

## HOUSING SATISFACTION IN SUBSIDIZED HOUSING SCHEMES: A SOUTH AFRICA PERSPECTIVE

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**ABSTRACT:** Post-occupancy evaluation (POE) techniques have been developed to provide a means for evaluating occupant responses to changes in an environment and linking this response to physical measures of that environment. POE has been used to systematically evaluate the performance of buildings after they have been built and occupied for some time. This paper present findings on factors (social and physical), which influences housing residential satisfaction of a sample of occupants in four different government Housing Subsidy locations in the Gauteng Province of South Africa. Descriptive statistics were carried out on the data obtained through the use of occupant survey. Findings emanating from the survey revealed that the respondents were satisfied with their overall housing situation, but had complaints about certain aspects of the housing unit. However, the respondents felt that most of their housing needs were not being met. Also, a comparison is also made of the perceived factors of dissatisfaction amongst the housing subsidy occupants. It is recommended that a wider systematic coverage of the subject through investigation and diagnostic POE and occupants need assessment should be carried in housing subsidy schemes in South Africa.

*Keywords: Post occupancy evaluation, Housing satisfaction, Housing subsidy, Government policy*

### 1. Introduction

The way a building function when it is used is essential for both whether or not it is regarded as a success and constitutes an asset for its owners and occupants. A systematic evaluation of buildings in use is an effective way to produce this knowledge in relation to the planning of new buildings and not least for the development and change of existing buildings that are not satisfactory to the occupants [1]. There are many concepts, definitions and methods that are relevant to buildings' quality, standard and condition. Most of these are associated primarily with a building as a physical object and not with its usability. An important approach to usability of building is that a building in itself has no value, but has value only insofar as it is used and satisfies the occupants.

Globally there are growing efforts to undertake performance studies of occupied buildings in response to the quest for more efficient buildings to meet occupant's satisfaction and sustainability challenges. The potential of building performance studies extend beyond the benefits for improvement to a specific building under investigation. It probe outcomes and make recommendations that open up opportunities to enable transfer of knowledge in future projects [2] [3] [4] [5]. An effective building performance study requires adoption of a systematic procedures and techniques, whereby the most commonly known is Post-Occupancy Evaluation (POE). POE is different from other evaluation methods in that it emphasizes on the needs of building occupants [6].

The strength of POE therefore lies on its capacity to proote the advancement of knowledge through lessons learned and feedback for a better performance of the buildings. Past studies have established the importance of POEs as determinants to crucial performance factors relating to sustainability such as resource consumption, environmental conditions, and the occupant satisfaction and operator experiences. As a result there has been a firm call to make POE a mandatory step in the design and commissioning of buildings, be it privately owned or in subsidized housing schemes [6] [7].

Low-cost housing provision has been a major focus of government in post-apartheid urban South Africa, as the government attempts to address historical race-based inequalities, poor municipal service provision and contemporary rapid urbanization. The White Paper on Housing formulated in 1994, which has undergone some modification, prioritized the needs of the poor, has encouraged community participation and the involvement of the private sector, and committed to deliver 1 million houses in five years [8], of which the delivery of 1 million houses has since be surpassed. The African National Congress (ANC) Reconstruction and Development Program document (RDP) of 1994, and the Constitution [9] also commit to providing housing for the poor. Since 1994, the low-cost housing program has mostly involved building serviced townships on urban peripheries, which in itself presents a myriad of environmental, social and political concerns. By the end of 2009, government had approved 2,8 million houses,

giving shelter to more than 13,5 million people, free of charge according to the Department of Human Settlement. However, many problems with the process have become clear as the process has unfolded. These include:

- New houses and infrastructure are of poor quality, and are rapidly deteriorating and require maintenance;
- New houses and Human Settlement development continue placing the poor and low-income blacks in “ghettos” on urban peripheries, far from jobs and services;
- People dislike the model of housing used, and would prefer larger houses (main model was first changed in 1998 when Department of Housing, now the Department of Human Settlement increased the minimum size of new houses to 30m<sup>2</sup>, and was further increased in 2004 during the launching of the Breaking New Ground Policy to 40m<sup>2</sup>);
- The dominant model of free-hold tenure inadequately deals with the dynamics of poverty, and several categories of the poor, such as temporary workers and many women, which would be better served by rental accommodation as against giving of houses;
- Because of these problems, people often sell or rent out their RDP houses bought through the subsidy, and move back to squatter or other informal settlements closer to their economic activities; and
- Environmental concerns regarding the new developments include increases in vehicular traffic caused by urban sprawl and land use changes.

From the above, it is thus evident that both the design and the performance of these buildings have become major concerns, and thus post-occupancy evaluation (POE) should be of interest since it provides a mechanism for feedback/feed-forward processes to be conducted between occupants, designers and policy implementers and the Department of Human Settlement. The objective of this study is to identify the factors which influence housing residential satisfaction among beneficiaries of government housing subsidy schemes. The paper starts with an overview of the literature on this topic, and then presents the results of the analysis and findings of the research. Finally, the paper draws some conclusions and recommendation.

## 2. Building performance appraisal

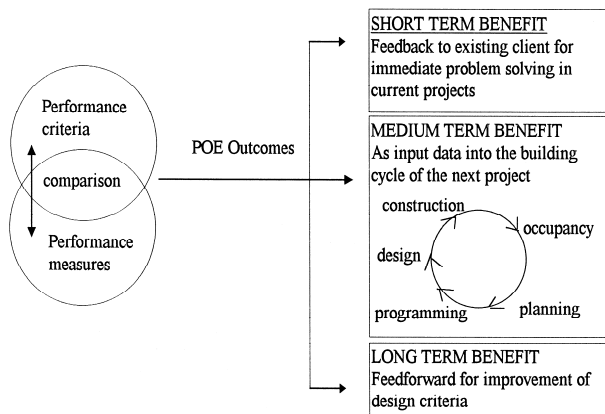
According to Liu [10] the most fundamental objective of a living organism is that of survival, however, there are other aspects of consideration such as spiritual, psychological, social and economic survival. All forms of survival entail the maintenance of a balance between the individual and the environment. Markus et al. [11]; cited in Liu, [10] suggested that in the field of design, any activity or object is considered to function as part of a system and consequently, interdependencies of the systems and the dynamism of the environment must be

emphasized. The assessments of building performance are of value only if they are considered as part of some other processes such as the constant maintenance of balance between the beneficiaries of the housing units and the environment. Liu [10] further emphasizes that the ‘building performance’ concept is based on the assumption that a building is designed and built to support and enhance the activities and goals of its occupants. There are different approaches to building performance appraisal;

- Overall approach to find out factors, on both physical and social levels, which affect housing residents’ satisfaction;
- Development of performance criteria and grading tools;
- Relationship of residential satisfaction with children’s accident risk according to Garling and Garling [12] spatial density, crowding and neighbourhood characteristics;
- Quality appraisal of the building design in terms of both function and cost.

Depending on the approach taken to satisfy a particular research purpose, building evaluation can be done during the design stage as in value engineering, or after completion of the building as in POE. Figure 1 below shows that, while short-term benefit is derived from the contribution of the POE process to immediate problem solving in current projects, medium-term benefit is drawn from the next building cycle. In which a potential link between satisfaction and behavior will bring improvements in unsatisfactory environments which should result in changes in beneficiaries’ satisfaction and in the social behavior of occupants [13] [10].

Occupants’ residential performance is a measure of the degree to which a housing (quality) performance has met the occupants’ expectation in terms of benefits and needs [10]. At the conception of housing occupation, a consumer builds some expectations on the performance of the desired housing, the benefits it will provide and the needs it should fulfill. The judgment of these begins immediately after occupation, which in turn determines his level of satisfaction/ dissatisfaction. Based on the foregoing, the work of Bruning, Langenhop and Green [14] considered housing satisfaction as the gap that exists between residential needs and aspirations and the current residential context. These may include residents’ assessment of neighbourhood safety, ease of access to areas of interest, the quality of other homes in the immediate area, the desirability of the community, and friendliness/pleasantness of the people in the immediate neighbourhood.



**Figure 1:** Building performance (Source: Liu [10])

### 3. Housing satisfaction studies

Numerous studies on housing satisfaction have evaluated housing provisions by dealing with problems of occupant satisfaction. Majority of the studies have not adopted a comprehensive approach and most only assess housing provision subjectively. Theoretically, the concept of housing satisfaction has been utilized in at least four different ways:

- as a key predictor of an individual's perception of general quality of life [15];
- as an indicator of incipient residential mobility, and hence altered housing demands and effected neighbourhood change [16] [17];
- also as an ad hoc evaluative measure for judging the success of housing developments constructed by the private sector [18];
- also to assess residents' perceptions of inadequacies in their current housing environment so as direct forthcoming private or public efforts to improve the status quo [19] [20].

However, according to Amerigo and Argones [21], quantitative studies in housing satisfaction can be divided into two distinct approaches. Firstly, there are those studies in which residential satisfaction is considered as a criterion of residential quality [22] [10], the objective of this kind of studies is to establish which factors determine the degree to which the occupant is satisfied in the residential environment; the other consider residential satisfaction not as a criterion but as a predictor of behaviour. Using the latter approach, a low level of residential satisfaction can predict behaviour as in moving house, or, in cases where this is not possible, the adaptation of the housing to new needs as they arise, such as the carrying out of home improvements [23]. From the above, the studies which deal with residential mobility and its consequences use residential satisfaction as a variable predictor of behaviour. A study which combined the two approaches is the model offered by Weidemann and Anderson [24] in which residential satisfaction is considered as an attitude, which was based on the conceptual framework developed by the work of Fishbein and Ajzen[25] in the theory of reasoned action.

A recent studies by Bonnes et al., [13] informs that there has been a recent gradual shift of emphasis in research away from the relationship between the individual and the physical characteristics of the environment towards an approach defined as 'contextual' [26] [27] which focuses on the relationship between the individual and the socio-physical environment, in which the purpose is to study the problems arising from this relationship in the contexts in which they occur.

Onibokun [28] [29] argues that the habitability of a house is influenced not only by the engineering elements, but also by social, behavioural, cultural, and other elements in the entire societal-environmental system. A dwelling that is adequate from the engineering or from the design point of view may not necessarily be adequate or satisfactory from the inhabitants' point of view. Onibokun [28] concluded that the house is only one link in a chain of factors which determine people's relative satisfaction with their accommodation. Varady [17] further argued that housing satisfaction acted as an intermediary variable between background characteristics and mobility behaviour. In the work of Lane and Kinsey [30] they reported that housing characteristics were more crucial determinants of housing satisfaction than demographic characteristics of housing occupants.

A significant issue in most of the models of residential satisfaction is how the housing attributes outlined in most of the past studies are measured. However, two types of measurements are usually adopted, namely objective and subjective measures of housing attributes, which are found in the literature [31] [32]. Objective measures refer to the actual measurements, such as the presence, the lack of, or quantities of attributes while subjective measures refer to perceptions, emotions, attitudes and intentions towards the housing attributes. The objective measures of the attributes of housing have been shown to be weaker predictors than the subjective measures [33] [32]. Finally, it has also been common, in measuring residential satisfaction to use an index of highly correlated items rather than a single-item variable of 'how satisfied are you with your housing?' In the model of satisfaction conceptualized by Francescato et al. [33], satisfaction was measured using an index based on four questions which were:

- How satisfied are you with living here?
- How long do you want to live in this housing development?
- If you move again would you like to live in another place like this?
- Would you recommend this place to one of your friends if they were looking for a place to live?

The reason for this was conceptual. The authors conceptualized satisfaction as an attitude which has affective, cognitive and conative dimensions. However, the reason given by other authors [34] [32] who used such an index suggests that it increases the reliability of the criterion since it would seem that an index is intrinsically better than a single item. This study will be patterned according to the framework develop by Francescato et al. [33], and validated by Carvalho et al., [34] and Wiedemann & Anderson, [32].

This paper reports on the factors which influence housing residential satisfaction and factors of dissatisfaction among the beneficiaries of a housing subsidy scheme in the Gauteng Province of South Africa both social and physical. The approach adopted by the South Africa government in delivery of housing and allocation of the subsidized house to its citizens will be discussed in the next session.

#### **4. The South Africa government housing subsidy scheme**

It has never proved easy to help the poor and disadvantaged group through housing subsidies, particularly in developing countries. Today, very few governments are prepared to offer housing subsidies to the poor unless they are delivered as up-front, targeted capital subsidies. However, the lack of resources has forced each government into making difficult decisions about the size and the number of subsidies to be offered. Dependent on those decisions, has come a series of implementation problems relating to the quality of construction, the location of the new housing solutions, the use of credit and how to allocate subsidies between so many beneficiaries. Housing delivery for the low income group in South Africa is reliant on the Housing Subsidy process. At the core of the National Housing Strategy is the provision of housing subsidy assistance to eligible households. Capital subsidy assistance are granted to low-income households in order to assist them in accessing at least minimum standard accommodation. Subsidy assistance is provided through three subsidy programmes, which are the Housing Subsidy Scheme, The Discount Scheme and Hostel Redevelopment Programme. The Housing Subsidy Scheme is the primary means of assistance in terms of the national housing policy. On March 15, 1994, the housing subsidy scheme replaced all previous government subsidy programmes for households with an income of R3,500 per month or less. These households should not own property or receive a government housing subsidy before and were expected to meet a range of criteria as contained in the National Housing Act[35].

The Policy makes provision for financial grants to assist homeless, low-income and disadvantaged group to become homeowners. The Housing Subsidy Scheme has been the key to the delivery of housing since the advent of government's low-cost housing programme mechanism which provides government-funded assistance packages to households categorized as 'poor'. Recent policy shifts have been attempting to simplify the administration of housing subsidies and increasing the subsidy amount. In addition, government policy is placing an increasing emphasis on the role that beneficiaries of government-funded subsidies should play in delivery, partly in response to concerns of the culture of entitlement' and ownership that outright subsidies create. As a result, government now requires that subsidy beneficiaries contribute to the construction of their homes either through physical participation or through the payment of a financial contribution.

For the past few years, the National Housing Subsidy has been increased annually to account for inflation and rising building costs. In 2008, the increase was significant; it went up by almost 12% for the mostly poor. Housing subsidies have reduced housing problems in South Africa, giving the poor and the disadvantaged group homeownership. The scale of the South Africa government housing delivery is second only to China, making the success of South Africa's housing programme unparalleled amongst other developing nations. Despite all the commendable efforts, the housing backlog has grown in leaps and bounds from 1.5-million in 1994 and now stands at approximately 2.1-million, which means that approximately 12-million South Africans are still in need of better shelter [36].

The built houses has encouraged homeownership among the disadvantaged group, providing them an asset that can be used for further wealth creation thereby reducing the effect of poverty and housing backlog in the country. But whether it is worth tackling housing problems in this way, in conditions of high unemployment, huge income inequality and widespread poverty, inclusive of its sustainability is another question.

#### **5. Objective and Methodology**

##### *5.1 Scope of Study*

Although POE outcomes are useful to inform housing policy and planning intervention to perform better than previously done in a number of ways [37], however, no significant POE studies have been carried out systematically in the Gauteng Province of South Africa, to assess the success of the low-income housing scheme. The scope of this study is based on the framework of POE (in stages of indicative, investigative and diagnostic) of Preiser [38]. The occupants of four government housing subsidy scheme were chosen as respondents to provide self-reports of their satisfaction with their housing condition based on a list of elements in the unit and beneficiaries expectation before the housing units were allocated to them.

##### *5.2 Objective*

The objective of the study is to establish predictors, of both physical and social characters, which influence the satisfaction of residents in subsidized housing schemes in the Gauteng Province of South Africa.

##### *5.3 Methodology*

Amerigo and Aragones [21] in a study on the residential satisfaction in council housing in Spain emphasized the importance of obtaining distinct geographical placement of a residential satisfaction samples. In this study, the geographical area chosen is Johannesburg in the Gauteng Province of South Africa. There are various government subsidized housing schemes in, Johannesburg, Gauteng Province.

Gauteng is a province of South Africa. It was formed from part of the old Transvaal province after South Africa's first all-race elections on 27 April 1994. It was

initially named Pretoria-Witwatersrand-Vereeniging [PWV] and was renamed Gauteng in December 1994. Gauteng, (a Sesotho word for “*place of gold*”) continues to serve as the economic engine room of the country and the subcontinent, responsible for over 34,8% of the country’s GDP, although it is geographically the smallest of the nine provinces [39]. The main cities are Johannesburg, the biggest city in southern Africa, and Pretoria, the administrative capital of the country. Gauteng Province is currently home to 11.19 million people [40] as against 10.45 million people reported in the Community Survey [41] report. Gauteng Province is also the fastest growing province, with a 22.40% share of the total population. This is mainly because of the high influx of people from other provinces, neighboring countries, and others. This is due to the fact that Gauteng is considered the economic hub and power house of Southern Africa and contributes heavily in the financial, manufacturing, transport, technology and telecommunications sectors, amongst others.

Furthermore, housing provision in the Gauteng province has become a burden and a nightmare to the Gauteng Provincial Government and the National Department of Human Settlement, with a majority of the low-income housing construction being given the almost consideration in Gauteng- Johannesburg to be specific. The study concentrates on occupants of four different housing subsidy schemes in Johannesburg. The four housing subsidy schemes chosen are Ivory Park Extension 2, Kanana Zone 12, Reiger Park, and Diepsloot.

The four chosen developments are all houses given to the low-income group through the South Africa housing subsidy scheme. The average size of a housing unit is 40m<sup>2</sup>. A structured questionnaire was used to conduct interviews with beneficiaries at the four locations. This approach was followed to improve consistency in the responses and ease of analysis. The method was also considered appropriate for a study amongst the low-income group. This is because it has been suggested that when dealing with a population likely to be of the low-income and disadvantaged group with low interest and motivation, the structured interview for data collection is the preferable option. The questionnaire was designed to seek the opinion of the respondents on their level of satisfaction/dissatisfaction on the list criteria. The respondents were asked to indicate the level of satisfaction/dissatisfaction on a scale of 1 – 4 Likert-type scale.

Beneficiaries were randomly selected in all four locations visited; these were interviewed given the fact that they have been resident in the areas for more than a month. Out of the 120 questionnaires sent out, 78 were received back; representing a sixty five percentage (65%) of the total sampled frame. The data collected were analysis using both descriptive and inferential statistics. The data presentation and analysis made use of frequency distributions and percentages of all the respondents. The questionnaire was administered to the heads of households or to the spouses of the heads of household in the sampled household. One household head per house was engaged in the questionnaire administration.

## 6. BENEFICIARIES RELATIVE SATISFACTION INDICES

A 4-point Likert type scale was used to determine beneficiaries’ levels of satisfaction with regard to the housing unit and the overall housing situation. The scale read as follows, 1=Very dissatisfied, 2= Dissatisfied, 3=Satisfied, and 4=Very satisfied. The 4-point Likert scale was chosen rather than the 3- or 5-point scale because the study was demanding more from the beneficiaries and in order to obtain definite answers and to prevent faking, the scale was used. The neutral level (such as ‘just satisfied’) was omitted from the list of options. Beneficiaries were thus forced to sincerely rate their level of satisfaction based on the 4-point Likert scale provided.

The computation of the relative satisfaction indices (RSI) was calculated from the total of all weighted responses and then relating it to the total responses on a particular aspect. This was based on the principle that beneficiaries’ scores on all the selected criteria, considered together, are the empirically determined indices of relative satisfaction. The index of relative satisfaction (RSI) of a beneficiary is the sum of the beneficiaries’ actual scores (on the four-point scale) given by all the beneficiaries’ as a proportion of the sum of all maximum possible scores on the four-point scale that all the beneficiaries could give to that criterion. Weighting were assigned to each responses ranging from one to four for the responses of ‘very dissatisfied’ to ‘very satisfied’. This is expressed mathematically as:

$$RSI_j = \frac{\sum_{i=1}^N a_{ij}}{\sum_{i=1}^N A_{ij}}$$

- Where,
- RSI<sub>j</sub> = relative satisfaction index for criterion “j”
  - N = Number of respondents
  - a<sub>ij</sub> = actual score on the four-point satisfaction scale by the “i”th respondent on the “j”th criterion
  - A<sub>ij</sub> = The potential score (or the maximum score that respondent “i” could give to criterion “j” on the satisfaction scale.

When the frequency is calculated to know the number of respondents on each score, the mean item score (MIS) for each criterion is calculated to obtain the RSI as follows:

$$RSI \text{ (on a four-point scale)} = \frac{1n_1 + 2n_2 + 3n_3 + 4n_4}{\sum N}$$

- Where;
- n<sub>1</sub> = number of respondents for very dissatisfied;.....

$n_4$  = number of respondents for very satisfied  
 $N$  = Total number of respondents

The questionnaire for the analysis was recoded on a two-point scale of 1 and 2, where 1 through 2 on the four-point scale was coded as 1 for “not satisfied” and 3 through 4 was coded as 2 for ‘satisfied’. The formula then becomes;

$$RSI = \frac{1n_1 + 2n_2}{N}$$

The criteria are then ranked in descending order of their relative satisfaction index (from the highest to the lowest).

### 7. FINDINGS AND DISCUSSION

Figure 1 below shows the length of stay of the beneficiaries in the housing units. About 29.50% of them have been living in the subsidized housing unit for more than five years. Those who have lived there between three and five years are 21.80% and 25.60% for those who have been living there for less than one year. In essence beneficiaries who have lived in their housing units for many years completed most of the questionnaires. It can therefore be inferred that the respondents have adequate knowledge of their living apartments and out-door environment.

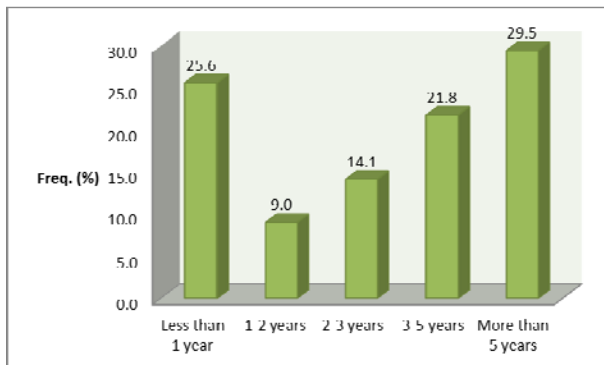


Figure 1: Length of stay in housing unit

Figure 2 below shows the beneficiaries’ intended duration of stay beyond what has already be reported in figure 1.

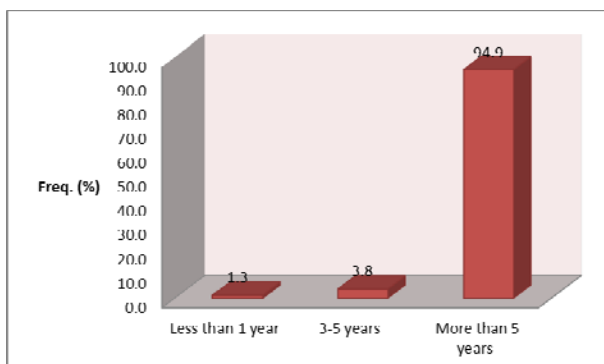


Figure 2: Intended duration of stay in housing unit

About 94.90% of indicated that they intend to live in the housing units for more than five years while 1.30% indicated they intend not to live for more than one year. This is a further confirmation that the occupant’s responses in the satisfaction survey are based on a genuine motive, because they seek the good and betterment of the living apartment and environment.

Table 1 below shows the weighted average from the relative satisfaction indices for the four housing subsidy schemes. The major building aspect/element which the beneficiaries were very dissatisfied with are ranked in descending order, include the ventilation in the unit (2.81), numbers of rooms in the unit (2.79), exterior finish (2.74) and interior finish (2.70). From the physical observation of the units, they were neither painted nor plastered. Further observations revealed that the walls of most housing units were cracked. Winston and Turner (2001) states that walls act as a support system for the roof and should be constructed from good quality material otherwise the walls will not be strong and will crack. Cracks in the wall were part of the structural defects in the housing units which respondents did not expect to find in the units. In terms of the weighted rank average for the finishes, both exterior (2.74) and internal (2.70), there was a general trend in the level of dissatisfaction as the residents in the different housing units were very dissatisfied - RP= (2.65, 2.30), IVP= (2.85, 2.70), KE= (2.61, 2.89) and DSP= (2.88, 2.89). The highest level of dissatisfaction was experienced by the residents living in Diepsloot. Generally, lack of interior and exterior finishes in most of the housing units influenced the satisfaction levels of the respondents. Also, the ventilation in the unit ranked very dissatisfactory, was because the units were not hot in winter and cold in summer. Respondents expected a housing unit that would protect them from the elements and especially the harsh, cold winter. According to the World Health Organization [42], the quality of a house plays a vital role in the health status of residents. The indoor air quality, humidity, low temperature and overcrowding in a house usually poses threats to the health of the residents [42].

Others are the size of the unit (2.63), noise level around the unit (2.51), privacy in the unit (2.51) and safety in the unit (2.50), safety around the unit (2.31), and position of the bedroom (2.07). Though the occupants were dissatisfied with the size of the unit, they were at least satisfied with the social and physical elements in the housing units. The position of the unit (1.97) and the position of the bedroom (2.07) were very satisfactory as the indicated by the weighted ranking averages. With regards to the space in the unit, respondents indicated that the units were too small as there was little space for movement after putting their furniture and most were not partitioned and could not take all their furniture. However, the weighted average ranking of the elements shows that the beneficiaries were not entirely satisfied with the social and physical elements of the building.

Table 2 below shows the distribution of the residents’ relative satisfaction indices of the housing units. The numbers of respondents who are satisfied with each of the building elements are indicated starting with the highest.

This implies that the criterion having the least frequency of relative satisfaction index will have the highest frequency of relative dissatisfaction index and vice-versa. Considering the whole listed building elements, the residents were more satisfied with the physical factors in their houses. The respondents who are satisfied with the position of windows and doors in their houses have the highest frequency (80.77%). This is followed by the position of the bedroom (76.64%) and the position of the unit which are all physical factor in the house. The social factor the residents were more satisfied with is the safety in the unit (67.95%) and safety in the unit (61.54%).

Findings also showed that there was a correlation between the elements residents were dissatisfied with as shown in table 1 for the weighted average of the ranked items in the different housing locations and the MIS in table 2. The elements of dissatisfaction in table 2 are ventilation (32.05%), internal finishes (23.08%), exterior finishes (43.62%), number of rooms (33.33%), space in the unit (44.87) and size of the units (38.46%).

Though, the residents were satisfied with the physical factors of the unit and not satisfied with the social factors, however, when their expectation before the housing units were given to them and after were examined; findings also showed that their expectation for bigger housing units (84.62%), houses with quality finishes (98.72%), and more consultation with the Gauteng Department of Human Settlement (92.31) were not met. This was not in line with the Department of Human Settlement housing policy goal which mandated the provincial and local spheres of government to consult meaningfully with individuals and community affected by housing development, thus facilitating the active participation of all relevant stakeholders in housing development. Nevertheless, residents indicated that their expectation for a house that will improve their living condition from shacks (slums housing) was met (87.18). Also they informed that they now have more comfort than their previous living environment (83.33). Other were better sanitary system (56.41) and clean environment (53.33), which were all expectations they had before the houses were allocated to them, as shown in table 4. Only four elements out of ten were met as against the original intended expectations before allocation of the houses.

**Table 2.** Occupants' Relative Satisfaction

<b>Building elements</b>	<b>Satisfied</b>	<b>Not Satisfied</b>
Position of windows	63 (80.77)	15 (19.23)
Position of doors	63 (80.77)	15 (19.23)
Position of bedrooms	59 (76.64)	19 (24.36)
Position of unit	59 (75.64)	19 (24.36)
Number of doors	58 (74.36)	20 (25.64)
Safety around the unit	53 (67.95)	25 (32.05)
Safety in the unit	48 (61.54)	30 (38.46)
Kitchen bathroom/toilet	48 (61.54)	30 (38.46)
Position of lounge	44 (56.41)	43 (43.59)
Privacy in the unit	44 (56.41)	34 (43.59)
Noise level around the unit	44 (56.41)	34 (43.59)
Layout of the unit	39 (50.00)	39 (50.00)
Noise levels in the unit	38 (48.72)	40 (51.28)
Climate conditions of unit	38 (48.72)	40 (51.28)
Size of unit	35 (44.87)	43 (55.13)
Space in unit	30 (38.46)	48 (61.54)
Position of kitchen	29 (37.18)	49 (62.82)
Exterior finishes	27 (34.62)	51 (65.38)
Number of rooms	26 (33.33)	52 (66.67)
Ventilation in the unit	25 (32.05)	53 (67.95)
Interior finishes	18 (23.08)	60 (76.92)

Note: Figures in parentheses are row percentages

Literature [43] informs that when the gap between what is expected and what is received decreases; residential satisfaction increases. Occupant's satisfaction with the housing units was affected with lesser of their expectations being met. Also, residential satisfaction being a subjective evaluation and relies heavily on the beneficiaries' views, perceptions, previous experiences, behaviour, norms, values and emotions, and a complex construct, affected by a variety of environmental and socio-demographic variables. It can therefore be concluded that the satisfaction of the occupants living in the subsidized housing units was not met, but from the basic expectation of an improved living conditions from shack and more comfort than previous living, it can be said that beneficiaries are thus satisfied with the overall housing condition even though most of their expectations were not met.

**Table 1.** Relative satisfaction indices for the four Housing subsidy schemes (in descending order of lesser satisfaction)

Building aspects	Ivory Park (N=20)	Rank	Diepsloot (N=20)	Rank	Kanana Ext 12 (N=18)	Rank	Reiger Park (N=20)	Rank	Weighted average (N=78)	Sub-group rank
Ventilation in the unit	2.80	1	3.22	1	2.83	2	2.37	11	2.81	1
Number of rooms	2.05	7	3.17	4	2.89	1	3.05	3	2.79	2
Exterior finishes	2.80	1	2.88	9	2.61	6	2.65	6	2.74	3
Space in unit	2.35	4	2.61	14	2.89	1	3.1	2	2.74	3
Interior finishes	2.70	2	2.89	8	2.89	1	2.3	13	2.70	4
Position of kitchen	2.20	6	3.20	2	2.72	4	2.55	8	2.67	5
Climate conditions of unit	2.40	3	2.71	11	2.17	10	3.25	1	2.63	6
Size of unit	2.30	5	2.68	12	2.78	3	2.75	5	2.63	6
Noise levels in the unit	2.00	9	2.59	15	2.67	5	2.9	4	2.54	7
Layout of the unit	2.15	7	3.00	5	2.28	9	2.65	6	2.52	8
Noise level around the unit	2.05	8	2.53	16	2.56	7	2.9	4	2.51	9
Privacy in the unit	1.90	10	2.61	14	2.89	1	2.63	7	2.51	9
Safety in the unit	2.80	1	2.31	17	2.33	8	2.55	8	2.50	10
Position of lounge	1.55	13	3.18	3	2.56	7	2.35	12	2.41	11
Kitchen bathroom/toilet	1.90	10	2.88	8	2.28	9	2.42	10	2.37	12
Safety around the unit	2.20	6	2.22	18	2.33	8	2.5	9	2.31	13
Position of bedrooms	1.70	11	2.94	7	2.00	11	1.65	17	2.07	14
Position of doors	1.50	14	2.63	13	1.83	13	2	14	1.99	15
Position of windows	1.40	14	2.47	16	2	11	2	14	1.97	16
Position of unit	1.40	15	2.78	10	1.94	12	1.75	16	1.97	16
Number of doors	1.60	12	2.95	6	1.39	14	1.9	15	1.96	17

Note: **RP**= Reiger Park; **IVP**= Ivory Park; **KE**= Kanana Extension 12; **DSP**= Diepsloot



**Table 3.** Level of housing satisfaction according to beneficiaries expectations

Areas of expectations	Expectation After allocation		Expectation Before allocation	
	Yes	No	Yes	No
Improved living conditions from shacks	68 (87.18)	10 (12.82)	77 (98.72)	1 (1.28)
More comfort than previous living environment	65 (83.33)	13 (16.67)	77 (98.72)	1 (1.28)
Good sanitary systems	44 (56.41)	34 (43.59)	76 (97.44)	2 (2.56)
Clean environment	40 (53.33)	38 (50.67)	75 (96.15)	3 (3.85)
Bigger plots	36 (46.15)	42 (53.85)	64 (82.05)	14 (17.95)
Adequate hot and cold water	34 (43.59)	44 (56.41)	70 (89.74)	8 (10.26)
More consultation with the municipality	27 (36.99)	51 (69.86)	72 (92.31)	6 (7.69)
Free services	18 (23.08)	60 (76.92)	58 (74.36)	20 (25.64)
Structure with quality finishes	12 (15.38)	66 (84.62)	73 (98.72)	5 (1.28)
Bigger units	10 (12.82)	68 (87.18)	66 (84.62)	12 (15.38)

Note: Figures in parentheses are in percentages

## 8. CONCLUSION

The paper set out to consider housing satisfaction in subsidized housing schemes, a South Africa perspective; using Johannesburg Subsidized housing schemes in the Gauteng province as a case study. Literature review showed that the South Africa government has vigorously ensured that houses were provided to advance the lives of its citizens through the initiation and implemented of Housing Subsidy Scheme, thus eliminating the incidence of slum housing associated with poverty. The empirical study, although based on a relatively small sample of four locations of low-income housing in Gauteng, provides an insight into the post occupancy experience of the beneficiaries of government subsidized housing. The findings showed that residents were satisfied with the physical attributes in the houses, but not satisfied with the social attributes, except in the case of the safety in and round the unit. Also, despite the majority of the respondents' expectation were not met, beneficiaries were satisfied with the privacy and improved living conditions in the housing units compared to where they were previously living. Further findings from the research revealed that the progressive realization of the right to adequate housing as contained in the South Africa constitution is being met by the government, as a majority of the beneficiaries that were allocated houses informed that their quality of life has increase because the provided houses has given them an improved living condition and they now live in clean environment. Thus the Department of Human Settlement objective of the broader housing vision in promoting social cohesion and improving quality of life for the poor is being achieved as findings showed.

## 9. RECOMMENDATIONS

However, the following are therefore recommended in order to increase the satisfaction level of beneficiaries: Meaningfully consultation should be held with individuals and community affected to facilitate the active participation of all relevant stakeholders in housing development and to improve the overall housing delivery

and the satisfaction of the housing subsidy beneficiaries. Also, it is recommended that the Department of Human Settlement and administrator of the subsidized housing policy in the Gauteng Province should conduct a complete and thorough needs assessment of the beneficiaries of a proposed housing subsidy development. The results of the needs assessment should be explained and limitations of the housing development need to be identified. For example, the beneficiaries may have indicated a need for a two-bedroom housing unit, but the subsidy amount and beneficiary contribution might only be sufficient to supply a unit with one bedroom. It is also recommended that government should provide as wide a choice of housing and tenure options as is reasonably possible. This can be achieved through the rental housing option. Finally, it is further recommended that in accordance with the findings of this study, the Department of Human Settlement should formulate a better quality control mechanism so that the houses that will be delivered through the Housing Subsidy Programme will be of good physical quality and also the social attributes of a typical housing unit.

## REFERENCES

- [1] Blakstad, Olsson, Hansen, and Knudsen, Usability Mapping Tool, *CIB World Congress*, pp. 216, 2010.
- [2] Lackney, J. A., In The 32nd Conference of Environmental Design Research Association, EDRA., Edinburgh, Scotland, 2001.
- [3] Zimring, C., (Ed.) Post-occupancy evaluations: Issues and Implementation, *John Wiley and Sons Inc*, New York, 2002.
- [4] Lu Aye, B. Charters, M. Chiazor and Robinson, J., *In association of Researchers in Construction Management 20th Annual Conference*, Vol. 1 (Ed, Khosrowshahi, F.) ARCOM, Heriot Watt University, Edinburgh, Scotland, pp. 277-286, 2004.
- [5] Mastor, Shah and Ibrahim, Post Occupancy Evaluation Practices: A Procedural Model for a Successful Feedback, *CIB World Congress*, pp 277, 2010.
- [6] Preiser, W. F. E. and Vischer, J., (eds) Assessing Building Performance, *Butterworth-Heinemann, Oxford*, 2005.

- [7] Issac A. Mier, Yaakov Garb, Dixin Jiao and Alex Cicelsky, Post Occupancy Evaluation: An Inevitable Step Toward Sustainability, *Advances in Building Energy Research*, Vol 3, pp 189-220, 2009.
- [8] Jenkins, P., Difficulties encountered in community involvement in delivery under the new South African housing policy. *Habitat International*, 23(4), 431-446, 1999.
- [9] The South Africa constitution 1996.
- [10] Liu A.M.M., Residential satisfaction in housing estates: a Hong Kong Perspective *Automation in Construction*, 8, 511-524, 1999.
- [11] T.A. Markus, P. Whyman, J. Morgan, D. Whitton, T. Maver, D. Canter, J., Fleming, Building Performance, *Applied Science Publishers*, Barking\_1972.
- [12] A. Garling, T. Garling, Parents' residential satisfaction and perceptions of children's accident risk, *Journal of Environmental Psychology* 10, 27-36, 1990.
- [13] M. Bonnes, M. Bonaiuto, A.P. Ercolani, Crowding and residential satisfaction in the urban environment, contextual approach, *Environment And Behavior* 23 (5), 531-552, 1991.
- [14] Bruning, S. D., Langenhop, A. and Green, K. A., 'Examining city-resident relationships: linking community relations, relationship building activities, and satisfaction evaluations', *Public Relations Review*, 30, 335-345, 2004.
- [15] Campbell, A et al., The Quality of America Life. *Regional Sage*, New York, 1976.
- [16] Speare, AA., Residential satisfaction and intervening in residential mobility, *Demography*, 11, 173-88, 1974
- [17] Varady, D., Determinants of residential mobility decisions. *Journal of the American Planning Association*, 49, 184-99, 1983.
- [18] Lansing, J. et al., Planned residential Environments. *Institute for Social Research*, Michigan, 1970
- [19] Michelson, W., Environmental Choice, Human Behaviour, and Residential Satisfaction. *Oxford University Press*, Uk, 1977.
- [20] Francescato, G et al., A systematic method of evaluating multifamily housing. *Ekistics*, 41 (242), 60-3, 1976.
- [21] Amerigo M., Aragonés J.I., Residential satisfaction in council housing, *Journal of Environmental Psychology* 10, 313-325, 1990.
- [22] Galster G.C., Hesser G.W., Residential satisfaction. Compositional and contextual correlates, *Environment And Behavior* (13) 735-758, 1981.
- [23] H. Premius, Housing as a social adaptation process. A conceptual scheme, *Environment And Behavior* (18) 31-52, 1986.
- [24] S. Weidemann, J.R. Anderson, D.J. Butterfield, P.M. O'Donell, Residents perception of satisfaction and safety. Basis for change in multifamily housing, *Environment And Behavior* (14) 95-724, 1982
- [25] Fishbein, M & Ajzen, I., Belief, attitude, intention and Behaviour: An introduction to theory and research. *Addison-wesley publishing company*, 1975.
- [13] M. Bonnes, M. Bonaiuto, A.P. Ercolani, Crowding and residential satisfaction in the urban environment, contextual approach, *Environment And Behavior* 23 (5), 531-552, 1991.
- [26] Altman, B. Rogoff, World views in psychology: trait, interactional, orgasmic, and transactional perspectives, in: Stokols, Altman \_Eds., *Handbook of Environmental Psychology, Vol. 1, Academic Press*, New York (19)., pp. 7-40, 1987.
- [27] D. Stokols, Conceptual strategies of environmental psychology, in: Stokols and Altman \_Ed., *Handbook of Environmental Psychology, Vol. 1, Academic Press*, New York., pp. 41-70, 1987.
- [28] Onibokun, A.G., 'Evaluating consumers' satisfaction with housing: An application of a systems approach, *AIP Journal*, 189-200, 1974.
- [29] Djebuarni, R., & Al-Abed, A., Satisfaction level with neighbourhood in low-income Public housing in Yemen. *Property Management*, 18(4), 230-242, 2000.
- [30] Lane, S and Kinsey, J., Housing Tenure status and housing satisfaction. *Journal of consumer affairs* 14(winter) 341-65, 1980.
- [31] Francescato, G., Residential satisfaction research: the case for and against. In J. I. Aragonés, G. Francescato, & T. Garling (Eds.), *Residential environments: Choice, satisfaction and behaviour* London: *Bergin and Garvey*, pp. 15-34, 2002.
- [32] Weidemann, S., & Anderson, J. R. A., A conceptual framework for residential satisfaction. In I. Atman, & R. Werner (Eds.), *Home environments* London: Plenum Press, pp. 154-182, 1985.
- [33] Francescato, G., Weidemann, S., & Anderson, J. R., Evaluating the built environment from the users point of view: An attitudinal model of residential satisfaction. In W. F. E. Preiser (Ed.), *Building NY: Plenum Press evaluation*, pp. 181-198, 1989.
- [34] Carvalho, M., Goerge, V. R., & Anthony, K. H., Residential satisfaction in conominos exclusivos (gate-guarded neighborhoods) in Brazil. *Environment and Behavior*, 29, 734-768, 1997.
- [35] National Department of Housing Urban Development Framework. (1997), Available at: [www.info.gov.za/view/DownloadFileAction?id=70505](http://www.info.gov.za/view/DownloadFileAction?id=70505), accessed on 19/02/2009.
- [36] Tokyo Sexwale., Speech at the occasion of the Budget Vote, Number 26 for the *Department of Human Settlements*, National Assembly, Cape Town. Available from: <http://www.housing.gpg.gov.za/Speech09.htm>, 2009
- [37] E.T. White, Post-occupancy evaluation from the client's perspective, in: W.F.E. Preiser \_Ed., *Building Evaluation*, Plenum, New York, 1989.
- [38] W.F.E. Preiser, Towards a performance-based conceptual framework for systematic POEs, in: W.F.E. Preiser \_Ed., *Building Evaluation*, Plenum, New York, 1989.
- [39] Pocket Guide to South Africa PROVINCES [http://www.gcis.gov.za/resource\\_centre/sa\\_info/pocketguide/2009/006\\_provencies.pdf](http://www.gcis.gov.za/resource_centre/sa_info/pocketguide/2009/006_provencies.pdf), 2010.
- [40] Statistics South Africa., Mid-year population estimates <http://www.statssa.gov.za/publications/P0302/P03022010.pdf>, 2010.

- [41] Community Survey., Basic results. Statistics South Africa. p.2. Available at: <http://www.statssa.gov.za/publications/CS2007Basic/CS2007Basic.pdf>. 2007
- [42] The World Health Organization., Review of evidence on housing and health, Fourth Ministerial Conference on Environment and Health. Geneva. *The World Health Organization*. Background document No. 5046267, 2004.
- [43] Darkwa, I., Post-occupancy evaluation of State-subsidized housing units in Kayamandi, Stellenbosch. Masters in Consumer Science (Housing), *University of Stellenbosch*, 2006.