Quality of Life and Cause and Effect Relationship with Resources and Facilities: Case Study of Selected Towns of Karachi

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Abstract: Karachi the megalopolis of Pakistan, with an ever exploding population due to a steady stream of immigrants is unable to provide resources and facilities to its occupants, therefore, a study of the Cause and Effect Relationship between quality of life, resources and facilities is an essential pre-requisite for Regional Planning. The study has put forward suggestions for improvement of quality of life based on first hand monitoring of local conditions observed in the area. The dissemination of literacy in the study area is of paramount importance in order to reduce disparities and to make better use of resources and facilities. Some shift or remodeling in town planning is also essential.

Key words: Land use and infrastructure, quality of life, resources and facilities, regional planning, recreational facilities, spatio-temporal

INTRODUCTION

Evaluation of quality of life of a population on a spatio-temporal basis is not only a basic pre-requisite for Regional Planning, rather it is common opinion that quality of life can be enhanced not only by improving standards of living which is dependent on the availability of basic needs like food, clothing and shelter but also provision of other necessary resources and facilities and vice-versa.

Quality of life is the product of the interplay of a number of factors e.g., social, economic, political, cultural and environmental conditions which affect human social development, which in turn depends on the physical resource base. Resource inadequacies and facility constraints are the cause of under development. The nature of the constraint, however, is highly dynamic and must be observed in relation to particular groups of people and specific locations. Not only is the characteristic of resource of overriding socio-economic significance to quality of life, but issues of control, use, allocation management and spatio-temporal availability and diffusion of these facilities are of dynamic importance for the residents of the concerned area but also for regional planners. Not only does quality of life depend on availability of Resources and Facilities, but also on whether the areas are 'planned' or 'unplanned'.

A variety of empirical studies on quality of life in urban areas around the world is presented, showing the impact of parks and play grounds on social and economic development and its role on urban planning (Yuan *et al.*, 1999; Sastor and Martins, 2007; Saltelli, 2007; Van Kamp *et al.*, 2003; Nuvolat, 1998; Graysan and Young, 1994). Case studies at a city level include Gatt (2003), European Committees (2000), Seik (2000), Giannias (1998) and Findlay *et al.* (1988). As they believe that improving the quality of life is one of the most important goals of public policies. The world wide growing tendency of populations to concentrate in cities is certainly a reason for the consolidation of an autonomous line of research on the quality of urban life. Current urbanization must be recognised and evaluated. Urban centres have become indisputable, economic and political players.

Study area: Karachi is a Division of Sindh Province (Sindh is divided into 5 Divisions i.e., (Karachi, Hyderabad, Sukkur, Mirpurkhas and Larkana) Karachi Division is divided into 18 towns for administrative purposes. All 18 towns are divided into 178 UCs (Union Councils). The 18 towns are Karachi, SITE (Sindh Industrial and Trade Estate), Baldia, Orangi, Lyari, Saddar, Jamshed, Gulshan-e-Iqbal, Shah Faisal, Landhi, Korangi, North Nazimabad, New Karachi, Gulberg, Liaquatabad, Bin Qasim, Malir and Gadap, shown in Fig. 1.
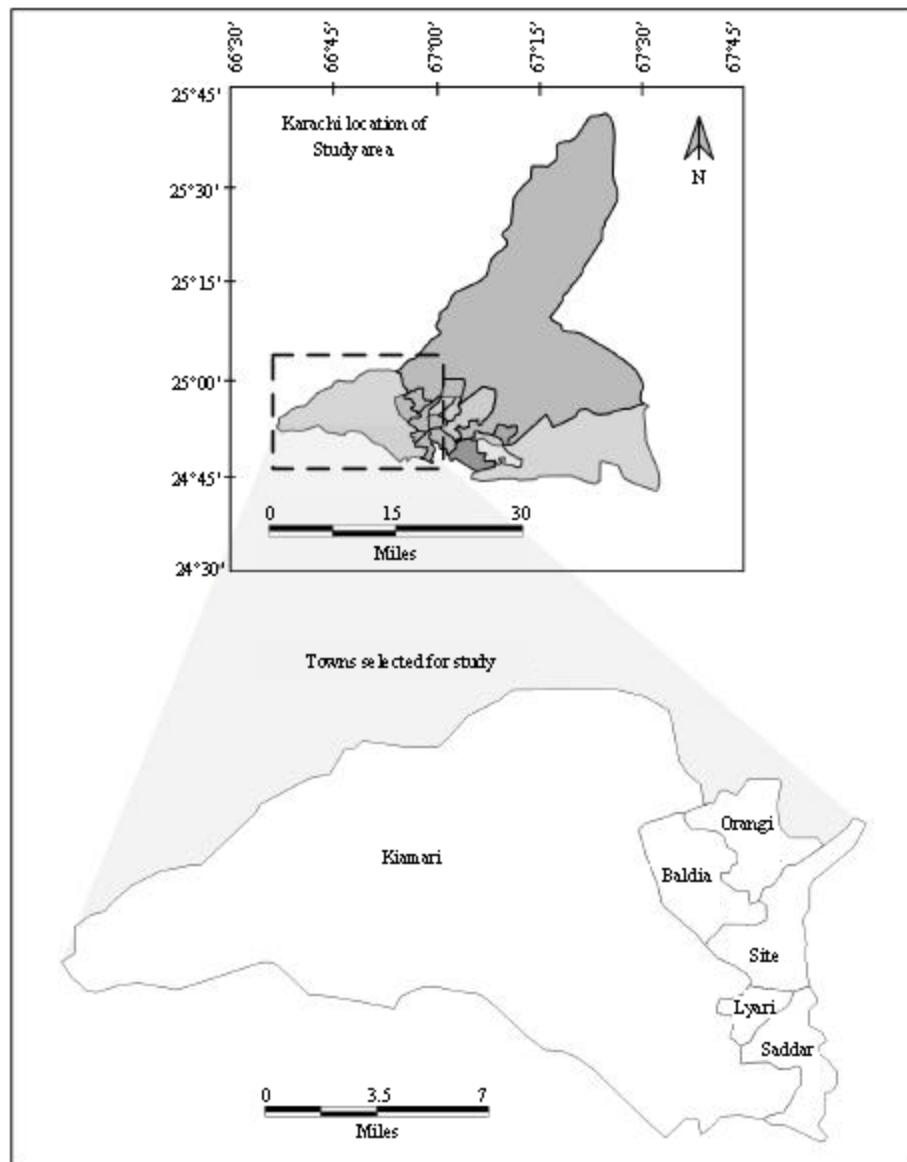

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Fig. 1: The devisions of Karachi

The study area comprises of 6 Towns of Karachi which are more than 90% urban and remaining part is rural. The towns of Baldia, SITE, Lyari and Saddar are totally urban, created in 2001, previously included in Districts West and South. This area lies between 66° 40' and 67° 34' East longitudes and 24° 45' and 24° 38' North latitudes and has a population of 3,199,973 persons according to the 1998 Census and contains 32.4% of Karachi's population.

Health, education and recreational facilities in these settlements are developed incrementally over time by the informal sector and remain inadequate and badly operated. At present it is estimated that approximately 50% of Karachi's population lives in informal settlements. These settlements are growing at a rate of about 9% as against a total urban growth rate of 4.4% (Hassan, 1999). In view of this observation, amelioration and improvement of conditions in these areas is of vital significance as such sectors are found in the present study area.

Objectives of the study: The study is multifaceted, based on a highly diversified approach including studies based on questionnaire, census studies and survey maps of Pakistan In this project an attempt has been made to obtain the following objectives:

- An assessment of availability of resources and facilities based on Questionnaire and Census data.
- An evaluation of the spatial disparities of quality of life based on Questionnaire and Census data.

- A major objective of this study is to demonstrate that through quality of life assessment socio-economic variables from Census data and questionnaire can be integrated through a GIS approach.
- Analysis of all the information collected from the different sources has been made for explaining the mechanisms and processes, which create and sustain territorial disparities in well-being.
- An evaluation of the spatial disparities in the life of the people in the light of prevailing societal values.
- The assessment of cause and effect relationship between quality of life and Resources and Facilities and last but not least,
- The prescription of remedial policies for minimizing the spatial disparities in quality of life.

MATERIALS AND METHODS

D.M Smith's works (1973, 1974, 1977, 1988 and 1994) on social indicators to identify areas of deprivation in cities and role of geography in providing social justice is well known as part of his Welfare Approach to Human Geography. GIS is now used to produce maps of well being and quality of life. A number of causative linkages between objective and / or subjective scores, levels of performance or satisfaction level, on indicators of well-being, social needs etc. have been made by researchers.

In this study 2 domains of spatial inequality have been investigated, conditions of quality of life (social-physical environment) and distribution of opportunities/ facilities (i.e., access to social and physical infrastructure). The resulting pattern reveals the degree of inequality experienced by the people. Spatial polarization and geographic inequality occur in urban areas around the world. However, in the cities of developing countries inequalities are particularly evident. The study area has been selected for a case study to describe and explain inequalities with the use of indicators and GIS analysis. Similar studies made by Burke and Afsar, (2003, 2005) are efforts in contributing towards forging ahead in research required in the study of universal applicability of the welfare approach and its linkages in socio-economic characteristics of urban environment.

There are 2 approaches to the study of quality of life in urban environment. The first deals with the living environment and involves the patterns of inequalities and opportunities which affect citizens through accessibility to services, facilities and amenities. Proximity to these is a key factor in improving living conditions. Other elements of the living environment include economic vitality and social equity, which encapsulate an infinite number of specific issues, for example, the quality and affordability of housing, availability of power and water, availability of recreation facilities etc.

The second approach to understanding urban quality of life, according to Perloff (1969) relates to the natural environment in urban spaces. This approach holds that amount of green space available affect the way we live. However, measuring these factors, for example noise or olfactory pollution and defining what constitute a good living environment or urban configuration is an inexact science.

Z-score model: No project can survive for long if the data produced are not put to proper use and these are possible by quantitative methods. The identification of broad spatial pattern of inequality requires the derivation of a single indicator or a restricted set of indicators measuring the major dimensions of the concept. There are several methods for inequality measurement. The Z-Score additive model is an easy method for analysis of inequality and other related studies (Burke *et al.*, 2006). The derivation of selected variables involves the transformation of data on individual variables into some kind of standard scores. This can be achieved in various ways including conversion into ranking and the standardization of the ranges, but the most common method is to use Z-Score. For observation 'i' on any variable, the Standard Score (Z $_i$) is given by:

$$Z_i = \frac{X_i - \overline{X}}{S}$$

Where,
X_i is the value for observation (i)

$$Xi = X - Xs$$

X is the value of variables which have been formulated for the study, Xs is the specific standard for each variable in the study area (i.e., the highest value of the variable)
$\overline{X}$ is the mean of the specific standards

$$\overline{X} = \frac{\sum Xs}{n}$$

n : The number of observations.
S : The standard deviation.

$$S = \sqrt{\frac{Xs - \overline{Xs}}{n - 1}}$$

This model has been applied in this study to measure inequalities of health and nutrition.

Firstly, the data has been converted into percentages and units i.e., variables. Secondly, all selected variables have been arranged in descending order (X).

Thirdly, highest value of each variable has been selected as specific standard for each variable in the study area (Xs).

Fourthly, the specific standard for each variable has been subtracted from the value of variables formulated (Xi).

Fifthly, the mean and standard deviation of the set of specific standards for the set of variables has been calculated.

Finally, Standard Score (Zj) has been calculated for each variable.

To remove negativity of Zj the values have been squared.

The Standard Score Additive Model has been used to develop a Composite Health and Nutrition indicator. The 8 selected variables require the addition of the Z-Score for the individual variables taken to measure them. The model is thus:

$$I_j = \sum_{i=1}^{K} Zij$$

Where,

I_j : The magnitude of the indicator for the district 'j'.

Z_{ij} : The standard score on variables (i) in the district 'j'.

'K' : The number of variables measuring the criterion in question.

The higher the Z-Sum for a particular zone the more developed it is in relation to other zones. The basic problem with this technique is that it assigns equal weight to all indicators. After constructing indices of quality of life indicators (effects) and Resources and Facilities indicators (causes), all the towns were ranked on the bases of such indices.

In this study a simply correlation (rs) technique is also applied for testing this hypotheses. The results of simple correlation (rs) and rank correlation (rc) are presented in the study. The simple correlations are based on the Z-Sum indices.

The formula for Spearman's Rank correlation coefficient is as follows (Skinner *et al.*, 2003):

$$rs = 1 - \frac{6 \sum d^2}{n^2 - n}$$

rs = Spearman's Rank.

d = Difference between ranks, squared.

n = Number of observations (pairs of data).

Of the many alternative aggregation methods, the most well known and most studied is the Borda rule. However, as it suffers from various limitations (Goodman and Markowitz, 1952; Fine and Fine, 1974) it has not been used in the present study.

Table 1: Sample size position

Towns	UCs	Population	Sample size
Baldia	8	406,165	58
Kiamari	8	383,378	56
Lyari	11	607,992	115
Orangi	13	723,964	106
Saddar	11	616,151	99
SITE	9	467,560	63

Factor analysis: The technique of Factor Analysis, initially developed by Charles Spearman a psychologist, as a means of analyzing the results from intelligence tests and later used by other disciplines, is a method of studying simultaneously the complex inter-relationships between many variables, as measured for many different observations and summarizing salient features of relationship in the form of a few basic patterns called factors.

Weinbach and Grinnell (2001) explain that researchers use factor analyses to perform several different tasks. One common use is to reduce the length of a measuring instrument such as a scale or index by eliminating items that are redundant, that measure the same indicator of a variable more than once. The present study of Factors Analysis was carried out on SPSS 13.Version.

The data and variables: The data is based on 0.1% sample of the total number of households in each town. The survey was carried out between October 2004 and March 2005. The sample was drawn following a multi stage stratified random sampling technique. The first stage of stratification was the Town. The town is an administrative unit of Karachi initiated in 2001. Eight towns were selected for the survey. In the second stage, within each town the sample was assigned to the Union-Councils in proportion to their population. Table 1 shows the sample size position.

Data sources and issues: In scrutinizing conditions for this study, it becomes clear that there were many issues about data availability and collection that could not be resolved, at least at the time of investigation. These include:

- The lack of comparable data over consecutive years. at intra-urban level except for Census data.
- Inconsistency of data.
- Data not being available at the Charges level.

These resulted in the omission of some indicators and highlighted the need for caution towards analyzing these indicators. Data has been collected from GoP District Census Report Karachi South 1998 and from the questionnaire surveys conducted.

Table 2: List of indicators and abbreviations

Quality of life indicators		Resources and facilities indicators	
Household Density (Houses/Sq.Km.)	HD	Per Capita Income (PKR)	PCI
Average Household size	AH	Population Density	PD
Literacy Ratio (10 Years and Above)	LR	Proportion of Govt. School to school going age population	GS
Working Women (%)	WW	Proportion of college to college going age population	C
Female Matriculates and above (%)	FM	Hospitals to I million population	H
Personal Business (Sample size)	PB	Parks and Playground (in meters) per 100 population	PP
Government Employees (Sample size)	GE	Electronic Media facilities per 1000 population	EM
House Ownership (%)	HO	Percentage of Electrified Houses to total houses	EH
		Percentage of Pucca Houses to total houses	PH
		Percentage houses with Potable Water	PW

The indicators of development: Khan and Zerby (1984) categorized development indicators into 2 kinds, namely:

- Quality of life Indicators.
- Resources and Facilities Indicators.

A great variety of indicators can be used to measure quality of life which combines both objective and subjective elements (Liu, 1970; Wallace, 1971; Szalai, 1980; Shelton *et al.*, 1983; Bederman and Hartshorne, 1984; Andrews 1986). Empirical city studies use, essentially, 2 types of indicators to evaluate the quality of life (Seik, 2000; Pacione, 2003). One type is quantitative indicators, which are used to measure concrete aspects that relate to environmental, economic or social conditions of a specific urban centre based on statistical data (Giannias, 1998; Bernell and Gabtex, 1992). The other type of empirical studies that should be mentioned comprises qualitative data, obtained from field surveys, where citizens are asked for their subjective "interpretation" of the various fields of quality of life.

A combination of indicators like household income or per-capita income and per-capita expenditure can serve as an adequate yardstick for assessment of standard of living but in Third World Countries their evaluation can be misleading for various reasons. In addition, neither of these measures captures such dimensions of welfare as health, life expectancy, access to public goods or common property resources. Availability of clean drinking water, for example, matters to ones standard of living, but it is not reflected in consumption or income as usually measured. Households with access to free public service are better off than those without, even though their income and expenditures may be the same. Furthermore, current consumption may not be a good measure of a household's, typical standard of living. Another problem is that different households in different localities may be subjected to different price rates. A study of Sri Lanka that allowed for this difference found that price variability made little difference to estimate of poverty (World Bank, 1990). On the ground of these circumstances the measure other than incomes has been included in the comparison of living standards of people in different

regions. In assessing, a community's quality of life, a multi-dimensional approach is applicable (Hajiran, 2006).

However, due to constraint of data and for simplification of the model the following indicators for development ranking by living standard of the people (Quality of Life Indicators) and governmental and self acquired factors of development (Resources and Facilities indicators) have been selected as shown in Table 2. The table shows the indicators along with their abbreviations.

SIGNIFICANCE OF INDICATORS

Quality of life indicators

Household density: It is the proportion of houses to area i.e. houses/sq.km. High density indicates congestion e.g. small plots and high rise apartments. Low density indicates large plot sizes and a better quality of life. Crowded households are considered a primary factor not only for the lower academic achievement, incidence of diseases, but also of juvenile delinquency (Kulkarni, 1984). Crowding is an indicator of housing need as well as affordability. Crowding is usually associated with low incomes and associated negative impact e.g. pressure on services and amenities and on the social and physical resources (Gatt, 2001) High household density is found in Lyari (14013), preceded by Saddar (4637) and lowest densities are found in Kiamari (1984) (15) preceded by Baldia (217).

Average household size: Visibly this is an indicator of the degree of congestion in houses, while socially it is an indication of the significance of large family sizes for socio-economic security. Highest values are recorded for SITE (7.3) preceded by Lyari and Baldia (7.0).

Literacy ratio: According to the 1998 Census (GoP, 1998) literacy is defined as the ability of a person who can read and write a simple letter in any language. Literacy ratio is computed as percentage of literate persons among the population aged 10 years and above. The literacy ratio in the study area is 59.23%. Social upliftment is highly dependant on literacy. The highest literacy ratio is in Saddar (75.17%), preceded by Orangi (62.85%) while Kiamari has the lowest (52.35%).

Working women to sample size population: The highest percentage of working women has been found in Baldia(5.0), preceded by Kiamari (4.68), SITE (2.29) and Saddar (1.85) while the lowest is found in Orangi (0.8). Women have been incorporated into the urban labor market in many different ways depending on the local economic and social conditions. They may range from highly educated, high quality intellectual class workers, household maidservants and menial service providers. They are mostly relegated to insecure and poorly paid positions. However, the occurrence of high level of literacy along with low level of working women in Orangi Town reflects the social nature of restriction on working women. On the whole the towns with lower literacy are showing higher working women.

Female matriculates and above: In Third World Countries which are not only economically backward but socially as well as culturally backward the education of females is a great achievement and they in turn help in alleviating the population squeeze as well as in changing the structure of "stimuli to labor" (Yanowitch, 1977). Education especially for girls has social and economic benefits for society as a whole. Educated women have more economic opportunities and engage more fully in public life (UN, 2005). In the study area Saddar town has the highest percentage of female matriculates i.e. 21.45%, preceded by Orangi Town i.e. 10.62 % and Lyari 8.25 %. This is quite in consonance with the literacy levels in general in the area.

Males with personal business: Having a personal business by virtue of its nature adds not only to the prestige of a person but also to his financial status, especially in Third World countries. In Third World Countries very few women own businesses and employ others (UN, 2005). The percentage of males with personal business is highest in Lyari (50.52 %) preceded by Orangi (42 %) and Baldia (35. 00 %). Although, Saddar is the lowest category indicating that the business class of Saddar are not residents of the area while the business activities of Lyari, Orangi and Baldia are characterized by small to medium sized, highly indigenous and localized

Male government employees: Government employment is a symbol of job security in Third World Countries and job security of males is an added boon for the person and his family. Highest percentage is found in Saddar (22.22%), preceded by SITE (17.24%) and Baldia (15%). Lowest is recorded in Lyari i.e. 6.31%. Saddar is the business hub of Karachi but it also has the highest percentage of government employees.

House ownership: Although, much of the statistical information on housing poverty is unreliable and incompatible, it is useful in illustrating trends over time and between regions. House ownership is traditionally seen as the most secure form of tenure and ownership of a house is the fundamental desire of most low income population. Levels of home ownership are used as a guide to population stability, community participation, the relative wealth of the community and changes in lifestyles and household patterns. The highest percentage of house ownership is found in Kiamari (90.62%), preceded by Baldia (87.50%).

RESOURCES AND FACILITIES INDICATORS

Per capita income: Wealth and income enable the acquisition of resources for the satisfaction of wants, thereby affecting the quality of life. While income is not the only determinant, it is an important contributor to the quality of life (Diener and Diener, 2002; Ferriss, 2002). In spite of the latest trends in the definition of income, the words some how reminds (even the layman) of gains measured in terms of money and of the age old proverb "money makes the mare to go" (Burke and Raza, 1986). Income is the key determinant of individual, family and community well-being and is the single most important modifiable determinant related to health and quality of life in general. Income levels indicate the ability of citizens to meet their needs and directly correlate with their conditions of health, education, social interaction, housing, leisure and general life style. All that matters for poverty reduction is high income growth for the poor, not how the growth compares to the growth of the non-poor (OECD, 2005). The highest per capita income enumerated is for Saddar (Rs. 26509.00) preceded by Baldia (Rs. 14876.03) and lowest for Orangi (Rs. 8923.42). Saddar is the oldest business hub of Karachi, while Orangi is an example of a 'Katchi Abadi'.

In the presence of overwhelming consensus that per capita income or related measures of well –being, the emphasis has now shifted to the identification of alternative measures (Rahman *et al.*, 2005).

Population density: Density of population is the number of people per unit area .This is called 'Crude Density'. Population density is an indication of the pressure of people on land or the degree of congestion and hence excessive utilization. Urban centers of Third World Countries are glaring examples of excessive utilization of scarce resources which is responsible for the increase of social and economic tensions leading to

multifarious negative behavioral expressions ranging from juvenile delinquency to crime and ethnic violence. The highest population density is in Saddar Town (28807 persons sq km^{-1}), while lowest is found in Kiamari (1060 persons sq km^{-1}). Saddar is not only the hub of business activities but also has highly dense residential population living mainly in apartments, while Kiamari is a coastal town with low density because of its humid climatic conditions, not congenial for health. It also includes the posh area of Clifton with large size plots and hence sparse population

Proportion of govt. Schools to school going age population: In Pakistan, Karachi, private school education is a lucrative business, while government schools are subsidized and within reach of majority of the people. The highest percentage of government schools is in Saddar (0.083%), preceded by Lyari (0.071%); lowest being in Orangi (0.038%).

Proportion of colleges to college going age population: Colleges to college going age group population has 2 aspects. Firstly, the number of colleges and secondly the proportion of college age group population. The highest proportion recorded is for Saddar (0.015), preceded by Lyari (0.01), lowest values are found for Baldia and Orangi (0.0056) and SITE (0.00485).

Hospitals population ratio: The data on hospitals includes government as well as private hospitals and the highest value for hospitals per one million population is for Saddar (i.e. 60), preceded by Orangi (29); lowest being for SITE (0.6). Hospitals in order to provide good service should be within easy access but Karachi hospitals are mainly concentrated in the Saddar area.

Area of parks and playgrounds per hundred populations: Open spaces are a contributor to the general health and well-being of a community. The availability of public open space to the urban population is not only an indication of the availability of fresh air but also space for recreation and rejuvenation. Maintenance of appropriate ratio of population to open green spaces in urban areas is of utmost importance from the physical, social, cultural, environmental and medical stand points. SITE and Orangi record the highest proportions741.0 and 629.30, respectively. Lyari and Saddar have lowest, 49.82 and 21.33, respectively, while Baldia and Kiamari record midway status as regards this indicator.

Proportion of electronic media facilities per thousand population: TV and Radio are popular means of recreation, entertainment and communication and have made the world a Global Village. Highest figures have been recorded for SITE (94.25%) and Baldia (90%) while lowest is in Lyari (52.63%). This not only depicts the quality of life, but standard of living as well.

Proportion of houses with electricity per thousand houses: Electricity is a source of light, heat, cooling and all manifestations of energy; it enhances our quality of life, making life very convenient and luxurious. Highest figures are found in Saddar (98.63%), preceded by Lyari (97.80%), while the lowest value is for Kiamari (83.61%). Although, electricity is meant to enhance our life styles, Karachi the mega polis is facing serious load shedding and power failures, thus adding on to the miseries of the Karachiites.

Proportion of pucca houses per thousand of population: Two types of houses have been identified in the census- 'Kucha' and 'Pucca' houses. 'Pucca' houses are an identification of well-to-do living standard, the spatial assessment of which reveals the disparity in levels of housing conditions. In the present study area highest proportion of pucca houses is found in Orangi (97.52%), preceded by Saddar (97.28%) while lowest is found in Kiamari (91.44%). However, the pucca houses of Orangi are not of very good quality but just fulfill the definition. It is an area of lowest per capita income in the present scope of the study.

Proportion of houses with potable water per thousand of houses: Water in Third World counties even in urban areas is available from a number of sources, e.g., tube wells, wells, hand pumps and even broken water mains etc. However, potable water, though it also is visibly contaminated maybe considered as the only partially safe source of drinking water. The highest proportion of houses with potable water per thousand of houses is in SITE (82.05%), preceded by Lyari (74.78%), while lowest is in Kiamari (44.19%), where women have to fetch water from long distances.

The correlation matrix of the 18 indicators selected for the study, shows highest positive correlation of H with LR (0.983918), FM with LR (0.979573), H with FM (0.965442); C with GS (0.934497).

The next high positive correlations found are between PCI and GE (0.879494), PB and HD (0.839181), PCI and FM (0.837272); GS and PD (0.815021).

High positive correlations are also found between EM and GE (0.798944); C and FM (0.787839); PW and EH (0.777209); H and C (0.770993); H and PCI (0.755076); PCI and LR (0.741683), GS and FM (0.727487); PW and PH (0.715545), C and PCI (0.715545); C and LR (0.710936).

Table 3: Rotated solution

S.No	Towns	Summation of Z-score (Rank)			Spearman's rank correlation (Rank)		
		Resources and facility (Causes)	Quality of life (Effect)	Composite	Resources and facility (Causes)	Quality of life (Effect)	Composite
1	Baldia	4	3	3.5	4	2	3
2	Kiamari	5	6	4.5	6	4	5
3	Lyari	2	4	4	3	6	4.5
4	Orangi	6	2	4	5	3	4
5	Saddar	1	1	1	1	1	1
6	SITE	3	5	4	2	5	3.5

Another set of high positive correlations is found between GS and PCI (0.687451); EH and GS (0.685369); HO and Working Women (0.68265); PD and HD (0.669798); GS and LR (0.662676), GE and FM (0.654957); PD and PCI (0.64682); GS and HD (0.634807).

Reasonable high positive correlations found are between C and PD (0.584606), PP and HO (0.577947), PP and AH (0.573933), GE and LR (0.571287), H and GE (0.571287).

Marked negative correlation found are between PD and HO (-0.90777); H and AH (-0.89218); PP and C (-0.86927); GS and HO (-0.82351).

The above correlation shows the interrelationship between income, education and employment and its impact on the Standard of Living and quality of life. The correlation matrix also shows the persistent correlation of housing conditions with income, education and employment.

Clearly, quality of life is highly dependant on education and income and this reflects in the institutional, environmental and recreation facilities available.

High population densities, average household size, etc. have negative influence on the institutional, environmental and recreational facilities.

In the present study, a three factor solution of the rotated factor matrix based on Varimax with Kaiser Normalization has been taken. The rotated solution is given in Table 3 on the basis of which factor loadings have been interpreted.

RESULTS AND DISCUSSION

Factor analysis of indicators of quality of life and resources and facilities indicators in an urban area: Factor Analysis of the eight variables related to quality of life indicators and ten variables of Resources and Facilities indicators in an urban area has yielded 3 factors which together account for 87.75 % of the total variance. Examination of the factor loadings on these indicators rendered them to be labeled Educational Status, Economic, Demographic Status and Environmental Status. As regards the contribution of the factors to the explanation of total variance, it has been found that the
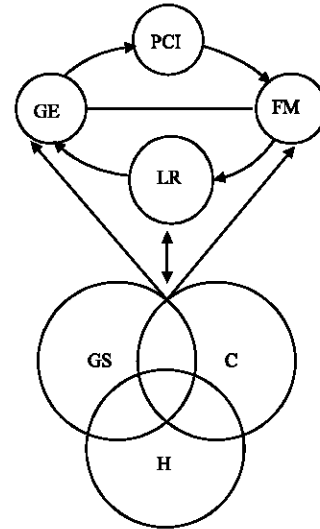

Fig. 2: Flow chart of Factor I

three factors account for 37.79, 28.57 and 21.39%, respectively. The cause of variation in quality of life is inherent in the spatial diversity of factors which form the mesh of the factors themselves. Quality of life is inherently dependent on the availability of facilities especially educational, infrastructural, economic and environmental facilities as shown in Table 3 .The interpretation of factors however, needs extreme caution as the relations exhibited are complex and can be understood only in the context of the actual position of the economic, social and demographic traits of the area.

Factor I-Educational status: The first factor which accounts for 37.79% reveals that colleges, followed by female matriculates, hospitals, per capita income and literacy ratio contribute prominently to this factor as shown in Table 4. Availability of educational institutions, along with the availability of hospital facilities and per-capita income are positive contributors to literacy and especially educational standard among females. All these facilities go hand in hand with development in a type of systems approach as shown in Fig. 2, Flow Chart of Factor I and together they can contribute to the welfare and upliftment of human beings which is an essential and basic pre-requisite for better quality of life.
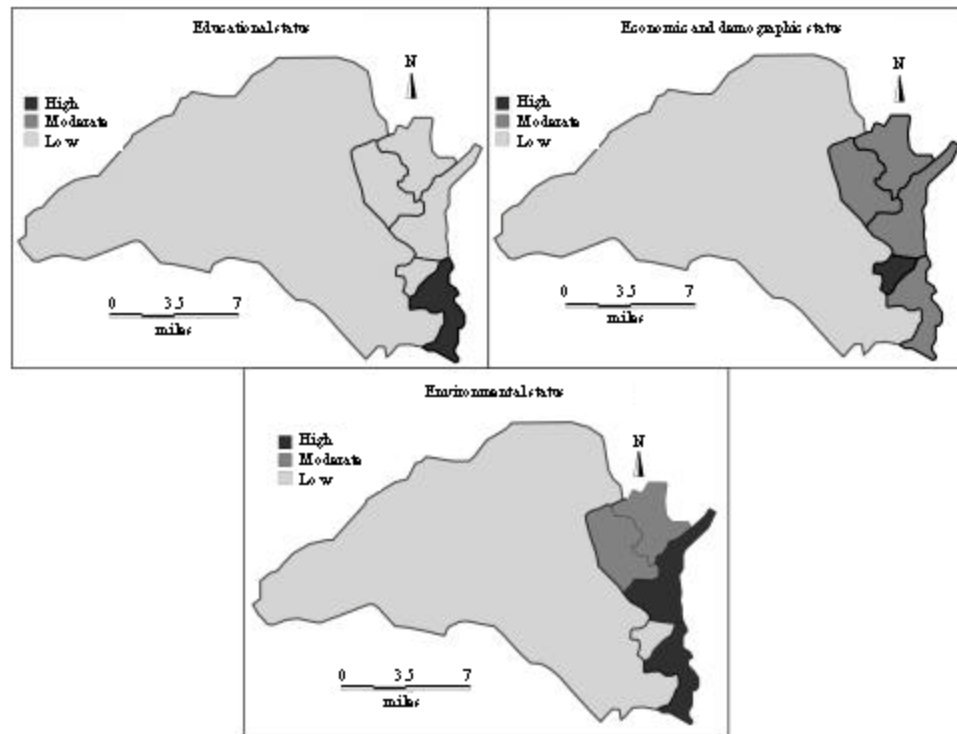
Fig. 3: The spatial dimension of factor I to III

Table 4: Factors and Loadings

Factor I		Factor II		Factor II	
Indicators	Factor loading	Indicators	Factor loading	Indicators	Factor loading
C	0.937	HPW	0.85	EM	0.967
FM	0.886	HHD	0.792	PH	0.786
H	0.877	EH	0.782	GE	0.769
PCI	0.85	PD	0.743	PP	0.567
LR	0.818	PB	0.673		

Figure 3 shows the spatial dimensions of Factors I to III in the study area. The first factor Educational Status shows that best rank is found in Saddar while all the other towns show low rank.

Factor II- Economic and demographic status: The second factor which accounts for 25.57% of the total variance can be closely identified with the state of economic and demographic situation. The variables on houses with potable water, household density, electrified houses, population density and personal business contribute prominently to this factor as shown in Table 4. Thus, this factor has been labeled Economic and Demographic Status. The demographic and social structures of the community/society provide the basis for interactions that lead to satisfactions, subjective well being and the quality of life (Ferriss, 2006). Rapid rate of increase of population is a deterrent to economic development, a very prominent feature of Third World Countries, where there is extreme pressure of population on the very meager infrastructural facilities. The pace of improvement of infrastructural facilities is not commensurate with the population explosion in the study area.

Factor II shows that highest rank is found in Lyari; SITE, Saddar, Baldia and Orangi show moderate rank while Kiamari shows lowest rank.

Factor III- Environmental status: This factor shows high positive loadings for electronic media, pucca houses, government employees and parks and playgrounds, as shown in Table 4. This factor accounts for 21.39 % of the variance. Parks and playgrounds act as lungs for purification of the environment and are very helpful in reducing environmental pollution in a composite manner. Presence of electronic media like radio and television are means of improving standard of living of the environment as they are the quickest and most effective means of communication and information. Pucca houses are not
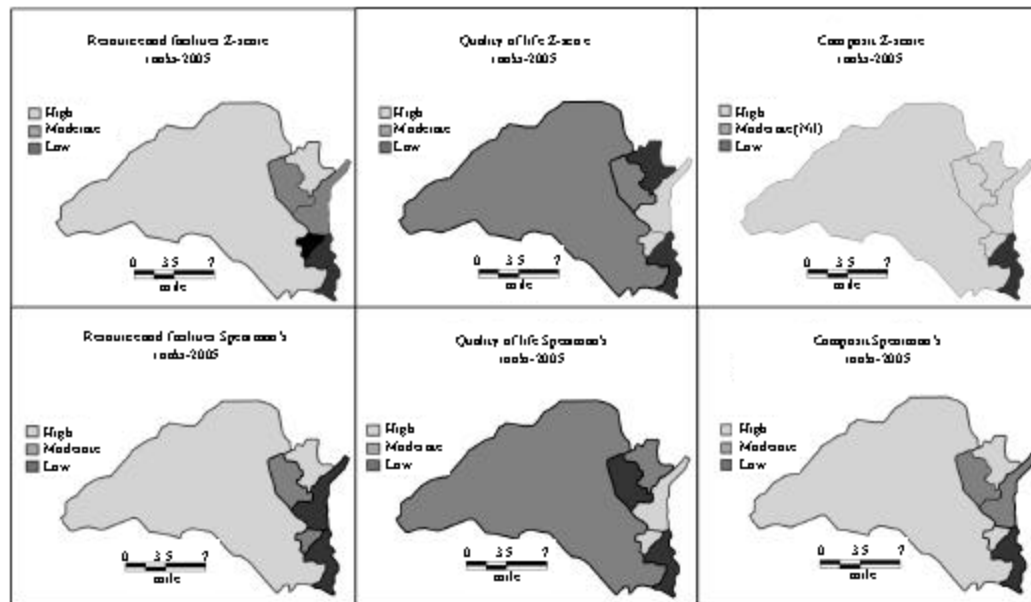
Fig. 4: Ranking of both, z- score and spearman's correlation

only a sign of economic stability but provide a better living environment as compared to "kucha" houses, government employment provides economic stability not only to the employee but his family as well, as it is somewhat a guarantee of job security.

Factor III shows highest rank for Saddar and SITE; Orangi and Baldia show moderate ranks while Lyari and Kiamari show low rank.

Table 3 and Fig. 4 showing ranking according to both z-score and spearman's correlation coefficient reveal that for both sets ranking of the Towns is quite in consonance.

The coefficient of correlation of the study area is 0.885 which indicates a high positive correlation between Resources and Facilities and quality of life.

CONCLUSION

Verily, food, clothing and housing are the basic necessities for the survival of human beings, but education it must be universally agreed is the basic necessity of a civilized society. It is the only wealth or asset which multiplies the more it is used and does not decay or gets destroyed, come what may. In Third World Countries, where basic needs are met with great difficulty, educational facilities are sadly lacking or in a state of neglect, where the means of achieving education is in a state of disarray, where there are socio-economic and cultural hurdles to achieving education, the quality of

life cannot be expected to be glorifying. Added to educational status, if demographic and economic stability are in the doldrums, all achievements will be negated. In Third World countries environmental conditions are in a sorry state and they are very much commensurate with the status of infrastructure and resource availability. Thus, we see that in the study area as shown in Fig. 4. Saddar Town has emerged as one with highest weightage for resources and facilities and rightly so, as Saddar is not only the business hub of the city having historical inertia, but most of the banks, offices and head offices are located here.

Baldia and SITE show second and third ranks as SITE is the main industrial hub of Karachi and Baldia located adjacent to SITE is also an industrial area. The SITE boasts the location of multinational industries, heavy machinery manufacturing industry, textile and detergent industries etc. Baldia mainly has textile and food processing industries.

Orangi and Lyari show third and fourth ranks as people here are engaged in personal businesses e.g. as timber merchants, "kiryana" dealers, blacksmiths, lathe machine, auto spare part dealers and tea stall owners in the latter, while in the former are small household industry owners as hosiery, carpet weaving, embroidery, footwear manufacturers etc. Kiamari shows poorest performance as the residents here are mainly 'pathan' labourers and 'makrani' fishermen who live in very sordid conditions of poverty as labourers and menial workers.

In the light of the prevailing conditions the aim of Regional Planning should be to diversify the economy and reduce rampant concentration of business activity in Saddar thus, also reducing the congestion. Upliftment programs should be implemented on a war footing especially in Orangi and Lyari. Access to free primary education should be the right of all children and provision of reasonable employment to all should be the aim of the government in order to improve the quality of life and we should target our actions for achieving a welfare state in such a manner that we can boast of a welfare economy.

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