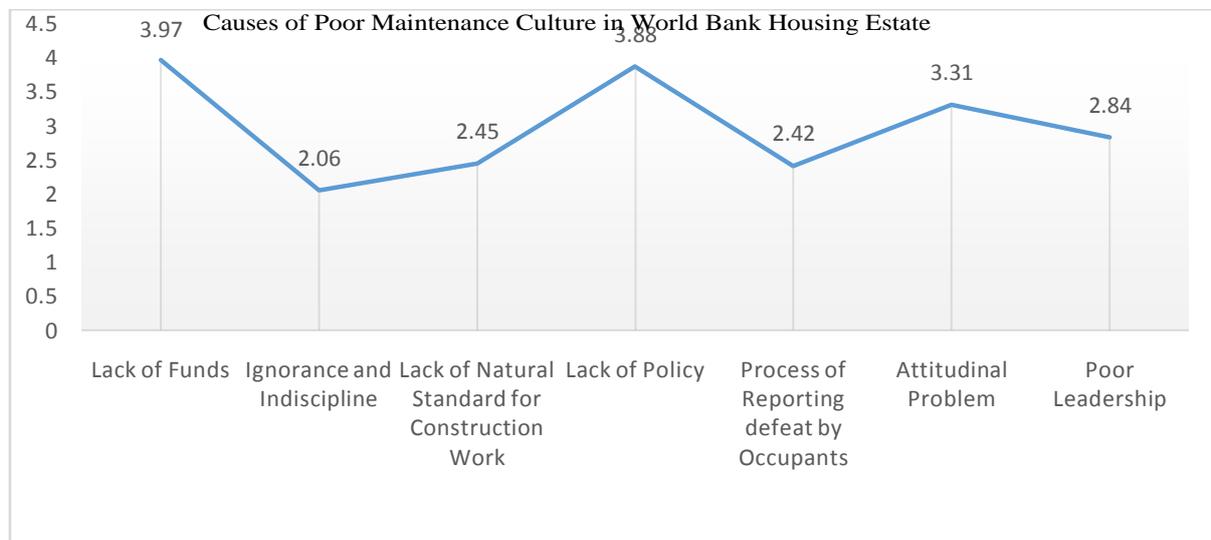


Fig 2 Causes of poor maintenance,  
 Source: Research Survey

### Relationship between Cultural Ethics and Maintenance of Residential Building

The relationship between cultural ethic and maintenance of residential buildings was assessed and the result are as presented in Table 2. From the Table it can be deduced that lack of commitment to maintenance issue account for the largest cause of poor maintenance culture. Similarly, it was identified that lack of penalty for non-maintenance offender also accounts significantly to the poor maintenance culture. Details of the mean value of some of the factors that contributes to poor maintenance culture are as presented in the Table

**Table 2 Relationship between Cultural Ethics and Maintenance of Residential Building.**

S/N	Variables	SA	A	U	D	SD	Mean
1	Lack of leadership commitment to maintenance issues create room for poor maintenance culture.	39	26	6	2	2	4.31
2	Leadership style influence and stimulate people behavior negatively toward maintenance culture.	21	18	16	16	4	3.48
3	Non-existence of maintenance policy affect maintenance culture.	21	26	14	8	6	3.64
4	Attitudinal problems create room for poor maintenance culture.	19	20	19	13	4	3.49
5	Non penalty for non-maintenance offenders affect maintenance culture.	35	25	8	4	3	4.13
<b>Average Mean Score</b>							<b>3.81</b>

Source: Field Survey, 2020.

Consequently, a test to confirm the hypothesis using Table 3

Where  $X$  is the Frequencies in Table 2

Test Hypothesis 1

$H_0$ : There is no significant relationship between cultural ethics and maintenance of residential building.

$H_1$ : There is a significant relationship between cultural ethics and maintenance of residential building

Table 3 Computation of statistical variables on hypothesis one from table 4.4

S/No	Strongly Agree		Agree		Undecided		Disagree		Strongly disagree	
	X	X <sup>2</sup>	X	X <sup>2</sup>	X	X <sup>2</sup>	X	X <sup>2</sup>	X	X <sup>2</sup>
1	39	1521	26	676	6	36	2	4	2	4
2	21	441	18	324	16	256	16	256	4	16
3	21	441	26	676	14	196	8	64	6	36
4	19	361	20	400	19	361	13	169	4	16
5	35	1225	25	625	8	64	4	16	3	9
<b>Total</b>	<b>135</b>	<b>3989</b>	<b>115</b>	<b>2701</b>	<b>63</b>	<b>913</b>	<b>43</b>	<b>509</b>	<b>19</b>	<b>81</b>

Calculation of total sum of square ( $SS_T$ )

$$SS_T = \sum_{i=1}^c \sum_{j=1}^{n_1} (X_{ij} - \bar{X})^2$$

$$\sum X^2 = 3989 + 2701 + 913 + 509 + 81 = 8193$$

$$\frac{(\sum X)^2}{N} = \frac{(135 + 115 + 63 + 43 + 19)^2}{25} = \frac{(375)^2}{25} = 5625$$

$$N = 25$$

$$SS_T = 8193 - 5625 = 2568.$$

$$SS_T = 2568$$

Calculation of between group sum of squares ( $SS_B$ ) (treatment)

$$SS_B = \sum_{i=1}^c n_i (\bar{X}_i - \bar{X})^2$$

$$\frac{(\sum X)^2}{n} = \frac{(135)^2}{5} + \frac{(115)^2}{5} + \frac{(63)^2}{5} + \frac{(43)^2}{5} + \frac{(19)^2}{5} = 3645 + 2645 + 794 + 370 + 72 = 7526$$

$$\frac{(\sum X)^2}{N} = \frac{(135 + 115 + 63 + 43 + 19)^2}{25} = \frac{(375)^2}{25} = 5625$$

$$N = 25$$

$$SS_B = 7526 - 5625 = 1901$$

Calculation of within group sum of squares ( $SS_W$ ) (error)

$$SS_W = \sum_{i=1}^c \sum_{j=1}^{n_1} (X_{ij} - \bar{X})^2 \text{ or } SS_W = SS_T - SS_B = 2568 - 1901 = 667$$

**Calculation of Degree of Freedom**

df for the whole group = total number of observation minus one  
 $df = 25 - 1 = 24$   
 $SS_{Bdf} = \text{number of group minus } 1 = 5-1=4$   
 $SS_{Wdf} = \text{number of group minus number of subjects} = 25-5=20$

**Calculation of Variance:**

Between group Variance ( $S_B^2$ ) =  $\frac{\text{Between group sum of squares (SS}_B)}{\text{Between group degree of freedom}}$

$$S_B^2 = \frac{\sum_{i=1}^c n_i (\bar{X} - \bar{X})^2}{c-1} = \frac{1901}{4} = 475$$

within group variance ( $S_W^2$ ) =  $\frac{\text{within group sum of squares (SS}_W)}{\text{within group degree of freedom}}$

$$S_W^2 = \frac{\sum_{i=1}^c \sum_{j=1}^{n_i} (X_{ij} - \bar{X})^2}{n-c} = \frac{667}{20} = 33$$

$$F\text{-value} = F_{df1, df2} = \frac{S_B^2}{S_W^2} = \frac{\text{between group variance}}{\text{within group variance}} = \frac{475}{33} = 14.39$$

Table 4. Computation of Analysis of variance on the relationship between cultural ethics and maintenance of residential building.

Source of Variance	Sum of Squares	Degree of Freedom	Mean Sum of Squares	Calculated F-value	Table Critical F-value	Decision
Between groups	1901	4	475	14.39	4.43	$H_0$ : Rejected
Within group	667	20	33			
<b>Total</b>	<b>2568</b>	<b>24</b>				

Source: statistical Computation and Table 4.7

The calculated F-value of 14.39 from table 4 showing the relationship between cultural ethics and maintenance of residential building. The calculated F-Value is significant since it is greater than the critical F-value of 4.43 given 4/20 degree of freedom at 0.01 level of significance. Therefore, the null hypothesis is rejected while the alternative is accepted.

This indicate that there is a significant relationship between cultural ethics and maintenance of residential building.

**V. Conclusion and Recommendations**

Maintenance culture should be given priority in the construction industry and its practice should be encouraged, since the installation as well as maintenance of existing facilities is a key indication of how developed a nation is. Lack of funding identified as the major cause of poor maintenance of residential building within the study area. Similarly, people’s attitude, lack of maintenance policies for housing estates and Poor leadership are some of the top ranking factors that account for the poor maintenance of the study area.

The study also revealed a strong relationship between cultural ethics and maintenance of residential building

**Recommendation**

Therefore, the numerous problem associated with maintenance could be solved if the following recommendations are adopted;

(a) The government should enact legislature mandating individual to maintain their properties at regular intervals.

(b) Maintenance professionals should be incorporated in the design team to advice other professional colleagues on the maintenance implication of their design plan and alternative methods of construction for easy maintenance.

## References

- [1.] Anderson, E.W. and Sullivan, M.W. (1993), "The antecedents and consequences of customer satisfaction for firms", *Marketing Science*, Vol. 12 No. 2, pp. 125-143.
- [2.] El-Haram, M.A. and Horner, M.W. (2002), "*Factors affecting housing maintenance cost*", *Journal of Quality in Maintenance Engineering*, Vol. 8 No. 2, pp. 115-23.
- [3.] Kim, J., Han, S., & Hyun, C. (2016). Minimizing fluctuation of the maintenance, repair, and rehabilitation cost profile of a building. *Journal of Performance of Constructed Facilities*, 30(3), 04015034.
- [4.] Kunya, S.U., Achuen, E.A. and Kolawale, J.O. (2007). Evaluation of Factors Affecting Maintenance Expenditures of Federal Tertiary Institution in Nigeria. *Construction Focus*. 1(1):98-105
- [5.] Malchi, G. and McGurk, H. (2001), "Increasing value through the measurement of the cost of quality (COQ): a practical approach", *Pharmaceutical Engineering*, Vol. 21 No. 3, pp. 92-96.
- [6.] Nkeleme, E. I., Mbamali, I., Okolie, K. C., & Ozoh, C. S. (2019). THE MAINTENANCE AND ENERGY SAVING STRATEGIES FOR HVAC INSTALLATIONS IN HOTELS IN OWERRI, IMO STATE. *Tropical Built Environment Journal*, 7(1).
- [7.] Okolie, K. C. and Okoye, P.U. (2012) Assessment of National Culture Dimensions and Construction Health and Safety Climate in Nigeria
- [8.] Olubodun, F. (2001), "A multivariate approach to the prediction of maintenance needs in public housing: the tenant dimension", *Structural Survey*, Vol. 19 No. 2, pp. 133-41
- [9.] Othman, A.A.E. (2015), "An international index for customer satisfaction in the construction industry", *International Journal of Construction Management*, Vol. 15 No. 1, pp. 33-58.
- [10.] Pan, W., & Thomas, R. (2015). Defects and their influencing factors of posthandover new-build homes. *Journal of Performance of Constructed Facilities*, 29(4), 04014119.
- [11.] Rotimi, F.E., Tookey, J.E. and Rotimi, J.O.B. (2015), "Home owners and developers relationships: exploring the cordiality factor", *Structural Survey*, Vol. 33 No. 3, pp. 278-292.
- [12.] Rotimi, F.E., Tookey, J.E. and Rotimi, J.O.B. (2015), "Home owners and developers relationships: exploring the cordiality factor", *Structural Survey*, Vol. 33 No. 3, pp. 278-292.
- [13.] Yip, N.M. (2001), "*Tenant participation and the management of public housing – the estate management advisory committee of Hong Kong*", *Property Management*, Vol. 19 No. 1, pp. 10-18.