International Journal on Emerging Technologies **5**(1): 1-7(2014)

ISSN No. (Online) : 2249-3255

Quantitative Approach for Understanding Perspectives on Livability in Indian Context

Rama Umesh Pandey*, Yogesh Kumar Garg** and Alka Bharat*

**Assistant Professor, Department of Planning,*
School of Planning and Architecture, Bhopal, (MP), India,
***Professor, Department of Architecture and Planning,*
M.A. National Institute of Technology, Bhopal, (MP), India,

*(*Corresponding author Yogesh Kumar Garg)*
(Received 15 December, 2013 Accepted 02 January, 2014)

ABSTRACT: Changing lifestyle and its various dimensions across social, economic, cultural and psychological parameters are now driving the change in livability with an increased pace. Planning and designing of residential areas is done by professionals as per their understanding of livability. However, the residents of these areas may have a different connotation for livable residential areas on account of their lifestyle or some other reason. This difference in perception of livability leads to exasperation amongst inhabitants towards the livable conditions of residential areas, despite best efforts of the professionals. The focus of this paper is to understand difference in perception of professionals and inhabitants respectively, in regard to importance of various livability attributes in one of the metropolitan cities of India. For evaluation, a randomly selected sample of 628 inhabitants from 35 residential areas were asked to express their opinion on importance of each 'livability attributes', preferred by professionals as being important for contributing towards livability. The perspectives of inhabitant's and professionals were then compared. The analysis confirms the difference in livability perception of inhabitants' and the livability provided in residential areas by professionals'. Further investigation is therefore required to identify appropriate livability attributes as per desired livability of inhabitants' in Indian context for inclusion in planning and design process.

Keywords: Livability; Lifestyle; Perception; Quantitatively

I. INTRODUCTION

Livability refers to the state of living environment, which must offer an acceptable quality of life to the inhabitants of a particular locale. Livability is herein defined as 'quality of life' as experienced by the residents within a city or region [1]. In a way, it denotes the sum total of deliverables available to an individual or set of individuals in a particular location, leading to their contentment in day to day life. Livability being a subjective notion, its gamut differs with different economic, social, cultural and local influences [2] thereby governing the inhabitants' impression and perception about livability. Though the interpretation of livability varies with time and place but the concept seems to share terms like "quality of life", "well-being" and "life satisfaction" all across. In the US, livability refers to overall 'quality of life' and 'wellbeing' whereas in UK, livability focuses strictly on local environment i.e. cleanliness, safety and greenery [2]. In Indian context the livability differs slightly from concept of developed countries though the essence remains the same. Developed countries take certain facilities for granted while having the same facilities becomes an attractive preposition for Indian people [3]. For example a grocery store with home delivery services within walking distance in a residential area, easy accessibility to a weekly vegetable market for fresh vegetables and fruits; are some of the important criteria for livability in India whereas these issues are not important in developed countries as the nearby departmental stores thereat serves the purpose of one stop shop. The fundamental goal of this paper is to identify the gap between understandings of livability performance parameters for evaluating livability of residential areas in the upcoming cities of India. Bhopal, the capital of Madhya Pradesh, India, was selected for the study as it is one of the major upcoming city of India with a wide metropolitan background, varied social and economic culture and was a part of Confederation of Indian Industry [3] study, "Livability index 2010: The best cities in India". Randomly selected inhabitants of 35 residential colonies were asked to provide their own definition of successful livability performance. Due to highly subjective and constantly evolving concept of livability, professionals and academicians were asked to provide their definition of successful livability performance. The definitions thus collected were matched with definition obtained through responses provided by inhabitants.

This paper describes the process that was used to define successful livability performance and match the professional's definition against the inhabitant's definitions of livability performance. The inhabitants' and professionals' opinions about successful livability performance of a residential development could then be used to retrospectively evaluate livability performance.

II. PROBLEM STATEMENT

India will witness a huge urban transformation over the next 20 years , the scale and speed of urbanization and high population growth will pose an unprecedented managerial and policy challenge on livability in residential areas. Currently Indian cities are home to 340 million people and the number is expected to increase to 590 million by 2030[4]. Provision of housing to increased urban population by 2030 would create demand for a large number of residential projects. The upcoming residential projects, if not planned for successful livability performance, would affect the future livability of these residential areas.

Livability is one of the critical emerging issues in the developing countries and got attention due to low standard of life in metropolitan cities. The cities that have high livability rating are those that have reinvented themselves, and managed growth and change to provide their citizens with a vibrant and livable environment [5]. Though efforts have been done to measure "livability" of Indian cities but little has been provided to gauge the "livability performance" of residential areas.

III. REVIEW OF PREVIOUS RESEARCH

Numerous studies have been conducted throughout the world to identify indicators that influence the livability of a neighborhood, city and a country. Researchers have developed various indices to gauge progress and to make comparisons between and among different cities, regions, and countries. The livability index is a system that monitors quality of life for a given environment using carefully selected social, economic, and environmental indicators [3]. These indicators ultimately help to measure different aspects of society. Though, there is a worldwide concern for improving quality of life and standard of living, but no consensus on what constitutes the most appropriate index. The selected indicators must represent the social, economic and environmental needs of the local community [6]. A British research has found that livability is related to the daily living environment and livability may conflict with sustainability if promoted with environment unfriendly manner [2].

Livability has become a global necessity for health, economic and social survival in agglomerations everywhere.

In the last 10-20 years a massive worldwide movement has transformed countless urban and township environments to make them far more livable [7]. In India too, the concept of livability is slowly gaining momentum.

The Confederation of Indian Industry [3] has recently prepared a livability index 2010 for Indian cities after a comprehensive study of 37 cities. Cities have been ranked on the basis of 8 identified indicators affecting livability in Indian context viz. Infrastructure and public services; Housing options; Economy; Socio cultural political environment; Medical and Health; Safety and Education. However, the study seems generic in the sense that the role of local factors and beliefs in influencing livability performance at the grassroots level in residential areas has not been taken into account. The perception of local populace about livability is important in identifying the key factors of livability which in turn will be useful in assessing successful livability performance.

Livability can be measured using a range of Livability Indices. The Economist Intelligence Unit's livability rating quantifies the challenges that might be presented to an individual's lifestyle across 140 cities worldwide. Each city is assigned a score for over 30 qualitative and quantitative factors across five broad categories: stability; healthcare; culture and environment; education; and infrastructure [8]. Other global measures include Mercer's Quality of Living Survey, the International Living Quality of Life Index and the United Nations Human Development Index. The Australian Unity Well-being Index measures personal well-being (e.g. standard of living, health, safety, community inclusion) and national well-being (e.g. social conditions, state of environment, business and national security)[9]. These indices produce a quantifiable measure of livability at a broader level rather than at the residential areas, building or dwelling level.

Peter and Lesley Brenner [9] developed a Livability Planning Checklist for municipalities of Tasmanian cities to assess whether a proposed development fulfills the requirements of up to date livability standards. The checklist includes nine broad categories of livability indicators – social interaction; economic viability; tourism and recreation; wellbeing for all; environment; safety and risk management; national and international treaties and guidelines; technical details; climate change. Though, the checklist was prepared for guiding the planning decision makers of Tasmanian cities but can also be used to identify indicators of livability for residential projects in India.

The B-Sustainable [10], a project of Sustainable Seattle is working towards achieving its goal of livable neighborhood through identified indicators for livability of residential areas.

According to this project, people want to live in neighborhood that are good places to raise their families and provides good connectivity; varied choices of housing and recreation; shops and services within walking distance; easy access to schools and open space; enough gathering places and parks; sense of safety; distinct character to meet the diverse and unique needs of the region's culture.

IV. METHODOLOGY

The common indicators of livability, identified through the literature review of previous research includes: social interaction places; infrastructure; public services; good connectivity; natural environment; safety; education; healthcare; cultural environment; recreation; shops;; housing options; cleanliness; walkability; and distinct characteristics. These selected indicators were then discussed with a group of fifteen professionals related to the field of planning to prioritize the livability indicators which they feel important in Indian context for assessing successful livability performance. Professionals working in the field of planning for more than fifteen years and well versed with local culture and living environment were invited.

It included: five academician's from the planning field; five planners representing the local government departments involved in planning decisions making and five were consulting planners in the city.

The focus group was first asked to shortlist the indicators and then asked to rank them in order of priority depending on their importance to livability performance in residential areas. The questionnaire was then developed for inhabitants for rating the selected list of indicators by professionals to capture their outlook on importance of each indicator in achieving desired livability in residential colonies. For capturing the data, thirty five residential colonies from seventy residential wards covering forteen zones of Bhopal, were identified. Residents were selected randomly for rating the indicators in scale of 1 to 8, where 1 was least important criterion and 8 the most important one. These 628 residents were approached personally to record their responses. Out of 628 residents, only 497 participated in the survey and rest declined to participate due to personal reasons. Questionnaire was filled up by family members who had responsibility for supporting and managing the family affairs. The collected data is then analyzed and results were drawn.

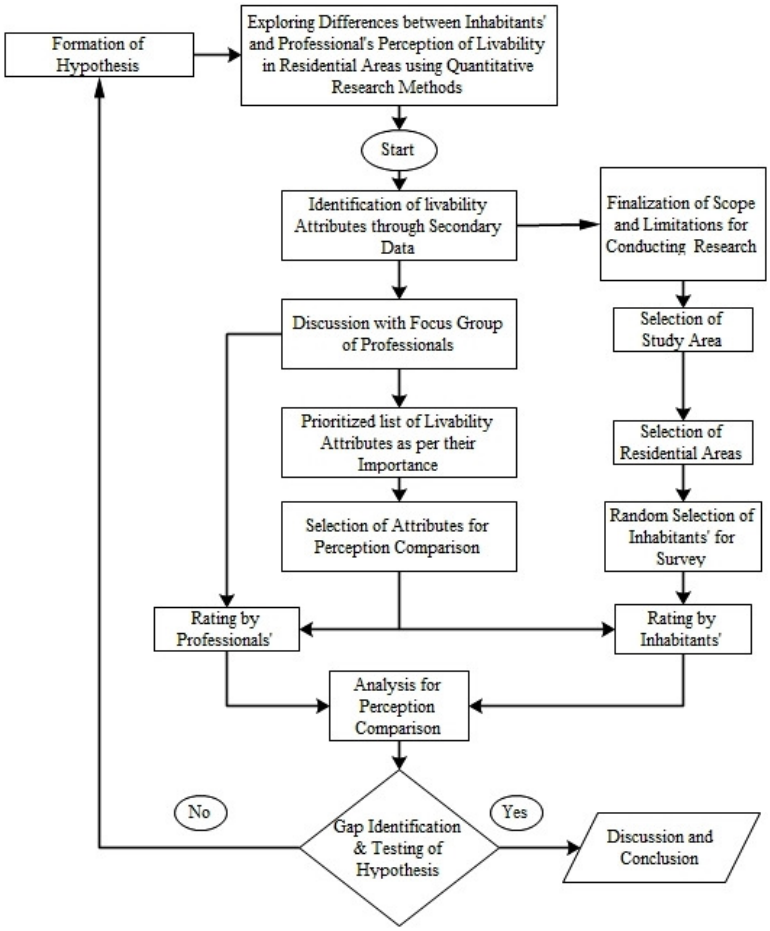

Fig.1: Methodology for exploring differences in opinion for perception of Livability.

V. DATA AND ITS ANALYSIS

In the first phase of the research, professionals were asked to shortlist the 16 attributes selected through literature review and assign weightage as per their importance in contributing towards livability. Professionals and experts prepared a prioritized list after thorough deliberations and finalized 8 attributes for comparison of perception. The identified attributes are: 1) infrastructure and public services; 2) recreation and amenities; 3) community spaces; 4) good connectivity; 5) cleanliness and natural environment; 6) distinct characteristics; 7) recreation and amenities; and 8) housing options. These 8 livability attributes were then rated by professionals for the importance of each attribute in contributing towards livability of residential areas. Table 1 presents summary of statistical description of professional responses for livability attributes of residential areas of Bhopal. The attribute "Good Connectivity" was rated as most important attribute by the professionals followed by "Infrastructure and Public Services" and "Safety" whereas "Distinct Characteristic" along with "Cleanliness and Natural Environment" was least preferred.

Table 1: Statistical description of professional's responses for livability attributes of residential areas of Bhopal.

Statistical Description	Livability Attributes							
	Safety	Recreation and Amenities	Community Spaces	Infrastructure and Public Services	Housing Options	Cleanliness and Natural Environment	Good Connectivity	Distinct Characteristics
Mean	6.07	3.93	4.93	6.93	3.00	2.20	7.40	1.53
Median	6	4	5	7	3	2	8	1
Mode	6	4	5	7	3	2	8	1
Range	4	6	4	3	2	3	3	3
Minimum	4	1	3	5	2	1	5	1
Maximum	8	7	7	8	4	4	8	4
Std. Deviation	1.100	1.668	.961	.884	.756	1.014	.910	.915
Skewness	.224	.121	.148	-.574	.000	.493	-1.626	1.821
Kurtosis	.106	-.476	1.005	.091	-1.077	-.588	2.359	2.895

Selected livability attributes, were explained to inhabitants to make them understand the context and meaning so that they can rate attributes wisely. Good connectivity was explained through the location of the residential area with respect to important amenities of the city, whether, the location is well connected to central business district, education institution etc. How important are services like, networking and physical conditions of internal roads; regular and adequate supply of water; proper surface drainage; efficiently laid and maintenance free sewer lines; operational rain water harvesting system; regular electricity supply. Safety was explained by psychological comfort, the inhabitant's feel within the campus. How safe are the roads for elders and kids within the campus? Whether the inhabitants can sleep through the night without bothering for their safety?

Availability and quality of recreation and other amenities include convenient shops, enough parking lots for inhabitants as well as visitors, nursery and primary school, health centers, green and open space within convenient walking distance. Community spaces include adequate gathering places like parks, clubhouse, temple, pedestrian walkways, playground and garden etc. to encourage social cohesion. Cleanliness refers to efficient collection and disposal of garbage, clean streets and pathways which encourages strolling within the campus. Housing options refers to availability of various types & sizes of housing units to suit the requirements of inhabitants. Residential areas should also reflect local culture and have some unique features within the campus to have their own identity? This explanation was included to minimize the variability in understanding livability performance, and to reduce the amount of subjectivity involved in rating livability attributes.

Randomly selected inhabitants of 35 residential colonies were then asked to rate the attributes and ratings of 497 respondents was compiled in SPSS. Statistical analysis of the compiled data was carried out to ascertain inhabitant's perception on livability attributes. Statistical description of responses were summarized in Table 2. for all eight livability attributes. The frequency of responses ratings shows the importance of each attribute from inhabitant's point of view in contributing the livability of residential colonies. "Safety" was rated as the most important livability attribute by 58% of the inhabitants whereas "infrastructure and public spaces" were rated second in importance by 44% of the inhabitants. The least important rating was given to "housing options" by 60% of inhabitants followed by "good connectivity".

Table 2: Statistical description of inhabitants responses for livability indicators of residential areas of Bhopal.

Statistical Description	Livability Attributes							
	Safety	Recreation and Amenities	Community Spaces	Infrastructure and Public Spaces	Housing Options	Cleanliness and Natural Environment	Good Connectivity	Distinct Characteristics
N	497	497	497	497	497	497	497	497
Mean	6.97	5.09	3.90	6.38	2.47	4.97	2.47	3.00
Median	8	5	4	7	1	5	2	3
Mode	8	6	4	7	1	5	2	3
Range	5	6	5	7	7	5	6	7
Minimum	3	1	1	1	1	3	1	1
Maximum	8	7	6	8	8	8	7	8
Standard. Deviation	1.546	1.324	.912	1.558	2.3767	1.454	1.720	1.720
Skewness	-1.481	-1.533	-.759	-1.918	1.527	.767	1.689	1.233
Kurtosis	1.036	2.264	2.746	3.940	.858	.022	1.817	1.544

Analysis of statistical description of mean response ratings by inhabitants' for selected livability attributes indicates that "safety", "infrastructure and public services", "recreation and amenities" and "cleanliness and natural environment" are more important as compared to other livability attributes. The hierarchy of selected livability indicators after analyzing mean and mode is 1) Safety 2) Infrastructure and Public services 3) Recreation and Amenities 4) Cleanliness and Natural Environment 5) Community Spaces 6) Distinct Characteristics 7) Housing Options and 8) Good Connectivity.

The inhabitants' response and professionals' response were then compared to find out the difference in the perception of important livability attributes in contributing towards livability.

Table 3 illustrates the comparative mean responses of inhabitants and professionals which indicate that safety, infrastructure and public services were rated highly by both.

The indicators like safety, infrastructure and public services, recreation and cleanliness were consistently considered important for livability performance by the inhabitants. Table 3 clearly illustrates that inhabitants cited safety as the most important indicator of successful livability performance with mean response of 7 in the scale of 1 to 8.

Table 3: Comparative mean responses of Inhabitants and Professionals for livability indicators of residential areas of Bhopal.

Livability Indicators	Professionals Response (Mean rating)	Inhabitant's Response (Mean rating)	Difference in Response (Mean Rating)
Safety	6.07	6.97	0.9
Infrastructure and Public services	6.93	6.38	0.55
Recreation and Amenities	3.93	5.09	1.16
Cleanliness and Natural Environment	2.2	4.97	2.77
Community Spaces	4.93	3.9	1.03
Distinct Characteristics	1.53	3.01	1.48
Housing Options	3.0	2.47	0.53
Good Connectivity	7.4	2.47	4.93

Safe campus encourages walkability which in turn improves social interaction; people can walk without fear at any time of the day, elders and kids walk around independently to parks, playground and grocery shops. Moreover they can have sound sleep during night. Safety and cleanliness were the two indicators that were not rated to the minimum value whereas all other indicators were rated minimum at least for once.

Infrastructure and public services with mean response of 6.38 too was given importance almost equal to safety. Pothole free roads with pedestrian walkways, sufficient street furniture and shade providing trees all along the pedestrian pathways add to the livability performance. Regular and sufficient water supply, electricity, well maintained sewer lines and surface drains, easily accessible communication network all contribute to livability performance. Nursery school, health center, sufficient parking lots, temple and day to day needs fulfilling shopping center are the public services rated highly for livability by inhabitants.

"Recreation and amenities" like clubhouse, green and open spaces, children park, joggers pathway and party hall are also rated highly (mean response 5.09) along with "cleanliness and natural environment" (mean response 4.79) by the inhabitants. Neat and clean pathways, lots of green spaces and trees, less of paved surfaces contributes to livability. Inhabitant's response was positive for various types of community spaces like parks, open spaces, playgrounds and community halls which are good places for interaction, encourages community living and social bonding. The "distinct characteristic" was rated moderately (3.01) followed by "good connectivity" (mean response 2.47) and housing options (mean response 2.47). All the interviewees had their own vehicles so for them connectivity by means of public transport is not very important indicator to determine livability. Standard deviation for housing options is comparatively higher than other indicators which indicate that respondents were inconsistent in rating and suggests that they were not sure whether housing option contributes to livability or not. Housing options in their opinion is least significant in contributing to livability performance as more number of people had rated it the lowest.

VI. CONCLUSION AND DISCUSSION

A comparative analysis of mean responses of inhabitants and professionals indicate that safety, infrastructure and public services were important for professionals and inhabitants confirming the importance of these livability indicators in deciding the livability of a residential project.

Recreation and community spaces were also rated both by inhabitants and professionals as moderate contributor to successful livability. The indicators like good connectivity, cleanliness and natural environment, distinct characteristics and housing options were perceived differently by inhabitants and professionals. Professionals viewed good connectivity and varied housing options as an important indicator whereas inhabitants perceived both indicators not so important in contributing for livability of residential areas. However, inhabitant's opinion about cleanliness and distinct characteristics were more positive than professionals. Inhabitants experienced these two as an important contributor to livability.

The utility of the comparative analysis is to understand: how successful livability performance is perceived by professionals and how the identified indicators of livability were judged by inhabitants. This analysis will help the planners and colonizers to improve livability of residential areas by giving due consideration as per the livability performance as perceived by the inhabitants.

REFERENCES

[1]. Timmer V. and Seymoar N.K.,2006, *"The livable city",* United Nations World Urban Forum'06, Vancouver Working Group Discussion Paper, p. 02.

[2]. Brook Lyndhurst,2004, "Livability & Sustainable Development: Bad Habits & Hard Choices", Final Report for the *UK Office of the Deputy Prime Minister*, London, 2004,(accessed 15 September 2010), http://www.communities.gov.uk/documents/corporate/pdf/142424.pdf

[3]. Confederation of Indian Industry, 2010"Livability index 2010: The best cities in India*", in Confederation of Indian Industry*, Northern Region , (accessed 17 June 2010), http://www.competitiveness.in/wp-content/uploads/2010/03/Livability-Report.pdf

[4]. McKinsey Global Institute,2010, "India's Urban Awakening: Building Inclusive Cities, Sustaining Economic Growth*",* McKinsey and Company, viewed 24 June 2010, http://www.mckinsey.com/mgi/reports/freepass_pdfs/india_urbanization/MGI_india_urbanization_fullreport.pdf

[5]. Yeun B. and Ooi G.L., 2009, "Introduction: World Cities —Challenges of Livability, Sustainability and Vibrancy" in *World cities : achieving livability and vibrancy,*O. Ling and B Yeun (ed.), ,World Scientific Publishing Co. Ltd,Singapore, pp. 1-12.

[6]. Carmichael A. , Gleason D., Lehrmitt R. and Luppino C., 2007, "City of Westminster livability index*",* Worcester Polytechnic Institute, London, (accessed 2 July 2010), < http://www.wpi.edu/Pubs/E-project/Available/E-project-022207-134352/unrestricted/City_of_Westminster_Livability_Index_Final_Report.pdf>

[7]. Brenner P. And Brenner L., 2007,"livability Planning checklist", Livability Initiative wake up call for *Tasmanian urban planning,* (accessed 10 October 2010), http://www.livability.info/_docs/Full%20Livability%20Planning%20Checklist.pdf

[8]. Gerrardbown, 2006, "Capitalizing on Melbourne's status as one of the world's most liveable cities*",* Committee for Melbourne: Livability report

[9]. Woolcock G., 2009, "Measuring Up?: Assessing the Livability of Australian Cities,"in *State of Australian Cities: National Conference*, urban research programme, Griffith University, Queensland, (accessed 5 November 2010) http://melbourne.org.au/static/files/assets/89b7362e/CFM_2006_Livability_Report.pdf

[10]. B. Sustainable project, 2008, "Goal: livable neighbourhood", in *Sustainable Seattle : Healthy communities, economics and ecosystems*, (accessed 7 July 2010), <http://www.b-sustainable.org/built-environment/livable-neighborhoods-and-communities>