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Housing Satisfaction in Subsidized Housing Schemes: A Case Study of Johannesburg, Gauteng Province, South Africa

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ABSTRACT Post-occupancy evaluation techniques have been developed to provide a means for evaluating occupant responses to changes in their environment and linking this response to physical measures of that environment. This paper presents the findings on factors (social and physical), which influence housing residential satisfaction of a sample of occupants in four housing subsidy locations in South Africa. The findings revealed that the respondents were satisfied with their overall housing situation, but had complaints about certain aspects of the housing unit. It is recommended that a wider systematic coverage of POE should be carried out in housing subsidy schemes in South Africa.

INTRODUCTION

The way a building functions when it is used is essential to whether or not it is regarded as a success and constitutes an asset for its owners and for 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 (Blakstad et al. 2010). There are many concepts, definitions and methods that are relevant to the 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' needs.

Globally, there are growing efforts to undertake performance studies of occupied buildings in response to the quest for more efficient buildings being built 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 probes outcomes and makes recommendations that open up opportunities to enable transfer of knowledge in future projects (Lackney 2001; Zimring 2002; Lu et al. 2004; cited in Mastor et al. 2010). An effective building performance study requires adoption of systematic procedures and techniques, where the most commonly known is Post-Occupancy Evaluation (POE). POE is different from other evaluation methods in that it emphasizes the needs of the building's occupants (Aigbavbsa and Thawofa 2011; Preiser and Vischer 2005). The strength of POE lies in its capacity to promote the advancement of knowledge through lessons learned and feedback for better performance of the building. 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 (Preiser and Vischer 2005; cited in Issac et al. 2009).

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 one (1) million houses in five years (Jenkins 1999). The delivery of the one (1) million hous-

es has since been surpassed. The African National Congress (ANC) Reconstruction and Development Program Document (RDP) of 1994, and the Constitution (The South Africa Constitution, 1996) 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; 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 (the 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 $30m^2$ and was further increased in 2004, during the launching of the Breaking New Ground Policy to $40m^2$ 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, 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, POE should be of interest since it provides a mechanism for feedback/feed-forward processes to be conducted between occupants, designers and policy implementers as well as the Department of Human Settlement. The objective of this study is to identify the factors which influence housing residential satisfaction amongst 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 recommendations for the future.

Post Occupancy Evaluation

Liu (1999) informs that the most fundamental objective of a living organism is that of survival, although 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. (1972 cited in Liu 1999) 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 (1999) further emphasized 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 such as; overall approach to find out factors, on both physical and social levels, that affect housing residents' satisfaction, which is the main aim of this paper; development of performance criteria and grading tools; relationship of residential satisfaction with children's accident risk according to Garling and Garling (1990) spatial density, crowding and neighbourhood characteristics; and 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. For instance, 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. Potential link between satisfaction and behaviour will bring improvements in unsatisfactory environments, which should result in changes in the beneficiaries' level of satisfaction and in the social behaviour of occupants (Bonnes et al. 1991).

Hence, occupants' residential performance is a measure of the degree to which housing (quality) performance has met the occupants' expectation in terms of their benefits and needs. 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 fulfil. The judgment of these begins immediately after occupation, which in turn determines his/her level of satisfaction/ dissatisfaction. Based on the aforementioned, the work of Bruning et al. (2004) 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 the friendliness/pleasantness of the people in the immediate neighbourhood.

Housing Satisfaction Studies

Numerous studies on housing satisfaction have evaluated housing provisions by dealing with problems of occupant satisfaction. 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 (Campbell et al. 1976);
- as an indicator of incipient residential mobility, and hence altered housing demands and effected neighbourhood change (Speare 1974; Varady 1983);
- as an ad hoc evaluative measure for judging the success of housing developments constructed by the private sector (Lansing et al. 1970);
- to assess residents' perceptions of inadequacies in their current housing environment so as to direct forthcoming private or public efforts to improve the status quo (Michelson 1977; Francescato et al. 1976).

Onibokun (1974) informs 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 socio-environmental system. Hence, 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 (1974) concluded that the house is only one link in a chain of factors, which determine people's relative satisfaction with their accommodation. Varady (1983) further argued that housing satisfaction acts as an intermediary variable between background characteristics and mobility behaviour. In the work of Lane and Kinsey (1980) 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 (Aigbavboa and Thwala 2011b). However, two types of measurements are usually adopted, namely objective and subjective measures of housing attributes, which are found in the literature (Francescato 2002; Weidemann and Anderson 1989); which has also been adopted in the present study through the evaluation of the physical and social factors which determines residential satisfaction. 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 (Francescato et al. 1989; Weidemann and Anderson 1989). 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. (1989), 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 the above was conceptual. The authors conceptualized satisfaction as an attitude, which has affective, cognitive and conative dimensions. However, the reason given by other authors, Carvalho et al. (1997) and Weidemann and Anderson (1982), 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. (1989), and validated by Carvalho et al. (1997) and Wiedemann and Anderson (1985).

This paper reports on the factors which influence housing residential satisfaction and factors of dissatisfaction amongst 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 section.

Housing Subsidy Scheme in South Africa

It has never proved easy to help the poor and disadvantaged groups 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 these decisions, a series of implementation problems arose relating to the quality of construction, the location of the new housing solutions, the use of credit and how to allocate subsidies amongst 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. Subsidy assistance is provided through three main subsidy programmes - Housing Subsidy Scheme, the Discount Scheme and the Hostel Redevelopment Programme. The Housing Subsidy Scheme is the primary means of assistance in terms of the national housing policy.

The Policy makes provision for financial grants to assist the homeless, low-income and disadvantaged groups 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 attempted to simplify the administration of housing subsidies and increase the subsidy amount. In addition, government policy is placing 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. For instance, 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 groups' homeownership. The scale of the South African 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 to now stand at approximately 2.2-million, which means that approximately 12.5-million South Africans are still in need of better shelter (Tokyo 2009). However, the built houses have encouraged homeownership amongst the disadvantaged groups, providing them with an asset that can be used for further wealth creation thereby reducing the effect of poverty and the 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.

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 (White 1989), 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 (1989). The occupants of four government housing subsidy schemes 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.

The variables (social and Physical) used in the measurement of satisfaction were selected based on the work of Altman and Rogoff (1987) and Onibokun (1974). They both emphasizes the 'contextual' approach in satisfaction studies, which focuses on the relationship between the individual and the socio-physical environment. These have been acknowledged as better predictors of housing satisfaction. Also, the criterion for the variable selection support the two types of satisfaction measurement commonly adopted as conceptualized by Campbell et al. (1976). The variables were selected to adequately measure both the objective and subjective attributes of housing satisfaction. This is because by 'themselves, objective indications are often misleading and will remain so until indicators of human beings attached to them are obtained'; likewise, by 'themselves, subjective indicators are insufficient as guide to policy evaluation and feedback to help improve low income housing development' (Campbell et al. 1976). 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.

METHODOLOGY

Amerigo and Aragones (1990) in a study on the residential satisfaction in council housing in Spain emphasized the importance of obtaining distinct geographical placement of 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 subconti-nent, responsible for over 34.8% of the country's GDP, although it is geographically the smallest of the nine provinces (Pocket Guide to South Africa 2010). 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 (Stats 2010) as opposed to 10.45 million people reported in the Community Survey (2007) 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, neighbouring countries, and others. This is due to the fact that Gauteng is considered to be the economic hub and power house of Southern Africa and contributes heavily to 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. Hence, a majority of the low-income housing construction has been given the 'almost consideration' in Gauteng- Johannesburg to be specific. The study concentrates on occupants of four different housing subsidy schemes in Johannesburg. The housing subsidy schemes chosen were Ivory Park Extension 2, Kanana Zone 12, Reiger Park, and Diepsloot.

The selected developments comprises of houses given to the low-income group through the South Africa housing subsidy scheme. The average size of a housing unit is 40m^2. A structured questionnaire was used to conduct

interviews with beneficiaries at the selected 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 listed criteria. The respondents were asked to indicate the level of satisfaction/dissatisfaction on a scale of 1 – 4 Likert-type Scale.

A structured occupant survey questionnaire was used to conduct interviews with beneficiaries at four already existing Reconstruction and Development Programme (RDP) housing subsidy locations in Johannesburg, Gauteng Province of South Africa. These locations had all benefited from the government housing subsidy scheme. The questionnaire was administered to the head of households or their spouses. One household head per house was engaged in the interview/questionnaire administration. Beneficiaries were randomly selected from all four locations visited. These were interviewed based on the fact that they have been resident in the areas for more than a month. All households from each location had an equal chance to be drawn and to occur in the sample. All completed and allocated subsidized housing units in all four locations were chosen as the sample frame. A total of 30 households were chosen in each location for the research, making the overall sample size 120 households. This was achieved as follows: each location was divided into 10 regions using the streets. Systematic sampling was then applied through the selection of every 49th house in each region. For ease of identification of the 49th house, house numbers were used to calculate the number of the next 49th house. In each location, 30 households (residents) were selected for the research. This process was essential to obtain true representation of the entire sample. Out of the 120 questionnaires sent out, 78 were returned representing a 65% response rate.

Beneficiaries' Relative Satisfaction Indices

A 4-point Likert-type Scale was used to determine the beneficiaries' levels of satisfaction with regard to the housing unit and the overall housing situation. The scale reads as follows: 1=Very dissatisfied, 2= Dissatisfied, 3=Satisfied and 4=Very satisfied. The 4-point Likert-type 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-type 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 was assigned to each of the responses ranging from one to four for the responses of 'very dissatisfied' to 'very satisfied'. This is expressed mathematically as:

$$RSIj = \frac{\sum_{i=1}^{N} aij}{\sum_{I=1}^{N} Aij}$$

Where:

RSIj = relative satisfaction index for criterion "j"
N = Number of respondents
aij = actual score on the four-point satisfaction scale by the "ï"th respondent on the "j"th criterion
Aij = The potential score (or the maximum score that respondent "ï" 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:

$$\text{RSI (on a four-point scale)} = \frac{1n1 + 2n2 + 3n3 + 4n4}{\Sigma N}$$

Where;

n1 = number of respondents for very dissatisfied.....

n4 = 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;

$$RSI = \frac{1n1 + 2n2}{N}$$

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

FINDINGS AND DISCUSSION

Figure 1 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 outdoor environment.

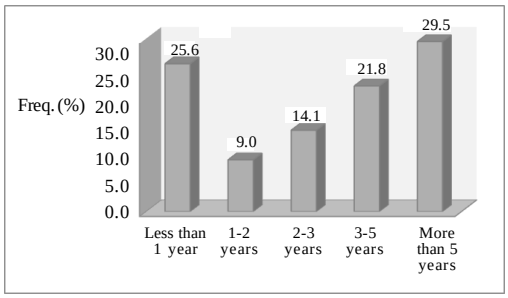

Fig. 1. Length of stay in housing unit

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

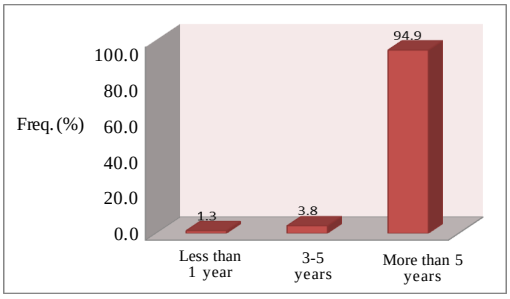

Fig. 2. Intended duration of stay in housing unit

About 94.90% indicated that they intend to live in the housing units for more than five years whilst 1.30% indicated they intend not to live there 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; as most of them have been living in the houses for a long time.

Table 1 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. This findings supported studies by Charlton and Kihato (2006) and Tissington (2010) where they found that a majority of the developed low-income houses in South Africa seldom meet the expectations of the eventual occupants.

Also, 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 crack. Hence, 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 interior (2.70),

Table 1: Relative satisfaction indices for the four Housing Subsidy Schemes (in descending order of lesser satisfaction)

Building aspects	*Ivory Park (N=20)*	*Rank*	*Diep-sloot (N=20)*	*Rank*	*Kanana Ext 12 (N=18)*	*Rank*	*Reige (N=20)*	*Rank Park aver-*	*Weigh-ted rank age (N=78)*	*Sub-group*
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

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, because the units were not hot in winter, nor cold in summer. Respondents expected a housing unit that would protect them from the elements, especially the harsh, cold winter. According to the World Health Organization (2004), 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 (WHO 2004).

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 some 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 they 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 in and most were not partitioned and could not accommodate all the 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 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 factors in the house. The social factors, the residents were more satisfied with is the safety in the unit (67.95%) and safety around the unit (61.54%).

Findings also show 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%), interior 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%). The study supported findings on a study conducted by Moolla et al. (2011) where it was found that the residents in a low-income housing location (Braamfischerville- South Africa), where dissatisfied with the physical factors of their units. This according to Thale (2001) and Cox (2008) is because of the predetermined floor area of 30m² which the housing construction are based. This was also the case in the present locations surveyed for the study.

Despite the residents were not all satisfied with the physical and social factors in and around the unit; when they were asked of their expectation prior to the housing units were allocated to them and after, findings revealed 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. These findings were 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 the community affected by housing development, to facilitate the active participation of all relevant stakeholders in housing development.

Nevertheless, respondents indicated that their expectation for a house that would improve their living conditions from shacks (slum housing) was met (87.18). Also they reported that they now had more comfort than their previous living environment provided (83.33).

Table 2: Occupants' relative satisfaction

Building elements	*Satisfied*	*Not satisfied*
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

These findings supported the 1948 Universal Declaration of Human Rights accord, which informs that everyone has a right to a standard of living that is adequate to the health and well-being of himself [herself] and his [her] family; and General Comment 4 1990; paragraph 8 of the Committee on Economic, Social and Cultural Rights which defined the concept of adequate housing, and elaborate the wordings of Section 26(1) of the South African Constitution.

Other criteria were better sanitary systems (56.41) and cleaner environments (53.33), which were all expectations they had before the houses were allocated to them, as shown in Table 3. Only four elements out of ten were met, as opposed to the original intended expectations, before allocation of the houses.

Literature (Darkwa 2006) states 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 the lesser of their expectations being met. Also, residential satisfaction being a subjective evaluation which relies heavily on the beneficiaries'

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

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 improved living conditions from shack living and more comfort than previous living, that beneficiaries are thus satisfied with the overall housing condition, even though most of their expectations were not met. Therefore, the physical and social factors which influenced the occupants' housing residential satisfaction in the four housing subsidy locations are: the number of bedrooms, size of the unit, space in the unit, position of the bedroom, position of the unit in the neighbourhood, and the condition of the exterior and interior finishes, ventilation in the unit, noise level, privacy in the units, safety in the units and around amongst others as specified in Tables 1 and 2.

Hence the present study agrees with Lazenby (1988:55) theorization of housing satisfaction as the "level of satisfaction with a specific house within a chosen residential, physical and social environment, as well as its specific housing attributes."

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 more satisfied with the social attributes in their housing units and the neighbourhood, but not satisfied with the physical attributes; except in the case of the safety in and around the unit. Also, despite the majority of the respondents' expectation not being 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 reported that their quality of life had increased because the provided houses had given them improved living conditions and they now lived in a cleaner environment. Thus, the Department of Human Settlement's objective of the broader housing vision in promoting social cohesion and improving quality of life for the poor is being achieved, as findings showed.

RECOMMENDATIONS

Based on the foregoing, the following recommendations are thus made in order to increase the satisfaction level of beneficiaries. Firstly, meaningful consultation should be held with individuals and communities 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 administrators of the subsidized housing policy in the Gauteng Province should conduct wider studies and thorough needs analysis of the beneficiaries of a proposed housing subsidy development, to understand their needs and expectations prior to the construction of the houses.

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. It is also recommended that informal economic activities should be supported in housing projects as more housing subsidy beneficiaries depend on informal economic activity as source of income. Possible ways of doing this include: designing of houses that are suitable for home-based enterprises; provision of appropriate public spaces for informal markets; also, the Department of Human Settlement should move beyond the progressive realization of the right to adequate housing as contained in the South Africa Constitution, to the use of the housing to improve the lives of the citizens. This is because the sustainability of the process will be difficult to maintain at the long run if the citizens are not empowered to take responsibility for their own housing with support from the government. 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.

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