Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 00 (2012) RE 001

Procedia Social and Behavioral Sciences

www.elsevier.com/locate/procedia

AcE-Bs 2012 Bangkok
ASEAN Conference on Environment-Behaviour Studies,
Bangkok, Thailand, 16-18 July 2012

Assessment of Residential Satisfaction with Public Housing in Hulhumale', Maldives

Mohammad Abdul Mohit[a*] and Mohamed Azim[b]

[a]*Kulliyyah of Architecture & Environmental Design, IIUM, Kuala Lumpur, Malaysia*
[b]*Ministry of Housing and Environment, Male', Maldives*

Abstract

This paper assesses the residential satisfaction with public housing in Hulhumale', Maldives, on physical features and service provision within the housing unit, public facilities and the social environment within the housing area and their contributions to residents' overall housing satisfaction. The findings show that a majority of the residents are only slightly satisfied, though satisfaction levels were generally higher for services provided and public facilities, compared to satisfaction with physical space within the housing unit and the social environment within the housing area. The study infers that merely providing housing does not ensure success of existing housing development and policies.

Keywords: Residential satisfaction; physical features; public facilities; social environment

1. Introduction

Since 1970s, urbanization rate in Male', the capital city of Maldives, has been rapid, requiring the need to provide housing to the growing population of the city. It has been reported that housing conditions in Male' and several islands are acutely inadequate as the existing housing market cannot meet the housing demand, especially for the capital city of Male' (World Bank, 2003). Responding to this situation, the government adopted Strategic Action Plan (SAP) in 2008, targeted to construct public housing in Male'

[*]*Corresponding author.* Tel.: +-6-03-6196-5285; fax: +6-03-6196-4864.
E-mail address: mamohit@iium.edu.my

and Hulhumale'. Although the project has not been complete, but several hundreds of housing units have been constructed and delivered to the people. Nevertheless, there are public complaints regarding the quality and physical space within the housing unit, the services provided in the housing area, and selection processes, have been reported in the news media (Human Rights Commission of the Maldives, 2008). Therefore, a need arises to examine residents' satisfaction with public housing in order to gauge the expectations, needs and preferences of the people, thereby determining which factors are important and the types of improvements that are required in existing and future housing development in Maldives.

2. Literature Review

Francescato et al (1979) defined residential satisfaction as the emotional response to a person's dwelling; the positive or negative feeling that the occupants have for where they reside. Residential satisfaction has been used as a measure to examine the success housing development projects. Resident satisfaction has been in use since the early 1960s as the basis for optimizing the architectural design of large housing developments, where feedback was collected from residents of housing projects with regard to resident's views on the physical features of proposed housing developments and then feeding those views back into the design process. The method of choice for assessing residential satisfaction today uses structured surveys followed by statistical correlation of variables (Furbey & Goodchild, 1986). From the 1980s to present day, residential satisfaction has been a key tool to assess and improve the performance of housing developers, and key government policies related to housing (Amerigo & Aragones, 1997).

Studies of residential satisfaction are basically of two types; those that consider residential satisfaction as a predictor of behaviour (intention to stay/move from existing housing), or residential satisfaction as a criterion of housing quality (Weidemann and Anderson 1985). Studies based on residential satisfaction as a predictor of behaviour assumes that satisfaction with existing housing determines behaviour of the resident in terms of making changes to the housing unit or the decision to move to another housing unit. The basis of this assumption is that differences in the existing housing and the actual housing needs and preferences of the dwellers will result in either making changes to existing housing or move to a housing unit that meets their actual housing needs and preferences. Studies that employ residential satisfaction as a measure of housing quality use housing unit features, services and facilities provided in housing area and the housing environment to determine the degree to which a person is satisfied with the existing housing unit (Amerigo & Aragones, 1990).

Existing literature suggests that housing satisfaction is a function of a whole series of factors related to the occupant's dwelling, services within the dwelling area, relationship with neighbours and the location of the dwelling unit. For instance, Morris (1978) found that satisfaction depends on a whole system of beliefs and opinions that the occupant entertains in respect to the housing unit and which are not connected with its physical characteristics. Other researchers such as Galster (1987) measured housing well-being using a composite sum of satisfaction with dwelling unit features, for e.g., the number of rooms per family and the possession of a private bathroom and kitchen. On the other hand Clarke (2008) identified dwelling types, property size, internal and outdoor space, kitchens and bathrooms, neighbourhood parking and external appearance as factors important to today's households. Varady and Carrozza (2000) stress that housing satisfaction is related to satisfaction with dwelling unit (i.e. physical aspects and personal preferences), satisfaction with services provided, and satisfaction with the neighbourhood and area, which also covers the location specific aspects.

Based on research carried out in Brazil by Pina & Kowaltowski et al (2005), the main factors related to housing satisfaction included communal services such as roads, sewer system, and basic utilities within the housing area. He and Zhao (2006) studied the real estate market in Beijing and found that housing demand is highly influenced by proximity to transportation and public facilities rather than merely based

on physical factors. Physical aspects of the housing area such as common areas, ventilation and lighting, and orientation of windows within the housing areas also contribute towards overall housing satisfaction. Toscano and Amestoy (2008), in their study examined housing satisfaction on the basis of individual and household attributes, housing characteristics, and social interactions with one's residential neighbourhood. Similarly Chin-Chun (1981) used the same factors to study housing satisfaction in Taichung, Taiwan; satisfaction with physical space, location, neighbours, and the environment.

Jiboye (2009) studied the residential satisfaction with public housing in Lagos, Nigeria, by assessing the levels of residential satisfaction of public housing tenants in Lagos using three major housing components; dwelling unit features, management of housing units and the housing area environment, and found that the level of residential satisfaction varies and is dependent on the physical features of the dwelling unit, housing area management and environmental features, with high levels of satisfaction for physical features and housing area environment but lower satisfaction level for the management of the housing unit and areas. Russell (2008) found that subsidised renters in the US report higher satisfaction with their housing than similarly situated non-subsidised renters.

The preceding review of existing literature and studies on residential satisfaction highlighted that physical characteristics of housing, the neighbourhood environment and the public facilities provided determine the level of residential satisfaction, however, these may vary by the type of housing, the locale, the community, the cultural backgrounds as well as the nationality. This suggests that studies to determine the residential satisfaction of housing types is specific to the housing area, type of housing provided, community, housing policies and the country itself. As such, in order to assess the level of residential satisfaction with public housing in Maldives, the criteria used should be specific to Maldives, but based on or adopted from the main definitions and concepts of residential satisfaction internationally and on lesson learnt through existing studies in similar countries. Due to the lack of such studies in the Maldives, this study aims to fill the existing gap and contribute towards the development and growth of the housing sector in the Maldives, through amending existing housing policies, strategies and contributing to the development of future housing projects and policies.

2.1. Conceptual Model

This study adapts the conceptual model developed by Mohit et al., (2010) and Mohit & Nazyddah (2011), in their study of residential satisfaction in Malaysia. Although various approaches and concepts have been used in evaluating housing satisfaction worldwide, this conceptual model most closely applies to the Maldivian context. The conceptual model presented in Figure 1 shows the inter-relationship between the descriptive and research variables (residents' satisfaction). The model shows the level of residential satisfaction as perceived by the residents in terms of the influence of the physical characteristics of the dwelling unit, services provided within the housing unit areas, the characteristics of the neighbourhood environment, and quality of public facilities and services.

3. Objectives, Methodology and Study Area

3.1. Objectives

The main aim of this study is towards improving the housing sector in the Maldives, through improved housing developments, living environment and societal development. As such, in order to meet the above aims, the following objectives have been formulated for this study:

- To investigate and examine the level of residential satisfaction and the factors that influence residential satisfaction with public housing in Hulhumale'.
- To identify key factors of residential satisfaction that can help improve the satisfaction with public housing in Hulhumale'.
- To examine the relationship between overall satisfaction with public housing and the intention to stay or move from the existing housing provided.
- To recommend suggestions to improve public housing environment in Hulhumale'.

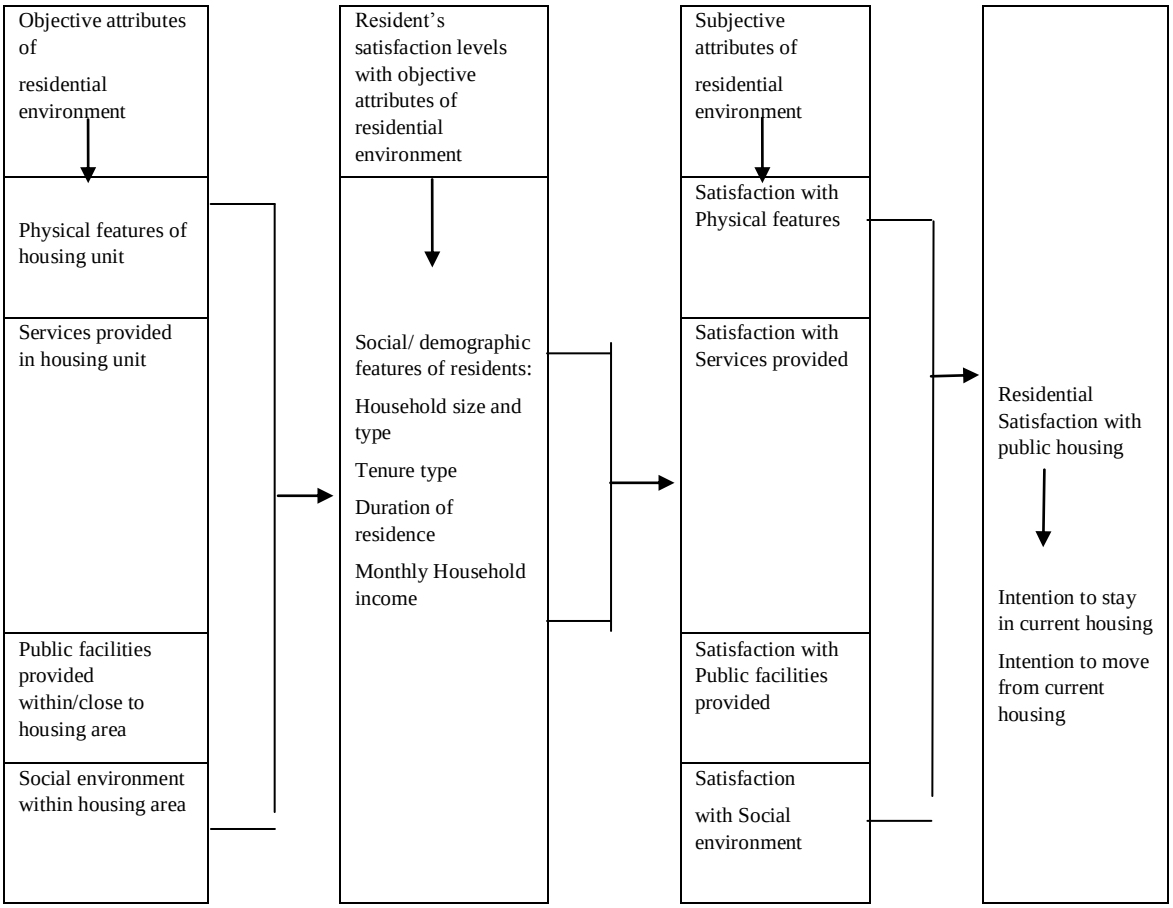

Fig.1. Conceptual model of residential satisfaction; Source: Mohit et al, (2010)

3.2. Research Questions

Based on the objectives of the study the following research questions have been formulated:

- What are the levels of residential satisfaction perceived by the dwellers in public housing units in Hulhumale'?
- What factors determine or enhance the level of residential satisfaction for dwellers in public housing in Hulhumale'?

- What is the relationship between overall satisfaction with public housing and the intention to move or stay in the existing housing?
- What are the potential ways to improve the residential satisfaction levels?

3.3. Methodology

A sample of 100 households (n=100) was selected from a total of 288 housing units (N=288), within the public housing area of Hulhumale'. The sample represents 35% of the total public housing population. The primary source of data for this study was collected through a self-administered questionnaire which contained seven sections – section 1: resident's social and demographic background; section 2: satisfaction with physical features of the housing unit: section 3: respondents satisfaction with services provided within the housing unit; section 4: satisfaction with public facilities provided within the housing unit area; section 5: satisfaction with the social environment in the housing area; section 6: overall satisfaction with the housing unit; and section 7: decision to stay/move from existing housing unit. The field survey was carried out for a period of four weeks, commencing from 1st August 2011. In order to ensure maximum responses to the questionnaires, respondents were briefed regarding the purpose of the survey and reassured that the information provided will be kept confidential and will be used for research purposes only. The total number of questionnaires administered during the survey was 100.

A Likert scale ranged from "1" = very dissatisfied, "2"=dissatisfied, "3"=slightly satisfied, "4"=satisfied and "5"=very satisfied, was used to measure respondents' level of satisfaction on various housing components (Table 1). The overall satisfaction for each feature of residential satisfaction was analyzed based on a mean score of 3.00 as positive indication of satisfaction, and values below 3.00 indicating dissatisfaction. The data collected was analyzed using Statistical Package for Social Sciences (SPSS version 17.0), for frequency distribution of the variables under study, including mean, standard deviation and percentage scores of satisfaction. Further analysis was carried out using cross tabulation, correlation analysis (Pearson r and Spearman's rho) and a regression analysis of variables.

Table 1. Components and variables selected for measuring residential satisfaction.

Component-1 (11 variables)	Component-2 (11 variables)	Component-3 (20 variables)	Component-4 (4 variables)
Housing unit physical features	*Services provided within housing area*	*Public facilitiesprovided*	*Social environment within housing area*
Ventilation, Bedroom1- size & condition, Living area-size & condition, Dinning area-size & condition, Kitchenarea-size & condition, Toilets-size & condition, Bedroom2-size & condition, Bedroom3-size & condition, Washing & drying area-size & condition, Number of sockets, Number of toilets.	Condition of staircase, Location of staircase, Plumbing repair services, Lighting in corridors, Plumbing, Size of corridor, Electrical repair services, Maintenenace of common areas, Garbage collection, Cleaning services for corridors & staircases.	Masjid, Water supply, Elenctricity supply, Childern's play areas, Pedestrian Walkways, Local shpos & shopping area, Recreational areas, Kindergarten, Parking facilities, Distances to – bus stop, masjid, hospital, shopping areas, ferry terminal, schools, town centre, police station, fire station; satisfactions on health & ferry services.	Neighbourhood relations, Community cohesion/ relations, Level of crime, Level of security.
Satisfaction with spaces within housing unit	Satisfaction with services within housing area	Satisfaction with public facilities within / close to housing area	Satisfaction with social environment within housing area
Overall Satisfaction with Public Housing of Hulhumale'			

3.4. Study Area

The study area is located in Hulhumale', an artificial island reclaimed to establish a new land mass required to meet the existing and future housing, industrial and commercial development demands of the Malé (capital of Maldives) region (Figure 2). The official settlement was inaugurated on May 12, 2004. The development and management of the island is undertaken by a Government owned corporation called Housing Development Corporation (formerly Hulhumalé Development Unit /Hulhumalé Development Co-operation) which was incorporated on March 23, 2005. The primary reason for the development of Hulhumale' is to develop the land to provide housing facilities in order to solve the growing problem of congestion and housing shortage within the capital region.

The development of Hulhumale' started in 1997 and reclamation work was completed in 2002 and development of physical and social infrastructure and residential developments commenced in 2002 and settlement began in the middle of 2004, with an initial population of just over 1000 people. The total land area of Hulhumale' is 200 Ha and the current population according to the 2006 Census is 2,866. Currently, Hulhumale' has 288 public housing units and 336 row-house units (Figure 3). In addition, land parcels for private housing, commercial and industrial uses have been allocated.

Hulhumalé' is linked to the capital Male' by public ferry service and is connected to Male' International Airport by road. The communities living in Hulhumalé' are provided with public transportation services via bus services operating from the ferry terminal to the various housing areas, town centre and the industrial areas. Hulhumale' is developed and managed by the Housing Development Corporation (HDC), formerly known as the Hulhumalé' Development Corporation, a wholly government owned company. Hulhumale' currently provides a variety of housing options from apartment or flats, terrace houses, row houses with mixed development such as shop houses, commercial and industrial land

with public facilities such as schools, hospitals, commercial areas, recreational areas etc. The target for the overall completion of residential developments and other institutional developments is by the year 2020, and the vision for Hulhumalé is to become a world class city, supporting a population of 60,000 people working and living in Hulhumale'. The advantages Hulhumalé' offer include superb and congestion free living environment for its residents, opportunities for income generation and availability of jobs close to the residential areas.

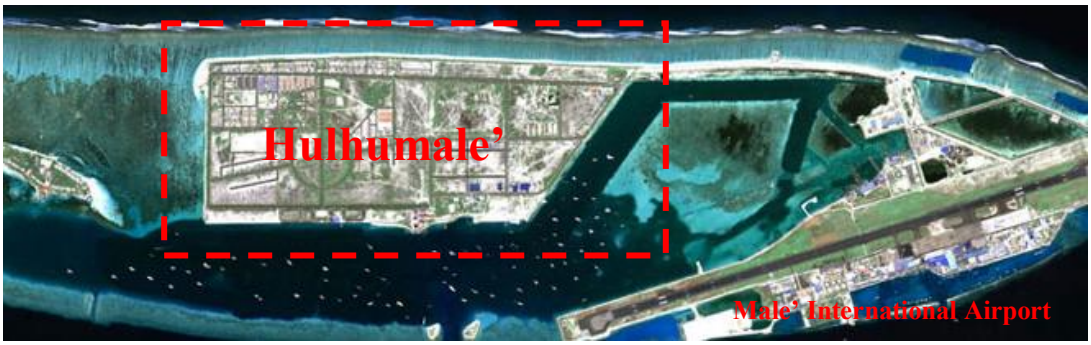

Fig.2. Location of Hulhumale'.; Source: Housing Development Corporation

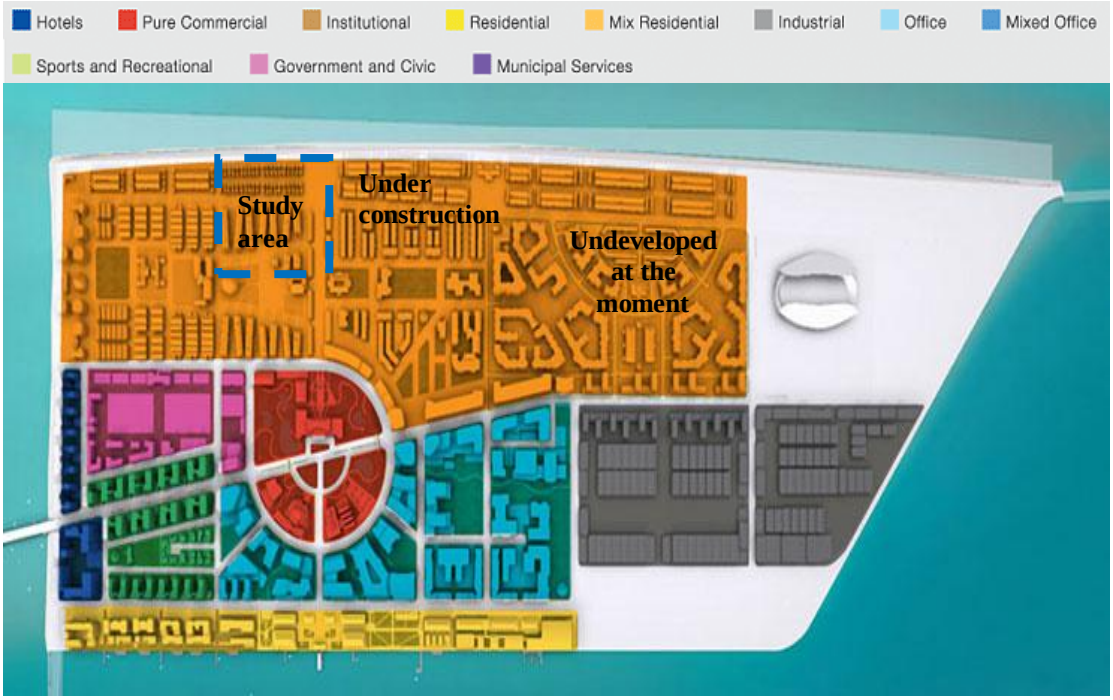

Fig.3.Hulhumale' Land-use Plan; Source: Housing Development Corporation, www.hdc.com.mv

4. Results and Discussion

4.1 Socio-Economic and Demographic Characteristics of Respondents

The following socio-economic and demographic characteristics of the responds deserve careful considerations while doing the data analysis:

- 74% of the respondent households were married and having children, while 14% were identified as married with no children, and the remaining 12% were identified as extended families.
- All the respondent households had more than three members in three members in their families; 51% reported have four members, 22% reported household size as three, 21% reported household size as five, and 4% reported household size more than 6 persons. Average household size is four persons, which is less the national average of 6 (Census 2006).
- Respondents' duration of residence in the housing area varied, with 65% resided for less than two years, whereas 23% have resided for more than five years, and 10% for two to three years and 2% for three to four years.
- 51% of the respondent households were tenants, whereas 49% were owner occupiers. Although the public housing units were allotted to those families without housing in Male', the owners chose to reside elsewhere and rent their unit, even though the Housing Development Corporation (HDC) states that these units may not be rented by the owner at a rental price more than the monthly instalments paid to HDC.
- All the respondents were employed, with 84% reporting as civil service employees and 16% reported as working in the private sector.

- Income levels of the respondents households had little variation, with all household earning more than Maldivian Rufiyaa (MRf) 12,000 (US$778) per month; 71% reported earning over MRf 13,000 (US$843) compared to 29% earning between MRf 12,000 and 13,000. The national average is MRf 15,000 (US$ 973) (Department of National Planning, 2010).

4.2 Satisfaction with Physical Features of the Housing Unit

- Data analysis (Table A1) indicates that the residents have conveyed highest level of satisfaction with the size and condition of Bedroom1 [Mean Satisfaction (MS) =3.59], followed by Bedroom2 (MS=3.56), Bedroom3 (MS=3.26), Kitchen (MS=3.05), Dining Area (MS=2.99), Living Area (MS=2.74) , Washing and Drying Area (MS=2.74) and Toilet which has the lowest level of satisfaction (MS=2.28).
- The satisfaction levels were spread across the variables, with 11% of the respondents most satisfied with the ventilation in the housing unit, 10% most satisfied with Bedroom1 and the Living room, respectively, followed by 9% of respondents reporting satisfaction with Dining Area, Kitchen, size and condition of toilets, Bedroom2 and Bedroom3, respectively. The lowest satisfaction levels (8% each) were recorded with the number of electrical sockets and washing and drying area, respectively, while 7% of respondents reported satisfaction with the number of toilets provided in the housing unit.
- The analysis indicates that the respondents were most satisfied with the size of the Bedroom1 and were least satisfied with the size of the toilets in the housing unit. Similarly, the washing and drying area also score low, indicating dissatisfaction compared to the rest of the spaces in the housing unit.
- A majority of residents (82%) were not satisfied with the number of toilets provided in the housing unit. The physical features most satisfied were the size and condition of the washing and drying areas (53% reporting as satisfied), followed by ventilation (34% satisfied) and living room size and condition (10% satisfied).
- Overall residents' satisfaction with the physical features of housing unit shows that while 12% of the respondents reported as dissatisfied, 66% were slightly satisfied and only 22% were satisfied.
- Further analysis, based on cross tabulation between overall satisfaction and tenure indicates that the tenants with a mean score of 3.27 are more satisfied than the owner, having a mean score of 2.92 with physical features of the housing unit.

4.3 Satisfaction with services provided within the Housing Area

- With regard to the satisfaction levels on the services provided (Table A2) in the housing area, the respondents were mostly satisfied with the condition of staircase (MS=4.64), location of staircase (MS=4.23), plumbing repair services (MS=3.91), corridor lighting (MS=3.86), plumbing (MS=3.59), corridor size (MS=3.44), electrical repair services (MS=3.07), maintenance of common areas (MS=3.07), while they expressed dissatisfaction with garbage collection (MS=2.83), street lighting (MS=2.61) and cleaning services (MS=1.93) for corridors and staircases.
- Overall satisfaction with the services provided within the housing area shows that while 13% are dissatisfied, 64% are only slightly satisfied and 23% reported as satisfied.
- Overall satisfaction with the services provided shows significant correlation with duration of residence, type of tenure, and income per month. However, satisfactions with services provided are not related to the demographic features of the households.
- Analysis of the overall satisfaction with the services provided and type of tenure shows that tenants are more satisfied (MS = 3.25) than the owners (MS = 2.94).

4.4 Satisfaction with Public Facilities provided within and close to the housing area

- Residents' satisfaction with public facilities (Table A3) within the housing area show means values of 4.65, 4.30, 4.23, 4.22, 3.97, 3.58, 3.5 , 3.44 and 3.27, for *masjid*, water supply, electricity supply, children play areas, pedestrian walkways, local shops, recreational areas, kindergarten schools and parking facilities, respectively.
- Mean satisfaction level with public facilities shows that the residents are most satisfied with the location of the bus stops and are satisfied with the distance of the *masjid*, hospital, shopping areas, and schools. Lower level of satisfactions were reported by the residents with the distance from housing unit to the town centre, followed by the distance to the police and fire station, and the quality of the ferry services..
- Based on the data analysis (Table A4), it can be deduced that in general the residents are satisfied with the distance they have to travel to use the ferry services but they are not satisfied with the ferry services provided in Hulhumalé', as 41% of respondents were dissatisfied, while 43% were slightly satisfied and 16% reported as satisfied with the ferry services.
- Overall satisfaction with the services provided within the housing unit indicated that 22% of the residents were dissatisfied, 55% reported as slightly satisfied and 23% satisfied, indicating that the quality of services provided within the housing area still need improvement. Maintenance of corridors and staircases, garbage disposal and street lighting had the low mean satisfaction levels, indicating that there is a need to reassess the provision of these services.
- Further analysis of overall satisfaction with public facilities between owners and tenants shows that tenants are more satisfied (MS = 3.24) than the owners (MS=2.78). This may be due to the fact that tenants have no long term attachment to the housing unit compared to owners.

4.5 Satisfaction with Social Environment within the Housing Area

- A majority of the respondents were very satisfied with the level of security (77%) and were satisfied with the level of crime within the housing area (51%) (Table A5).
- Ranking the social environment features by mean satisfaction level shows that the residents are most satisfied with their relationship with their neighbours (MS=3.71) and with the community (MS=3.71). The residents conveyed lower satisfaction levels with crime (MS=3.22) and security (MS=2.89) within the housing area. Activities such as house break-ins and drug abuse/selling have been reported as frequently happening, indicating a need to improve security and increase police patrols within the housing area.
- Overall satisfaction with the social environment within the housing area indicates that the residents are generally satisfied with the social environment within the housing area. Although 20% of the respondents were dissatisfaction, the majority of the residents reported slightly satisfied (56%) and 24% reported as satisfied with the social environment.
- Further analysis of overall satisfaction with social environment between owners and tenants shows that the tenants are more satisfied (MS = 3.27) than the owners (MS =2.80).

4.6 Overall Satisfaction with Public Housing in Hulhumale'

- Analysis of overall satisfaction with public housing (Table A5) shows that the residents are in general, satisfied with the public housing in Hulhumale', with 8% reporting as dissatisfied, 68% reporting as slightly satisfied, and 24% reporting as satisfied. The mean score for the overall satisfaction with public housing stands at 3.24, (assuming 3 represents moderate satisfaction) the

level of overall satisfaction is moderate and indicates that the residents are slightly satisfied with public housing unit. Although only 8% of the residents reported actual dissatisfaction with public housing provided, given that the overall satisfaction is close to the moderate level, there is still need for further improvement in the public housing provided.

- A majority of the residents (63%) preferred to move to another housing unit compared to 37% who would chose to stay in their current housing unit. Most of the residents who intended to move out of the housing area are owners.

4.7 Factors influencing overall satisfaction with public housing

- Correlation analysis between the overall satisfaction with public housing in Hulhumale' and the components of residential satisfaction shows significant correlation. Although all the components show significant correlation with overall satisfaction, satisfaction with physical features of housing unit (0.802**) and satisfaction with the social environment within the housing area (0.767**) show significantly higher correlation, indicating that these two components play a key role in the overall satisfaction level with public housing in Hulhumale'. Satisfaction with public facilities provided (0.744**) and satisfaction with services provided in housing area (0.683**) too have significant impacts on the overall satisfaction levels.
- The findings of the study show that tenure influences the overall satisfaction levels and that owner occupiers showed lower levels of satisfaction compared to tenant occupiers.
- Correlation analysis of the social and demographic features of the residents with the overall housing satisfaction in Hulhumale' shows that the except for household type, all the other features such as household size, duration of residence, type of tenure have significant positive correlation, while income has a significant negative correlation with overall satisfaction on public housing.

4.8 Factors determining overall satisfaction with public housing in Hulhumale'

- Step-wise Regression analysis was carried between the factors and overall satisfaction to determine the predictor variables that influence the overall satisfaction with public housing.

Table 2. Regression analysis of factors influencing overall satisfaction

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
(Constant)	1.812	.351		5.163	.000
Bedroom 1 - size and condition	.635	.051	.878	12.469	.000
Cleaning services for corridors and staircases	.673	.101	.473	6.646	.000
Schools including pre-schools	-.903	.106	-1.136	-8.509	.000
Number of electrical sockets	-.515	.068	-.897	-7.572	.000
Bedroom 3 - size and condition	.594	.107	.547	5.564	.000
Washing and Drying Area - size and condition	.220	.073	.254	3.033	.003

Dependent Variable: Overall level Satisfaction with public housing unit

Note: Adjusted R^2=0.76

- The regression analysis (Table 2) reveals that the overall satisfaction levels are determined by enhancing satisfactions on Bedroom1 - size and condition, Cleaning services for corridors and staircases, schools including pre-schools, number of electrical sockets, Bedroom3(size and condition), and Washing and Drying Area (size and condition).
- Therefore, it is important to reassess and re-evaluate the physical features of the existing housing unit to determine ways to improve the design of the housing units and also re-evaluate the provision of services and public facilities within the housing area. This will contribute towards enhancing overall satisfaction with public housing in future public housing developments in Hulhumalé' and in other areas of Maldives.

5. Conclusion

This paper has examined the residential satisfaction with public housing in Hulhumale', based on assessment of satisfaction with physical features of housing unit, services provided within the housing unit, public facilities provided both within and close to the housing area, and social environment within the housing area and their contributions to the overall satisfaction with public housing. The study found that a majority of the residents are slightly satisfied, though satisfactions levels varied with the provision of services and public facilities, compared to satisfaction with physical features of the housing unit and the social environment within the housing area. Low level of residential satisfaction was recorded for number of toilets, size and condition of washing and drying area, number of electrical sockets, cleaning services for corridors and staircases, street lighting, garbage collection, ferry services and security level within the housing area. The study also found that satisfactions levels were lower among housing units occupied by owners than those occupied by the tenants. Therefore, the study recommends to re-assess those features of the public housing development which registered low levels of satisfaction by the residents. The following improvements in the residential environment are necessary to enhance residents' satisfaction with public housing in Hulhumale':

- Increase the size of the common toilet (toilet number 2);
- Increase the size of washing and drying area;
- Improve garbage collection and disposal within the housing area;
- Improve street lighting within the housing area;
- Improve the quality of ferry services between Male' and Hulhumale';
- Establish Police posts and fire stations within the housing area.

In conclusion, the study infers that merely providing housing does not indicate success of housing development and policies, but meeting the actual housing needs and preferences of the residents will determine whether the government can achieve the goal of providing adequate and affordable housing for all citizens as stipulated under the Maldivian constitution.

References

Amerigo, M., & Aragones, J. I., (1997). A theoretical and methodological approach to the study of residential satisfaction, *Journal of Environmental Psychology*, 17, 47–57.

Chin-Chun, Y., (1981). *Housing satisfaction among residents of Taichung, Taiwan (*Ph.D. dissertation), Minnesota: University of Minnesota. Retrieved January 29, 2009, via ProQuest Dissertations & Theses

Clarke, A. (2008). *Understanding Demographic, spatial and economic impacts on future affordable housing demand*. Cambridge: University of Cambridge

Department of National Planning (2006). *Census of Maldives*. Maldives: Government of the Republic of Maldives

Francescato, G., Weidemann, S. et al (1979). *Resident's Satisfaction in HUD-Assisted Housing: Design and Management Factor*s. Washington DC: U.S. Department of Housing and Urban Development

Furbey, R. & Goodchild, B. (1986). Method and methodology in housing user research, *Housing Studies.* 1(3), 166–181.

Galster, G.C., (1987). Identifying the correlates of dwelling satisfaction, *Journal of Housing and the Built Environment,* 20, 301-24.

He, L., & Zhao, L. (2006). *Study on Determinants of Housing Demand for Community in Beijing*. Beijing: Beijing Normal University.

HRCM (2008). *Rapid Assessment of the Housing Situation in the Maldives.* Maldives: Human Rights Commission of the Maldives.

Jiboye, A.D., (2009). Evaluating Tenant's Satisfaction with Public Housing in Lagos, Nigeria, *Town Planning and Architecture,* 33(4), 239–247.

Mohit, M.A., and Nazyddah, N. (2011). Social housing programme of Selangor *Zakat* Board and housing satisfaction, *Journal of Housing and the Built Environment*, 26 (1), 123-142.

Mohit, M.A., Ibrahim, M., & Rashid, Y.R., (2010). Assessment of residential satisfaction in newly designed public low-cost housing in Kuala Lumpur, Malaysia, *Habitat International*, 34(1), 18-27.

Morris, E.W., (1978). *Housing, Family and Society*. New York: John Wiley.

Pina, S.A., Kowaltowski, D.C., et al (2005). Transfer Process of Self-built houses in environmental protection areas in the region of Campinas, Brazil, in Garcia-Mira, R., Uzell, D.L., et al, (Ed.) *Housing, Space and Quality of Life.* Oxon: Ashgate.

Russell, N.J. (2008). Impact of subsidised rental housing characteristics of metropolitan residential satisfaction, *Journal of Urban Planning and Development*, 134 (4), 166-172.

Toscano, E.V., & Amestoy, V.A., (2008). The relevance of social interactions on housing satisfaction, *Social Indicators Research*, 86(2), 257-274.

Varady, D., & Carrozza, M. (2000). Toward a Better Way to Measure Customer Satisfaction Levels in Public Housing: A Report from Cincinnati, *Housing Studies*, 15(6), 797-825

Weidemann, S. & Anderson, J. R., (1985). A conceptual framework for residential satisfaction. In Altman, I & Werner, C. H., (Eds.), *Home environments.* NY: Plenum Press.

World Bank (2003). Capacity Building for Land Management, Housing and Urban Development Maldives. Washington DC: World Bank Project TF#27401.

Appendix A.

A.1. Residents' satisfaction with physical features of housing unit. Source: Field Survey, July-August (2011)

Satisfaction with	Very Dissatisfied	Dissa tisfied	Slightly Satisfied	Satisfied	Very Satisfied	Mean	Std. Deviation	Pearson r
Bedroom 1 - size & condition	0	2%	51%	33%	14%	3.59	.753	.606
Bedroom 2 - size & condition	0	11%	73%	16%	0	3.05	.520	.522
Bedroom 3 - size & condition	0	13%	75%	12%	0	2.99	.502	.003
No. of Toilets	2%	68%	30%	0	0	2.28	.494	-.028
Size & condition of Toilets	0	12%	52%	34%	2%	3.22	.645	.510
Dining Area - size & condition	0	12%	52%	36%	0	3.26	.691	.517
Kitchen - size & condition	0	12%	52%	34%	2%	3.24	.653	.498
Living Room - size & condition	0	12%	52%	4%	32%	3.56	1.067	.515
Washing & Drying Area - size & condition	10%	6%	84%	0	0	2.74	.630	.156
Ventilation	2%	43%	19%	36%	2%	3.89	.931	.472
No. of electrical sockets provided	2%	41%	22%	33%	2%	2.92	.950	.254
Overall Satisfaction with Physical Features	-	12%	66%	22%	-	3.10	5.77	1.00

A.2. Residents' satisfaction with services provided within the housing area; Source: Field Survey, July-August (2011)

Satisfaction with	Very Dissatisfied	Dissa tisfied	Slightly Satisfied	Satisfied	Very Satisfied	Mean	Std. Deviation	Pearson r
Corridor Size	-	52%	46%	-	14%	3.44	0.538	0.366
Corridor lighting	-	-	43%	28%	29%	3.86	.841	0.170
Staircase - location	-	-	2%	73%	25%	4.23	.468	0.570
Staircase - condition	-	9%	34%	14%	43%	4.64	.523	0.247
Cleaning – corridor & staircase	11%	85%	4%	-	-	1.93	.383	-0.58
Plumbing – condition	-	-	43%	55%	2%	3.59	.534	0.385
Plumbing – repair services	-	9%	34%	14%	43%	3.91	1.065	0.014
Electrical repair services	-	11%	73%	14%	2%	3.07	0.573	0.454
Common area - maintenance	-	11%	73%	14%	2%	3.07	.723	0.454
Street lighting	14%	11%	75%	-	-	2.61	.620	-0.613
Garbage collection & disposal	2%	23%	65%	10%	-	2.83	.429	-0.528
Overall Satisfaction with services provided within housing area	-	13%	64%	23%	-	3.14	.595	1.00

A.3. Residents' satisfaction with public facilities provided within the housing area; Source: Field Survey, July-August (2011)

Satisfaction with	Very Dissatisfied	Dissa tisfied	Slightly Satisfied	Satisfied	Very Satisfied	Mean	Std. Deviation	Pearson r
Masjid	-	-	12%	11%	77%	4.65	.687	0.132
School	-	11%	34%	55%	-	4.22	.799	-0.342
Parking	-	6%	61%	33%	-	3.14	.594	0.177
Children's play area	-	4%	11%	44%	-	3.58	.654	-0.426
Recreational area	-	19%	12%	69%	-	3.44	.686	-0.424
Pedestrian walkways	-	2%	43%	71%	14%	3.50	.798	-0.047
Local shops	-	-	9%	34%	55%	3.27	.566	0.072
Water supply	-	-	4%	62%	34%	4.30	.541	0.296
Electricity supply	-	-	13%	51%	36%	4.23	.664	0.288
Overall Satisfaction with Public facilities provided within housing area	-	22%	55%	23%	-	3.01	.674	1.00

A.4. Residents' satisfaction with public facilities provided close to the housing area; Source: Field Survey, July-August(2011)

Satisfaction with	Very Dissatisfied	Dissa tisfied	Slightly Satisfied	Satisfied	Very Satisfied	Mean (n=100)	Std. Dev.	Pearson (*r*)
Distance to town centre	9%	2%	45%	44%	-	3.24	0.878	0.115
Distance to school	-	41%	4%	35%	20%	3.34	1.208	0.269
Distance to Police station	-	2%	76%	22%	-	3.20	0.449	0.093
Distance to Fire station	11%	4%	44%	41%	-	3.15	0.936	-0.259
Distance to Hospital	-	2%	22%	76%	-	3.74	0.485	-0.147
Distance to Health clinics	11%	2%	32%	55%	-	3.49	0.959	0.269
Distance to Masjid	-	-	2%	67%	31%	4.29	0.498	0.081
Distance to Bus station	-	2%	9%	34%	55%	4.42	0.741	-0.170
Distance to Shopping centres	11%	-	18%	71%	-	3.45	1.077	-0.118
Distance to Ferry services	-	22%	34%	21%	23%	2.46	1.077	0.258
Ferry service quality	11%	2%	32%	55%	-	3.31	0.961	-0.083

A.5. Residents' satisfaction levels for social environment within the housing area

Satisfaction with	Very Dissatisfied	Dissa tisfied	Slightly Satisfied	Satisfied	Very Satisfied	Mean (n=100)	Std. Dev.	Pearson (*r*)

Level of security within housing area	-	-	12%	11%	77%	2.89	0.424	-0.050
Level of crime within housing area	-	11%	34%	55%	-	3.22	1.079	-0.083
Relationship with neighbours	-	65	61%	33%	-	3.71	0.498	-0.482
Relationship with community	-	4%	11%	44%	41%	3.71	0.498	-0.482
Overall Satisfaction with Social Environment	-	20%	56%	24%	-	3.04	0.655	1.00
Overall Satisfaction with Housing Environment	**-**	**8%**	**68%**	**24%**	**-**	**3.24**	**4.29**	**-**