International Journal of Housing and Human Settlement Planning
ISSN: 2455-8516(online)
Vol. 1: Issue 1
www.journalspub.com

Appraising Residential Satisfaction Indicators in Emerging Cities of India (Case: Bhopal, Madhya Pradesh)

Bhavna Shrivastava*, Yogesh Garg, Nakul Dhagat
Department of Architecture and Planning, MANIT, Bhopal, Madhya Pradesh, India.

Abstract

The paper comprises of residential satisfaction parameters. The issue is subjective, as residential satisfaction alters with person to person and surroundings. For convenience we chose cities which were on verge of transformation into metropolitan cities. Research says, residential satisfaction is directly related to housing quality levels i.e. qualitative and quantitative both ways. Quantitatively, residential satisfaction is associated with the cost of living, location, social networks, public transport, and familiarity with area and support services as well as physical conditions of residence. The paper evaluates the residential ambiance of four private housing colonies in Bhopal. The methodology involves an expert rating appraisal, a survey of residents' satisfaction. Data for residents' satisfaction was acquired by structured questionnaire administered on a systematic sample of 80 household heads, from a sampling frame housing units. The quantitative data were analyzed. Deciding various requirement and parameters for designing site and built-up areas based on socio economic nature of targeted population for practicing row housing. The results also showed that 62 per cent of the physical characteristics of the residences are highly correlated with resident's satisfaction. This information will enhance the skills of private developers, architects and housing administrators to ascertain specific actions that can maximize more satisfactory housing provisions and minimize dissatisfaction as much as possible.

Keywords*: Residential satisfaction, housing quality levels, residential ambiance, survey of residents, satisfactory housing provisions*

****Author for Correspondence: E-mail:*** *srivastav.bhawna@gmail.com*

INTRODUCTION

Residence is an inherent need for human entity. Its importance in urban areas has risen due to increased encumbrance of population resulting high densities. Residential satisfaction plays a critical role in measuring quality of life. Until 1980's, construction was done individually, consulting an architect as per requirement, resulting high levels of satisfaction. Site development and provision of plots are generally accomplished by government/semi government agencies like Housing board, Development Authorities. But, due to exponential growth of cities during last 20 years, these agencies are unable to match up with the housing requirements. As a result, nowadays major chunk of housing development is with private builders and colonizers. The development including site and building is mostly prototype, considering few housing options based on area considerations with their costing in ☐ per sq ft. Generally it's observed that there's a huge disparity between their promises on quality and development of site amenities and ground reality that customer faces. The question then arises, about residents' satisfaction level of the customer living in it. Despite an increase in research on evaluation of residential

 © JournalsPub 2015. All Rights Reserved

areas, exiguous have paid attention on identification of components that influence the levels of residents satisfaction. This research aims to identify the most prominent indicators associated to their satisfaction or dissatisfaction level. The paper includes the understanding of physical, social and economic indicators involved in residential satisfaction.

LITERATURE REVIEW

Ukoha and Beamish (1997) contrived on effects of environment on human and articulated its influence on human psychology being unquestionable, although the essence and character of this influence has not as yet been fully clarified[1]. The consequences of this influence, both in the sphere of the mental life of an individual and social pathology, haven't yet been fully recognized. This is partly because the results will come to notice with time, so the connection between the results and historical potential causes is almost forgotten or disregarded[2].

Evaluating housing projects is essential part in the process of designing the built environment[3]. The evaluation could be on a number of different bases, one of them is made through dwellers own judgment and assessment of the various components of their settlements. The success of a particular housing project also, to a large extent, depends on assessing the environmental quality and its evaluation[4]. Study by Frances M. Carp on impact of improved housing on morale and life satisfaction with life as well as with housing tends to improve among elderly person who move to better living environments[5]. The Lehman Quality of Life Scale has been used primarily to assess satisfaction with housing in studies of residential services. Hillier and Hanson's in 1984 worked on effects of housing morphology on customer satisfaction levels and they gave syntactic analysis method, called the Gamma Analysis method[6]. An evaluation study done by Rapaport in 1990, introduced Environmental Quality Profiles (EQP) technique, to illustrate dwellers' response to different attributes of a particular environment[7].

Compilation of above literature concludes that elements of residential environments should include characteristics of the neighborhood and community, such as the physical conditions, locations and proximity of support services, proximity to informal supports including family and friends, accessibility and usability of transportation, and security concerns[8]. Housing isn't restricted to the built structure but it also includes the surrounding environment and community facilities with services at neighborhood levels such as the physical condition safe walking paths, location and proximity of support services, the quality of lighting, ventilation, pavements, availability and adequacy of nearby open and green spaces, proximity to informal supports including family and friends, accessibility and usability of transportation, and security concerns[9–11]. Process identifying residential satisfaction is very complex as satisfaction levels vary from person to person based on their individual expectations, needs and affordability.

METHODOLOGY:

For appraising residential satisfaction parameters of flourishing metro cities was selected as study area. List of indicators is initially created through extensive literature review. Grouping is done for selected 37 parameters under seven indicators *viz.* economic, location, transportation, social, physical, infrastructure and others.

Economic indicators consist of rise in value of property (due to % of rise in value during 2 years) in nearby areas. This

indicator affects both colonizer as well as consumer (price of properties in nearby areas also other ambitious residential project in nearby areas). Consumers occupation level (monthly or annual income of a family is directly related to buying capacity of the family) and monthly EMI are also important parameter. Banking facilities and EMI's (Leading Housing Finance organizations have a widespread network all over the Country giving out loans to customers for housing) presented an attractive option to the banks to channelize their funds through housing scene.

Location indicators consist of development scale (Development activity in last two years), overall appearance (view of nearby colonies like height of buildings, elevation, facilities, treatments, maintenance, open areas, roads, and green area), nearby surroundings and accessibility to amenities (like proximity to school, market place, hospital/ health care facility, bank, ATM counters, place of worship, central business district, milk parlor, and working place).

Transportation indicators consist of width of approaching roads, layout of roads and quality of roads along with proximity to public transport (sufficient width of approaching roads with parking spaces and turning radius, width of carriage way and footpath, closed tunnels for rain water disposal system).

Social indicators consist of social contacts, value (for social status), neighboring structure (well educated society), and belongings/ownership. Society and its standard of living is important in residential satisfaction. Society gives societal symbol to human; it defines contentment of human being and plays a great role in healthy growth of children. Social status of colony enhances self-esteem and thus increases residential satisfaction.

Physical indicators consist of size of plots/built up area, organization (planning)/spatial arrangement, qualitative aspects of construction, aesthetics, interiors and finishing materials.

Infrastructure indicators consist of public water supply system, common waste disposal facility, provision of rain water harvesting and electricity supply (physical planning like spatial arrangement, open areas, sizes of rooms, will give healthy home environment). Organized planning with habi Table spaces, naturally well-lit and ventilated spaces are essential requirement of residential planning.

Remaining other indicators consist of green areas/plantation, hygiene, surroundings, vastu, entrance gate, water bodies in nearby areas and security system. Maintained green cover is essential for toddlers activities, walkways and meditation for release stress and tension along with recreational areas. Coordination between built up mass and its surroundings is utmost important parameter for residence satisfaction of all age group.

The Study Area Bhopal

Bhopal being a metropolitan city in the heart of India is well connected with rail, road and air to the major cities of India. It has a population of 17.95 lakhs[12] with net residential density 63 persons per hectares and gross residential density 80 persons per hectares. Initially, it was an administrative hub being a capital but now it has developed as a commercial, educational, industrial, and political metropolis. Spatially, residential areas are mainly divided into three categories viz. congested residential colonies in the old city, colonies developed after 1956 when Bhopal was being developed as capital of Madhya Pradesh and decade old

development along main highways. Land cost of residential areas ranges from Rs. 5,000–2,500 per square feet in old city, and from Rs. 4000–Rs. 2000 per square feet in colonies developed after 1956. Rate of residential properties is approximately Rs. 1500–Rs. 800 per square feet in a decade old colonies. About 88 % of families live in independent houses and rest 22% in apartments of high rise buildings, leaving apart squatters and pavement dwellers. Due to reasonable land prices with rapid growth as compared to other Megapolitan cities, major infra structural multinational companies of India started emerging and started huge investments.

Evaluating the Residential Satisfaction Indicator

For evaluating residential satisfaction parameters of flourishing metro cities, Bhopal was selected as study area. Deliberations and discussions were then done with stake holders such as town planners, developers, colonizers and builders etc. As satisfaction parameters also contain a component of dwelling unit satisfaction, architects, contractors and interior designers are also included in the discussions. After the discussion list of 37 parameters were finalized. Primary survey was then conducted in four colonies of Bhopal to get the first hand information regarding opinion of dwellers on the selected indicators. From the 4 selected colonies 80 families were interrogated to get the opinion of all age groups including senior citizens, women and children. They were asked to rate the selected indicators in the 5 point Liker scale. In the scale, 1 signifies very low, 2 are low, 3 is Average, 4 are high and 5 is very high.

The data collected was analyzed using mean, mode, standard deviation and skew were used to compare the factors. The results were tabulated. Mean score for each factor is given with respective standard deviation. Since there is no major deviation in the standard deviation the mean score can be considered as an important tool to compare the factors. Survey data collected was analyzed using descriptive statistics range; variance and skew were used to compare the factors.

Table 1: *Descriptive Statistics for Economic Parameter.*

Parameters	**Mean**	**Standard deviation**	**Median**	**Mode**	**Max.**	**Min.**	**Skew**
Rise in value	4.45	0.875	5	5	5	2	–1.49
Price of properties in nearby areas and Ambitious residential project in nearby area	3.54	0.951	3.5	3	5	2	0.034
Occupation level of families	3	0.889	3	3	5	2	0.416
Banking facilities and EMI	3.87	0.66	4	4	5	1	–0.84

Table 1.for economic parameter indicates that rise in value has maximum mean of 4.45 with least standard deviation 0.87 and range 3 indicates least fluctuation among respondents with standard deviation 875 and skew –1.49. Negative skew shows the maximum respondents have consistent opinion towards near of Bell curve. Thus, we can infer that the respondent have a consistent opinion about these parameters. Respondents were satisfied because of rise in property value. Banking facilities and EMI has maximum mean of 3.87 with least standard deviation 0.66 and range 4 shows the least fluctuation among respondents with standard deviation 0.66 and skew –0.84. Ambitious residential

project in nearby area has third highest mean value.

Table 2: *Descriptive Statistics for Location Parameter.*

Parameters	Mean	Standard deviation	Median	Mode	Max.	Min.	Skew
Development scale	3.79	1.26	4	5	5	1	–0.89
Overall appearance	3.47	1.51	4	4	5	1	–0.77
Proximity to school	2.54	1.4	2	2	5	1	0.6
Proximity to market place	3.11	1.3	3	3	5	1	–0.34
Proximity to hospital/ health care facility	3.47	0.323	4	5	5	1	–0.5
Proximity to bank	3.7	1	4	4	5	2	–0.11
Proximity to ATM counters	3.4	0.87	3	5	5	1	0.026
Proximity to place of worship	2.4	1.36	4	4	5	1	–0.4
Proximity to milk parlor	3.4	0.95	4	5	5	1	–0.5
Proximity to central business district	3.86	0.65	4	5	5	1	–0.48
Proximity to working place	3.68	0.95	4	5	5	1	–0.52

Table 2 for location parameter indicates that out of the eleven parameters the proximity to central business district has highest mean value 3.86 with –0.48 skew. Here standard deviation is above side 0.65 simultaneously the development scale also has second highest rating with 3.79 mean values and here also standard deviation is 1.2. Proximity to working place, hospital/ health care facility and ATM counters has also had consistent mean value.

Table 3: *Descriptive Statistics for Transportation Parameter.*

Parameters	Mean	Standard deviation	Median	Mode	Max.	Min.	Skew
Width of approaching roads	3.77	0.844	4	4	5	1	–0.57
Layout of roads	3.1	1.17	3	3	5	1	–0.34
Nearby public transport system	3.47	0.87	4	4	5	1	–1
Quality of roads	2.7	1.15	3	3	5	1	0.14
Nearby petrol pump	3.43	1.33	3	5	5	1	–0.25

Table 3 is for transportation parameter indicating, out of the 5 parameters width of approaching roads and nearby public transport system has maximum mean of 3.77 and 3.47 with least respective standard deviation 0.84 and 0.87. Thus, we can conclude that the respondents were satisfied because of sufficient width of approaching roads and nearby transportation system.

Table 4: *Descriptive Statistics for Social Parameter.*

Parameters	Mean	Standard deviation	Median	Mode	Max.	Min.	Skew
Social contact	3.22	1.05	3	3	5	1	–0.23
Social status of colony	3.31	0.78	3	3	5	1	–0.01
Neighboring structure (Well educated society)	2.1	1.15	2	1	4	1	0.19
Belongings/ownership	3.56	0.76	3	3	5	1	–0.49

Table 4 is for Social parameters, which are of utmost importance for residential satisfaction. In any built environment, economic values and social parameters have 20% and 80% contribution respectively. In the above Table belonging/ownership has highest mean value 3.56. Social status of colony has second highest value of 3.31. So we can conclude that respondents have consistent opinion about these indicators.

Table 5: *Descriptive Statistics for Physical Parameter.*

Parameters	Mean	Standard deviation	Median	Mode	Max.	Min.	Skew
Parameters of plots	3.27	1.11	3	3	5	1	–0.1
Design and construction of housing unit. Planning and spatial arrangement.	3.8	0.741	3	3	5	1	0.21
Qualitative aspects of construction	3.43	0.891	4	4	5	1	–0.73
Aesthetics(elevation of residents)	3.63	1.01	4	4	5	1	–0.8
Interiors	4.02	0.81	4	4	5	2	–0.57
Vastu based design	2.97	0.728	3	3	5	1	–0.28

Table 5 is for physical parameters, where out of 6 parameters, interiors have highest mean value of 4.02 and least standard deviation 0.81. Design and construction has second highest mean value 3.8 and standard deviation is 0.741. Positive skew shows the respondents opinion towards right side of curve. Thus, we can infer that respondents were satisfied because of good interiors, organized planning, aesthetic value, good quality of construction, size of plots.

Table 6: *Descriptive Statistics for Infrastructure Parameters.*

Parameters	Mean	Standard deviation	Median	Mode	Max.	Min.	Skew
Public water supply system	3.54	0.955	4	4	5	1	–0.63
Common waste disposal facility	3.15	0.967	4	4	5	1	–1.1
Provision of Rain water harvesting	2.59	1.33	3	1	5	1	0.095
Electricity Supply (Hours of power cut)	3.13	0.618	3	3	5	2	0.637

Out of the 4 parameters, Public water supply system has maximum mean of 3.54 with least standard deviation 0.955 which shows the least fluctuation among respondents and skew –0.63. Thus, we can infer that the respondents were satisfied because of good quality and sufficient portable water supply system.

Table 7: *Descriptive Statistics for Other Parameters.*

Parameters	Mean	Standard deviation	Median	Mode	Max.	Min.	Skew
Green areas / plantation	2.5	1.26	2	2	5	1	0.324
Hygiene	3.13	1.39	3	3	5	1	–0.15
Maintained open spaces inside the colony	3.36	1.37	3	3	5	1	–0.38
Entrance gate and openings	3.06	1.25	3.5	3	5	1	–0.4
Water bodies in nearby areas	2.31	1.1	3	4	5	1	0.011
Security system	3.76	0.899	3	3	5	2	0.034

Table 7 is for other important parameters which are essential for residential satisfaction. Out of the 6 parameters, security system has highest mean value 3.76 with least deviation 0.899 indicating least fluctuation among respondents with skew 0.034. Maintained open spaces inside the colony have mean value of 3.36 with standard deviation 1.37. Respondents were satisfied because of good security system and maintenance, nearby water body for recreational activities and mental peace. There are green areas have 1.26 standard deviation with 2.5 mean indicate the consistent opinion about these parameter.

CONCLUSION

Lack of residential area, poor ventilation, unhygienic conditions and unsafe surroundings lead to slow prosperity of human life, a person when not in ease with living conditions experiences decrease in efficiency levels to perform[13–14]. Out of seven indicators physical indicators were found to be most critical. Within which good interiors, design and construction and parameters of plot were found to be most important. Among other indicators rise in value, banking facilities, development scale, proximity to central business district were found prominent among residents[15]. The above research appraised the essential characteristics that contribute to residential satisfaction. The most dominant role is played by quality of the physical environment. Through the review of relevant literature and statistical tests, the research reveals the subsisting relationships between user response and physical characteristics of the residential buildings. If there is proper coordination between various satisfaction indicators and their parameters like physical conditions of residence, affordable cost of living, location aspects like proximity of support services, social indicators like proximity to informal support including family and friends, accessibility of transportations, amenities and security concern, accordingly the level of residence satisfaction will rise.

REFERENCES

1. Ukoha O, Beamish J. Assessment of Residents' Satisfaction with Public Housing in Abuja, Nigeria. *Habitat International.* 1997; 21(4): 445–60p.
2. Sungur CA, Cagdas G. Effects of housing morphology on user

satisfaction. 2003. Available at http://www.spacesyntax.net/symposia-archive/SSS4/shortpapers.posters/Sungur_Cagdas.pdf , Aragones JI, Garling T, Guido F. Residential environments: choice, satisfaction, and behavior, *Bergin & Garvey, Westport*. 2002, 20.

3. Burt ME. A Survey of Quality and Value in Building. *Building Research Establishment.* 1978.
4. Carp FM. Impact of Improved Housing on Morale and Life Satisfaction, Oxford Journals: *The Gerontologist.* 1975; 15(6): 511–15p.
5. Hillier B, Hanson J. The Social Logic of Space, Cambridge University Press, Cambridge, NY, USA. 1984.
6. Rapoport A. Environmental Quality and Environmental Quality Profiles', in Wilkinson, *Quality in the Built Environment, Conference Proceedings*, July, 1989, Newcastle upon Tyne: Open House International Association. 1990.
7. Cattaneo MD, Galiani S, *et al.* 2007. Housing, Health, and Happiness, World Bank Policy Research Working Paper No. 4214, Social Science research Network. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=981822, Kwasi OA. Housing and urban poor, Batiment. *International Building Research and Practice.* 1990; 18(2): 116–20p.
8. Luis DS. Housing Satisfaction, Homeownership and Housing Mobility: A Panel Data Analysis for Twelve EU Countries, IZA Discussion Paper No. 2318, September 2006, *The Open Access Publication Server of the ZBW,* Available at http://www.econstor.eu/dspace/bitstream/10419/33744/1/518343529.pdf,
9. Muoghalu LN. Subjective Indices of Housing Satisfaction as Social Indicators for Planning Public Housing in Nigeria. *Social Indicators Research.* 1984; 15(2): 145–64p.
10. Provisional Population Totals. *Census of India 2011*. The Registrar General & Census Commissioner. Government of India. Retrieved 2013–03–12.
11. Savasdisara T. Resident's satisfaction and neighbourhood characteristics in Japanese urban communities, Landscape and Urban Planning. 1988; 15(3–4):201p. Seilheimer T.A., Doyal G.T. Self-efficacy and consumer satisfaction with housing. *Community Mental Health Journal.* 1996; 32(6): 549–59p.
12. Serrano Diaz L. Disentangling the housing satisfaction puzzle: Does homeownership really matter? *Journal of Economic Psychology.* 2009; 30(5) 745–55p.