The Management Fund Classification to Determine Reliable Maintenance Fees of High-Rise Residential in Malaysia

Siti Rashidah Hanum Abd Wahab[*1], Adi Irfan Che-Ani[#2], Halizah Omar[##3], Maznah Ibrahim[##4], Maharam Mamat[##5]

[#]*Department of Architecture, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia*

[##]*Pusat Citra Universiti, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia*

[2]adiirfan@gmail.com

[3]halizah@ukm.edu.my

[4]maznah@ukm.edu.my

[5]maharam@ukm.edu.my

[*]*Department of Civil Engineering, Politeknik Sultan Salahuddin Abdul Aziz Shah, 40150 Shah Alam, Selangor, Malaysia*

[1]siti.rashidah.hanum@gmail.com

***Abstract*— High-rise residential building is a type of housing that has multi-dwelling units built on the same land. This type of housing has become popular each year in urban area due to the increasing cost of land. Unfortunately, there are several issues occurred in managing high-rise residential building especially in maintenance fund. Thus, distribution of maintenance fund need to be clarified in order to make it well organised. The purpose of this paper is to identify the classification of maintenance fund distribution at high-rise residential building. The survey was done on 170 high-rise residential schemes within Klang Valley area. The result, there are five classification of maintenance fund allocation identified namely, management fund for administration and utilities, maintenance fund for exclusive facilities, maintenance fund for basic facilities, maintenance fund for support facilities and management sinking fund. Then, all the items in these five factors undergo descriptive analysis to identify the importance of maintenance fund allocation for non-low cost of high-rise residential building in Malaysia.**

***Keywords*—** *Classifications; Maintenance Fund; Allocation; High-Rise Residential; Transparency*

1. Introduction

Nowadays, the demand for high-rise residential building is increasing rapidly due to the increasing of price house and land. There are many development of high-rise residential building in urban area compared to the development of landed residential building [1]. This scenario happened due to the increasing urbanisation and scarcity of land in urban area. The concept of strata living in Malaysia is not a new issue. It was started in 1958 with two scheme of high-rise residential building namely Pangsa Sulaiman Court and Pangsa Jalan Loke Yew [2]. Moreover, living in high rise residential building giving the occupants flexibility to access for the basic amenities such as security, privacy, swimming pool, attractive landscape garden and so on [3]. All these facilities provided are based on sharing concept. Therefore, the requirement to pay for maintenance fees is compulsory for owners living at high-rise building. The purpose of maintenance fees is collected in order to maintain all the facilities provided. A good management in high-rise building is depending on the good financial management [1], [4]. Unfortunately, experience in managing high-rise building in Malaysia is still new and inconsistent [5]. As results, there are many disputes and problems occurred regarding the management of high-rise residential building especially in term of maintenance funds. . Therefore, this paper is to look into the breakdown of management fund at each scheme of high rise residential building in Klang Valley based on data collected from previous literature and guideline related to manage fund for high-rise residential building.

2. Issues in Managing High-rise Residential Building

Management Corporation (MC) was the responsible body to manage all cases in high-rise residential building. At the same time, Management Corporation need to ensure that there are enough fund to manage high-rise residential building in proper way. This fund is known as maintenance fund and it was collected from the residents at this property. Management Corporation need to ensure all residents pay maintenance fund on the stated time. This is to ensure the stability of maintenance fund is enough to carry out all the maintenance works according to the schedule. Unfortunately, there are many issues regarding management of facilities management at high-rise residential building. Previous literatures figure out that the main contribution to the poor maintenance works was inadequate of maintenance funds. Che Ani et. al.

International Journal of Supply Chain Management
IJSCM, ISSN: 2050-7399 (Online), 2051-3771 (Print)

(2010) [6] mentioned that the argument of maintenance fund is regarding the refusal of residents to pay for maintenance fees. They claimed that maintenance fees that impose on them were not parallel with the facilities provided at their residential [3], [7], [8]. It means that the charge is considered expensive when comparing with the less facilities provided. Some resident complain that the maintenance fee was not comparable with the service quality [7], [8], [9]. Therefore, these arguments lead to the refusal of resident to pay for the maintenance fees. They feel doubtful with the transparency of maintenance fund expenses that managed by Management Corporation [7]. Although there are no clauses stated about the transparency of the maintenance fund expenses, but the word `fair and justifiable' in Housing Developer (Control and Licensing) Regulation 1989, Schedule H, S & P Clause 16 under payment of service charge, covers the right of the owners to know the flow of maintenance fund expenses. The residents mentioned that they have right to know how their money being managed by Management Body. However, in current practice there is no proper guideline for Management Body to show their current budget and account management to be audited.

3. High-rise Residential Maintenance Fund Classifications

For the purpose of this research, we used the classification of high-rise residential schemes provided by the strata guideline from Malaysia, Singapore, Hong Kong and several previous studies to support the pre-determined categories of maintenance fund distribution. Table 1 shows the pre-determined of maintenance fund for high-rise residential building.

Table 1. Classification of Maintenance Fund for Non-Low Cost High-rise Residential Building [10]-[18]

No	Classification of Maintenance Fund	Distribution of Maintenance Fund	Sources									
			[a]	[b]	[c]	[d]	[e]	[f]	[g]	[h]	[i]	[j]
1	Fund for administration management	Administration cost such as stationery, printing, postage, advertising, etc.	√	√	√			√	√	√		√
		Staff cost (e.g. staff salary)	√		√							√
		Operation management cost (e.g. petrol and diesel)	√		√				√			
		Insurance for buildings	√	√	√	√	√	√	√	√	√	√
		Penalty charges			√	√			√			√
		Property tax or estimated tax		√	√				√	√	√	
2	Fund for maintaining basic and support facilities	Cleaning services for common area (e.g. corridor)	√	√	√	√	√		√			√
		Repair and maintenance basic facilities (e.g. leakage of roof top, rainwater system, lighting at common area etc.)		√	√	√	√	√	√	√	√	√
		Electrical supervision (e.g. main switch room)	√	√	√	√	√	√	√	√	√	√
		Hardware and tools			√		√		√			
		Garden and landscape maintenance	√		√	√	√		√			√
		Lift maintenance	√	√	√	√	√	√	√	√	√	√
		Fire extinguisher maintenance			√	√	√	√	√	√	√	√
		Inspection fee	√		√		√		√	√	√	√
3.	Fund for maintaining exclusive facilities	Periodic maintenance for swimming pool	√		√	√	√		√	√	√	√
		Periodic maintenance for pest control			√	√	√		√	√	√	√
		Security fees			√		√		√			
		Periodic maintenance for *CCTV*	√		√	√	√		√			√
4	Sinking Fund	Repainted faded building facade		√	√	√	√		√	√	√	√
		Painting at common area		√	√	√			√	√	√	√
		Upgrading capital asset (e.g. lift)		√	√	√	√		√	√	√	√
		Replacement of capital asset (e.g. broken lift)		√	√	√	√		√	√	√	√
		Buying essential common property		√	√	√			√	√	√	
5	Utility Fund	Electricity bills (e.g. common area)		√	√	√	√	√	√	√	√	√
		Water bills (e.g. common area)		√	√	√	√	√	√	√	√	√
		Electricity, water and telephone bills for management office			√			√	√			

Notes : [a] – Srikanth and Devanathan (2013); [b] – San (2012); [c] – Tawil, et. al. (2012); [d] – Strata Living Singapore (2005); [e] – Operating Cost Manual for Homeowner Association (2007); [f] – RICS (2007); [g] – Strata Management Malaysia (2015); [h] - Housing Guideline New South Wales (2015); [i] - Housing Guideline Tasmania, (2008); [j] - Building Department Hong Kong (2012)

Thus, this study identified there are five pre-determined classifications of maintenance fund for high-rise residential building. These classifications are important to create better management system for high-rise residential building. Then, it can give clear distribution of maintenance fund to improve the transparency of management body. In addition, management body can used this classification as a guide to determine the realistic maintenance cost to be imposed on the residents of high-rise building scheme.

4. Research Method

In Malaysia, there are 67.4% non-low cost high rises residential buildings were built in the area of Klang Valley [3], [7]. Klang Valley is an economic centre of Malaysian country. Therefore, the sample used in these areas already met the sampling requirement for the purpose of the study [7]. Table 2 shows that there are 1,769 non-low cost high-rise residential building schemes in Klang Valley.

Table 2. Non-Low Cost High-rise Residential Building Scheme in Klang Valley

No.	Zon/PBT	Non-Low Cost High Rise Residential Building Scheme	Rate	Approximate Sample Size	Sample Size
1	***Wilayah Persekutuan Kuala Lumpur***				
	- DBKL (Kuala Lumpur area)	790	0.447	75.92	76
2	***Selangor***				
	- MPSJ (Petaling area)	212	0.120	20.37	20
	- MBPJ (Petaling area)	150	0.085	14.41	14
	- MPKj (Hulu Langat area)	138	0.078	13.26	13
	- MPS (Gombak area)	121	0.068	11.63	12
	- MPAJ (Gombak and Hulu Langat area)	119	0.067	11.44	11
	- MBSA (Petaling area)	90	0.051	8.65	9
	- MPK (Klang area)	86	0.049	8.26	8
	- MPSp (Sepang area)	22	0.012	2.11	2
	- MDHS (Hulu Selangor area)	17	0.009	1.63	2
	- MDKS (Kuala Selangor area)	12	0.007	1.15	1
	- MDKL (Kuala Langat area)	11	0.006	1.06	1
	- MDSB (Sabak Bernam area)	1	0.001	0.09	1
Total		**1769**			**170**

By using stratified random sampling technique, there are 170 non-low cost housing scheme were selected in the

area of Klang Valley to do a survey on the availability of high-rise building facilities. Furthermore, there were five respondent selected under each of 170 non-low cost housing scheme. The respondent consist of (1) three members of Management Body (president, vice president and secretary), (2) one member of management agent and (3) one member of resident (participated in Management Body activities). Therefore, there are total of 850 respondents from 170 non-low cost housing scheme participated in this study. But, only 635 respondents of questionnaires responses have been received. This study used registered post to distribute questionnaires to all 170-selected high-rise residential building scheme. This study analyses the data based on respondents' scores by using Statistical Package for the Social Sciences (SPSS) version 19. The objective of the survey is to categories the allocation of maintenance fund for non-low cost of high-rise residential building scheme in Malaysia.

5. Results and Discussion

5.1 Factor Analysis

This study used an analysis factor to categories allocation of maintenance fund involved in managing non-low cost of high-rise residential building in Malaysia. Therefore, principle component analysis (PCA) with varimax rotation was used to classify the allocation of maintenance fund [19]. Table 3 shows the value of KMO for the allocation of maintenance fund was 0.811. This value is more than 0.7, which indicates that the number of samples used is sufficient to undergo analysis factor. The value of Bartlett's Test of Sphericity is significant (less than 0.001) means that the independent variables are suitable for analysis factor [20].

Table 3. KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.811
Bartlett's Test of Sphericity	Approx. Chi-Square	38274.803
	df	325
	Sig.	.000

Furthermore, the percentage of variance explained was 87.779%, which is more than 60% of the total variance as, proposed by (Meyer, 2006) [21] (refer table 4). These value shows that the research data is suitable for next process of analysis factor.

Table 4. Total Variance Explained

Component	*Initial Eigen values*			*Extraction Sums of Squared Loadings*		
	Total	*% of Variance*	*Cumulative %*	*Total*	*% of Variance*	*Cumulative %*
1	13.649	52.497	52.497	13.649	52.497	52.497
2	4.638	17.837	70.334	4.638	17.837	70.334
3	2.006	7.714	78.047	2.006	7.714	78.047
4	1.513	5.820	83.867	1.513	5.820	83.867
5	1.017	3.911	87.779	1.017	3.911	87.779
6	0.877	3.373	91.152			
↓	↓	↓	↓			
26	.000	.001	100.00			

Table 5 shows the results of analysis factor for the allocation of maintenance fund at non-low cost of high-rise residential building in Malaysia.

Table 5. Factor Analysis

Item	Components				
	1	2	3	4	5
Electricity bills (e.g. common area)	0.860				
Water bills (e.g. common area)	0.854				
Electricity, water and telephone bills for management office	0.824				
Operation management cost (e.g. petrol and diesel)	0.812				
Staff cost (e.g. staff salary)	0.810				
Penalty charges	0.794				
Administration cost such as stationery, printing, postage, advertising, etc.	0.790				
Insurance for buildings	0.755				
Repair and maintenance basic facilities (e.g. leakage of roof top, rainwater system, lighting at common area etc.)		0.904			
Cleaning services for common area (e.g. corridor)		0.903			
Periodic maintenance for lift		0.902			
Electrical supervision (e.g. Main switch room)		0.888			
Hardware and tools		0.884			
Garden and landscape maintenance		0.721			
Periodic maintenance for swimming pool			0.935		
Security fees			0.932		
Periodic maintenance for CCTV			0.931		
Periodic maintenance for pest control			0.930		
Buying essential common property				0.912	
Replacement of capital asset (e.g. broken lift)				0.897	
Upgrading capital asset (e.g. lift)				0.896	
Repainted faded building facade				0.767	
Painting at common area				0.749	
Inspection fee					0.918
Periodic Maintenance for Fire extinguisher					0.849

There are 26 items were analyses in the analysis factor and 1 items aborted due to the loading factor less than 0.4 as suggested by (Meyer, 2006) [21]. There are 5 factors developed from the analysis. Then, the classification allocations of maintenance fund were renamed according to the group factor. The first group was classified as management fund for administration and utilities. This group has 8 items that consist from the combination of administration fund and utilities fund variables. The Eigen value was 13.649 (significant if more than 1) [21] and contributes 52.497% of the total variance. Then, the second group was classified as maintenance fund for basic facilities. This group has 6 items that consist from the breakdown of maintenance for basic and support facilities variables. The Eigen value was 4.638 and contributes 17.837% of total variance. Furthermore, the third group

was classified as maintenance fund for exclusive facilities. This group has remained 4 items from the same group as before. The Eigen value was 2.006 and contributes 7.714% of total variance. Next, the forth group was classified as management for sinking fund. This group has remained 5 items from the same group as before. The Eigen value was 1.513 and contributes 5.820% of total variance. Finally, the last group was classified as maintenance fund for support facilities. This group has 2 items that consist from the breakdown of maintenance for basic and support facilities variables. The Eigen value was 1.017 and contributes 3.911% of total variance.

5.2 Mean Scores

After undergo analysis factor, mean scores is used to identify the importance of each items in the factor. To explain the justification of mean scores, guideline from Hurme (2007) [20] was used in this study. Mean score between 1.00 to 1.49 justified that the item was not relevant, mean score between 1.50 to 2.49 justified that the item was not important, mean score between 2.50 to 3.49 justified that the item was slightly not important, mean score between 3.50 to 4.49 justified that the item was slightly important, mean score between 4.50 – 5.49 justified that the item was important and lastly mean score between 5.50 to 6.00 justified that the item was very important [20]. Therefore, this guideline from Hurme (2007) [20] was modified to fit the purpose of this study. Table 6 shows the justification of mean score 2007). After undergo analysis factor, mean scores is used to identify the importance of each items in the factor. To explain the justification of mean scores, guideline from Hurme (2007) [20] was used in this study. Mean score between 1.00 to 1.49 justified that the item was not relevant, mean score between 1.50 to 2.49 justified that the item was not important, mean score between 2.50 to 3.49 justified that the item was slightly not important, mean score between 3.50 to 4.49 justified that the item was slightly important, mean score between 4.50 – 5.49 justified that the item was important and lastly mean score between 5.50 to 6.00 justified that the item was very important [20]. Therefore, this guideline from Hurme (2007) [20] was modified to fit the purpose of this study (refer table 6).

Table 6. Justification Mean Score (Modified from Hurme, 2007) [20]

Mean Score	Justification
1.00 – 1.49	Not Relevant
1.50 – 2.49	Not influence the determination of maintenance fees
2.50 – 3.49	Slightly not influence the determination of maintenance fees
3.50 – 4.49	Slightly influence the determination of maintenance fees
4.50 – 5.49	Influence the determination of maintenance fees
5.50 – 6.00	Strongly influence the determination of maintenance fees

5.2.1 Factor 1 – Mean score for management fund for administration and utilities

For the first factor, there are 8 items need to measure their mean score. From the analysis shows that the item of electricity, water and telephone bills for management office scored (M=1.58, S.D=0.521) justify that it is not influence the determination of maintenance fees balanced because this cost was bear by the Management Body itself. Next item was penalty charges scored (M=1.58, S.D=0.521) also justify as not influence the determination of maintenance fees balanced. Meanwhile, item Operation management cost (e.g. petrol and diesel) scored (M=3.59, S.D=0.520); item Staff cost (e.g. staff salary) scored (M=3.59, S.D=0.522); item Administration cost such as stationery, printing, postage, advertising, etc. scored (M=3.60, S.D=0.517); item Insurance for buildings (M=3.62, S.D=0.546) justified as slightly influence the determination of maintenance fees balanced. Furthermore, item electricity bills (e.g. common area) scored (M=4.75, S.D=0.473) and water bills (e.g. common area) scored (M=4.75, S.D=0.473) justified as influence the determination of maintenance fees balanced. In a nutshell, average items in first factor which is management fund for administration and utilities gave an impact to the determination of maintenance fees balanced at non-low cost of high-rise residential building in Malaysia (refer to table 7).

Table 7. Mean score for management fund for administration and utilities

Code	Item	Mean	Standard Deviation	Justification
ADU1	Electricity bills (e.g. Common area)	4.75	0.473	Influence the determination of maintenance fees
ADU2	Water bills (e.g. Common area)	4.75	0.473	Influence the determination of maintenance fees
ADU3	Electricity, water and telephone bills for management office	1.58	0.521	Not influence the determination of maintenance fees
ADP3	Operation management cost (e.g. Petrol and diesel)	3.59	0.520	Slightly influence the determination of maintenance fees
ADP2	Staff cost (e.g. Staff salary)	3.59	0.522	Slightly influence the determination of maintenance fees
ADP5	Penalty charges	1.59	0.537	Not influence the determination of maintenance fees
ADP1	Administration cost such as stationery, printing, postage, advertising, etc.	3.60	0.517	Slightly influence the determination of maintenance fees
ADP4	Insurance for buildings	3.62	0.546	Slightly influence the determination of maintenance fees

5.2.2 Factor 2 – Mean score for maintenance fund for basic facilities

For the second factor, there are 6 items need to measure their mean score. From the analysis shows that the item of repair and maintenance basic facilities (e.g. leakage of roof top, rainwater system, lighting at common area etc.) scored (M=4.74, S.D=0.454); item hardware and tools

scored (M=4.75, S.D=0.463) and item garden and landscape maintenance scored (M=4.82, S.D=0.401) justified as influence the determination of maintenance fees balanced. Meanwhile, item cleaning services for common area (e.g. corridor) scored (M=5.75, S.D=0.450); item periodic maintenance for lift scored (M=5.74, S.D=0.455) and item electrical supervision (e.g. main switch room) scored (M=5.75, S.D=0.453) justified as very influence the determination of maintenance fees balanced. Therefore, it can be concluded that all the items in this factor gave an impact towards the determination of maintenance fees balanced at non-low cost of high rise residential building in Malaysia (refer table 8).

Table 8. Mean score for maintenance fund for basic facilities

Code	Item	Mean	Standard Deviation	Justification
ADFA 2	Repair and maintenance basic facilities (e.g. leakage of roof top, rainwater system, lighting at common area etc.)	4.74	0.454	Influence the determination of maintenance fees
ADFA 1	Cleaning services for common area (e.g. corridor)	5.75	0.450	Very influence the determination of maintenance fees
ADFA 6	Periodic maintenance for lift	5.74	0.455	Very influence the determination of maintenance fees
ADFA 3	Electrical supervision (e.g. main switch room)	5.75	0.453	Very influence the determination of maintenance fees
ADFA 4	Hardware and tools	4.75	0.463	Influence the determination of maintenance fees
ADFA 5	Garden and landscape maintenance	4.82	0.401	Influence the determination of maintenance fees

For the third factor, there are 4 items need to measure their mean score. From the analysis shows that the item of periodic maintenance for swimming pool scored (M=4.58, S.D=0.521); item security fees (M=4.59, S.D=0.525); item periodic maintenance for CCTV scored (M=4.58, S.D=0.521) and item periodic maintenance for pest control scored (M=4.59, S.D=0.531) justified as influence the determination of maintenance fees balanced. Therefore, this results shows that all the items in third factor gave an impact towards the determination of maintenance fees balanced at non-low cost of high rise residential building in Malaysia (refer table 9).

Table 9. Mean score for maintenance fund for exclusive facilities

Code	Item	Mean	Standard Deviation	Justification
ADFE 1	Periodic maintenance for swimming pool	4.58	0.521	Influence the determination of maintenance fees
ADFE 3	Security fees	4.59	0.525	Influence the determination of maintenance fees
ADFE 4	Periodic maintenance for CCTV	4.58	0.521	Influence the determination of maintenance fees
ADFE 2	Periodic maintenance for pest control	4.59	0.531	Influence the determination of maintenance fees

5.2.4 Factor 4 – Mean score for management fund for sinking fund

For the fourth factor, there are 5 items need to measure their mean score. From the analysis shows that the item of repainted faded building façade scored (M=4.82, S.D=0.421) and item painting at common area scored (M=4.82, S.D=0.434) justified as influence the determination of maintenance fees balanced. Meanwhile, item buying essential common property scored (M=5.74, S.D=0.470); item replacement of capital asset (e.g. broken lift) scored (M=5.73, S.D=0.478) and item upgrading capital asset (e.g. lift) scored (M=5.73, S.D=0.473) justified as very influence the determination of maintenance fees balanced. Therefore, this results shows that all the items in third factor gave an impact towards the determination of maintenance fees balanced at non-low cost of high rise residential building in Malaysia (refer table 10).

Table 10. Mean score for management fund for sinking fund

Code	Item	Mean	Standard Deviation	Justification
ADWP 5	Buying essential common property	5.74	0.470	Very influence the determination of maintenance fees
ADWP 4	Replacement of capital asset (e.g. broken lift)	5.73	0.478	Very influence the determination of maintenance fees
ADWP 3	Upgrading capital asset (e.g. lift)	5.73	0.473	Very influence the determination of maintenance fees
ADWP 1	Repainted faded building façade	4.82	0.421	Influence the determination of maintenance fees
ADWP 2	Painting at common area	4.82	0.434	Influence the determination of maintenance fees

5.2.5 Factor 5 – Mean score for as maintenance fund for support facilities

For the fifth factor, there are 2 items need to measure their mean score. From the analysis shows that the item of inspection fees scored (M=4.57, S.D=0.507) and item periodic maintenance for fire extinguisher scored (M=4.54, S.D=0.511) justified as influence the determination of maintenance fees balanced. Therefore, it can be concluded that all the items in this factor gave an impact towards the determination of maintenance fees balanced at non-low cost of high rise residential building in Malaysia (refer table 11).

Table 11. Mean score for management fund for support facilities

Code	Item	Mean	Standard Deviation	Justification
ADFA 8	Inspection fees	4.57	0.507	Influence the determination of maintenance fees
ADFA 7	Periodic maintenance for fire extinguisher	4.54	0.511	Influence the determination of maintenance fees

6 Conclusions

After In a nutshell, maintenance charges is the main issues and problems related to high-rise residential building. This problem lead to the poor facility maintenance for majority of the high-rise residential scheme. Therefore, this paper list out all the maintenance cost at high-rise building and regroup to five classifications by using analysis factor. Later, the importance of each item in the factors will be justified by using mean score. As results, the distribution of maintenance cost and expenses can be clarified. The allocation of maintenance fund at high rise building are grouped into five classification that consist, management fund for administration and utilities, maintenance fund for exclusive facilities, maintenance fund for basic facilities, maintenance fund for support facilities and sinking fund This study will serve as benchmark for the designation of allocation of maintenance fund at each type of high-rise residential scheme. Then, the better solution for maintenance cost expenses can be determined as a guide to determine the realistic maintenance cost to be imposed on the residents of high-rise building scheme.

Acknowledgments

The authors would like to express our heartfelt thanks to Universiti Kebangsaan Malaysia [Pusat Citra Universiti (Citra UKM), Lestari Physical Development Research Group (LPhyD) and the Evolutionary and Sustainable Urban Living Research Group (EvoSUL)] for supporting this research. Credit also goes to various organizations, which facilitated the successful completion of this research.

References

[1] Tawil, M. N., "*Service Chare collection of High rise Residential in Kuala Lumpur*", European Journal, Vol. 10, pp. 7-12, 2009.

[2] Leong K. C., "*Low Cost Housing Design: Public and Private Housing in Malaysia*", Heinemann Educational Books (Asia) Ltd., 1980.

[3] Abd-Wahab, S. R. H., Sairi, A., Che-Ani, A. I., Tawil, N. M. and Johar, S., "*Building Maintenance Issues: A Malaysian Scenario for High Rise Residential Buildings*", International Journal of Applied Engineering Research Vol 10, No. 6, pp. 15759-15776, 2015.

[4] Adi, I.C.A., "*Model Pengurusan Fasiliti Perumahan Bertingkat Bukan Kos Rendah di Malaysia*", (Unpublished PhD Thesis), Universiti Malaya, 2007.

[5] Tiun, L.T., "*Pengurusan Kompleks Kediaman Tinggi: Gambaran & Realiti, Kuala Lumpur*", Utusan Publications, 2003.

[6] Che-Ani, A.I., Tawil, N.M., Sairi, A., Abdullah, N.A.G, Tahir, M.M., Surat, M., "*Facility Management Indicators for High-Rise Residential Property in Malaysia*", WSEAS Transactions on Environment and Development, Vol. 4, No. 6, 2010.

[7] Tawil, N.M., Yusoff, Y.M., Che-Ani, A.I., Abdullah, N.A.G. and Surat, M., "*A Study of Management Corporation Financial in High Rise Residential with Correlation of Management Fund and Facilities Provided*", International Business Management, Vol. 6 No. 3, pp. 304–307, 2012.

[8] Yusoff, Y.M., Tawil, N.M., Hamzah, N. Abdullah, N.A.G., Musa, A.R., "*Tinjauan Kesan Fasiliti Kediaman Bertingkat Terhadap Amaun Dana Pengurusan*", Journal of Design + Built, Vol. 4, pp. 32–40, 2011.

[9] Tiun, L.T., "*Managing High-Rise Residential Building In Malaysia: Where Are We*?", Persatuan Sains Sosial, Universiti Putra Malaysia, 2009.

[10] Srikanth, C. and Devanathan, S., "*Maintenance Costing for Housing Society—an Emerging Concept*", The Journal for CMAs Vol. 8, No. 2, 2013.

[11] San, "*Guide to Maintenance Charge Calculation in Apartments*", Legal and Society Accounting, 2012.

[12] Strata Living in Singapore, "*A General Guide, Building and Construction Authority, Singapore*", 2005.

[13] Operating Cost Manual for Homeowners Association. Department of Real Estate, California, 2007.

[14] RICS, "*Code of Practice for Cormmercial Building Service Charge*", 2007.

[15] Strata Management Malaysia (Maintenance and Management), Federal Government Gazette, Attorney General's Chambers of Malaysia, 2015.

[16] Housing Guideline New South Wales, "*Strata living in New South Wales*", NSW Fair Trading, 2015.

[17] Housing Guideline Tasmania, "*Strata Living in Tasmania*", Department of Industries and Water Tasmania Government, 2008.

[18] Building Department Hong Kong, "*Building Maintenance Guide Book*", www.info.gov.hk/htm, Last access (10 September 2015).

[19] Hair, J. F., Jr, Black, W. C., Babin, B. J., Anderson, R. E., dan Tatham, R. L., "*Multivariate Data Analysis (6th Ed.*)", Upper Saddle River, NJ: Pearson Printice Hall, 2006.

[20] Hurme, F.E., "*Competencies for rural nursing practice*", Unpublished Dissertation, Louisiana State University Baton Rouse, Louisiana, USA, 2007.

[21] Meyer, L.S., Gamst, G., dan Guarino, A.J., "*Applied Multivariate Research: Design and interpretation*", California, USA: Sage Publication Inc., 2006.