An Assessment of the Relation between Quality of Life and Satisfaction in Domains of Life in Chennai City – An Empirical study

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Abstract

Quality of life (QoL) is exposed as the satisfaction which a person acquires from its surrounding of physical conditions and human conditions that were scale dependent. This QoL could predominantly impact the behaviour of groups inclusive of economic units (firms) and households and individual persons. QoL turns out as theoretically and empirically researched term, in urban planning stream. Specifically in a sector of urban regeneration, the progressing interest lead primarily from unique fact that this QoL contribute to have effects upon cities effective development. The previous literature delineated that certain considerations of QoL could play a significant role to improvise their standards, when organisation and households decide to reside on a location. The direction of this research relies in the investigation of urban planning and regeneration literatures, and to incorporate QoL considerations, in different domains of life into sustainable living standards in measuring through their satisfaction range. The primary objective of the research the key elements, influencing the QoL of people, residing in the sub-cities of Chennai such as Mylapore, Sholinganallur and T.Nagar were determined and the corresponding satisfaction levels in different domains of life are acquired from 957 household participants. The data collection, accomplished through structured questionnaire, gathered from survey assessment, wherein the population samples are chosen using stratified random sampling-approach. The quantitative analysis is employed to assess the association of these life domain attributes and the QoL in terms of levels of satisfaction, from the respondents, through SPSS software package. The research could aid in understanding QoL of urban populations and their domains, and to evaluate the same in regions having similar socio-economic and geographic environment.

Keywords: QoL-Quality of Life, urban planning, domains, satisfaction, living standards

1. Introduction

Present world is urbanising at an extraordinary rate due to the huge shift of population from rural areas to urban areas. This is said to happen usually when a country is still at its developing stage. According to the estimates calculated by the UN estimates, the proportion of the entire world's population is predicted to level up to 68% by the year 2050 [1]. The projections also disclose that the urbanisation, steady shift of the population from villages to cities integrated with the entire development of the global population which could add 2.5 billion people in the urban region by the year 2050 [2]. Enhancing the Quality of Life (QoL) in cities are observed to a critical issue for the planning of urban region. The increase in the worldwide urban population due to the rapid increase in the population development and urbanisation mechanisms in turn makes the quality of life more relevant to more people. According to World Health Organisation (WHO), QoL is the perception of individuals regarding their position in life in the model of values and culture to their aim and expectation in terms of standards and concerns [3]. The fore-mentioned definition identifies 6 extents of QoL which includes psychosomatic well-being, freedom, physical wellbeing, social relationships, environment and individual beliefs. The concept of urbanisation aids in economic growth and also enables the optimal use of infrastructure and land. Furthermore, it is important to accomplish complete growth of urban region in order to provide an adequate QoL to the inhabitants. Complete

growth of an urban region proffers economic development, safe and secure habitable environment, satisfactory basic amenities and well-being of the community [4].

Urban QoL is an ideology which is research in depth in recent decades. Though QoL is widely used concepts, there is no such consensus in the existing studies on its definitions, or any certain guidelines that would assist in measuring or assessing it. Certain scholars define QoL as encircling the quality of environment where people live in and the general well-being of people and their satisfaction with the quality of environment. The literature of Al-Qawasmi depicts that the urban QoL is a multi-dimensional concept that encompasses an extensive range of urban life attributes such as social aspects, economical aspects, environmental aspects and political aspects among others [5]. QoL is recognised as a crucial concepts in number of academic disciplines like urban researches sociology, health studies, economics, marketing and political science. QoL is mostly observed and estimated differently across different platforms. The research of Diaz et al, have also reported that there is some overlap among the concepts of QoL and other concepts such as happiness, well-being, living quality, satisfaction and standard of living, sustainability and quality of place. Though there are certain differences among these terms, still they are interchangeably used [6]. Considerably, QoL is a widely used concept, it is still considered as a difficult and elusive to measure and define. It has also been reported that QoL does not have a universally accepted definition. Since the world's population is increasingly moving towards cities, there is an increasing interest in measuring and investigating QoL in cities and urban regions [7]. However, the research of Mulligan et al, [8] has offered definition for urban QoL which is defines as happiness of an individual with their life. Significance of researching about QoL in an urban environment has been approved and agreed by policymakers, scholars and planners. This is because investigating such research topics are crucial when policymakers are deciding on the most effective ways to improve the standard of living. The results of QoL researches would probably assists the city planners in understanding and prioritising the problems faced by the society. In terms of planners, they completely focus on any particular place or on a particular person or group in order to improve the quality of life.

The two major concepts QoL and sustainable growth are associated and it's important to realise the relationships between these two concepts. As per [9], two concepts are strongly associated with each other. Similar to QoL, sustainable growth does not have any universally accepted but definition of world of commission in environment and development which is cited frequently is that ability to meet about the demands of present without ability in compromising the upcoming generation in order to satisfy their own needs. Planners would absolutely prefer to focus on specific place or an individual or a group is a significant for any planner. The ultimate aim and intention of any planner is to enhance the QoL of any specific space or a community or a neighbourhood [10]. However, enhancing the QoL in cities are not a common matter that is dealing with motors and bricks. Human satisfaction is dealing with various urban issues like quality of public, population, land use patterns, and building densities, recreational opportunities and building densities, services and public amenities as well as social issues like providing for security and safety, social incorporation, promoting equity and respect cultural identities, historic preservation, spiritual cultural and religiously significant districts and buildings that in turn supports spatial diversification and mixed use of services and housing at the local environment to meet the different needs and expectations. Additionally, certain other environment issues such as treating the local government and respecting local landscapes with the care and reverence [11].

Most of the QoL researches have been conducted in the cities in Northern parts, signifying the QoL theories and empirical investigations possess their primary roots in the western part of the society. Due to this, the key factoring impacting QoL of people in cities across the nationals located in the southern part of the globe are left unidentified. As a results, the implementation of the methodology devised in the northern part of the globe did not considerably explain the key factors which affect the QoL of the people who reside in other parts of the globe. The primary goal of the present study is to establish the implementation of QoL assessment techniques in a non-western low income urban setting and also investigate the relative relevance of different dimensions of urban life that contribute to the QoL in Chennai city. Through the formulated results of the present study, policymakers in Chennai suburban would find it easy to create and apply QoL enhancing the policies using the empirical data and new insights. The present study can also aid researchers in better understanding the urban QoL and its domains as well as the methodologies to evaluate QoL in cities with same socioeconomic and geographic environments.

QoL is regarded as a form of individualised social existence, where each individual is categorised on the basis of the quality of life they live in. Through certain indicators, data regarding degree of satisfaction on the basis of food demands, clothing, environmental quality and the human relationships can be determined. These indicators are significant as these are the basic needs for any individuals to live a basic life they deserve. The ultimate idea of quality of life gathers all the particular aspects that designs a life for an individual or a group. As stated already, the QoL of an individual is basically measured by the means of their satisfaction level in terms of their life. Thus, programs and policies that are conducted to evaluate the satisfaction and dissatisfaction aids in assuring the QoL that has become the goal of the social enhancement. Most of the researchers have proffered their efforts to investigate about the QoL in northern parts of the globe. The present study has made genuine efforts to research about QoL by studying various other domains of the life and estimate its influence on the satisfaction of individuals who reside in Chennai city, capital of Tamil Nadu, India. As it is crucial to get know the satisfaction level of individuals regarding their QoL who live in a capital city of southern major region of India. Analysing with these perspective would obvious aid in improving the QoL of the entire country.

The main of the study is to analyse the relation among QoL and satisfaction in domains of life in Chennai city. Addition to this the study propound the different levels of satisfaction perceptions of the households in various domains of life obtained from different sub-cities of Chennai, assess the relationship between Quality of life of the households in sub cities of Chennai and their level of satisfaction in different domains of life and explicate the recommendations and the implications measures to enhance the quality of life for the households of Chennai regions in different domains of life. The hypothesis of the study will examine impact in the level of satisfaction of participants in various life domains, and the quality of life among the households (participants) residing in Chennai sub cities, finds differences in the respondent's satisfaction level, among the different domains of life (defined above in table) related to their quality of life.

2. Literature review

Many conventional scholars have made considerable amount of efforts to research about QoL. Such existing literatures are illustrated in this section QoL is a concept that has been elaborated in various literatures as a results to several problems faced by the compacted cities situated all over the worlds also in Egypt. Abunazel et al, [12] has worked with an objective to concentrate mainly on the concept of urban QoL as it has multi-dimensional complex problems and the model of the conventional study is to determine the indicators in compacted cities. The study has used questionnaire and random sampling method in order to work on the objectives of the research. The results reveals that semi-sustainable areas should be converted to sustainable areas by exploiting non-functioning quality indicators of life. Also, the aqua-ponic system is considered as the best system that aids in enhancing the economic QoL for regions that study has attempted to work upon. The facility of green and open space in the face of extensive development pressure is observed to be the key challenge of urban areas. In spite of this, few studies have critically researched about the QoL implication of such provisions. Douglas et al [13] has worked on the factors of building environments and their impact on the neighbourhood QoL. In order to work on the objective, the study fetches data from the household survey questionnaire responded by 483 habitants residing in the three neighbourhoods in Dublin, Ireland. The results has illustrated that understanding the factors that has the impact on the residential satisfaction can provide beneficial information to the policy makers of the urban regions and have considerable potential tool that can be incorporated into the evidence based planning tactics that improve the QoL for the habitants as valued outcome.

Housing satisfaction, commute satisfaction and neighbourhood satisfaction which can be used as an indicators of the urban QoL and liveability because of the potential contribution to the subjective well-being. In association with this, Mouratidis et al [14] has aimed to determine if these three concepts are considerable predictors of subjective well-being and reliable indicators of liveability and QoL in cities. The study has tested and presented a model that investigates the pathways between fore mentioned satisfaction in terms of commute, housing and neighbourhood also with other life domains and subjective well-being components that includes affect, life satisfaction and eudaimonia. To work on the objectives of the study, data are collected through survey on Oslo and were analysed using Structural Equation Modelling in AMOS tool. The results reveals that neighbourhood

satisfaction, commute satisfaction and housing satisfaction are all associated with the subjective well-being. Each of these satisfaction factors are associated with the subjective well-being via other satisfaction determinants. Also, from these findings, the Mouratidis et al study has affirmed that neighbourhood satisfaction, commute satisfaction and housing satisfaction are said to be reliable indicators of urban liveability.

Health issues might have negative impact on the physical and psychological manner that would immensely disturb the quality of life of geriatrics. Souza et al [3] has aimed to investigate the impact of physical activity on the anxiety, depression and QoL among the elderly population. The study has performed a cross sectional analysis on 200 elderly people of both males and females. Subjects that were considered for the study was divided into two groups, first group consists of 100 senior citizens who are engaged in the physical activities in a social centre and another group consists of 100 subjects who were not indulged in any physical activities. In order to work on the subjects, the study used questionnaire, Hospital Anxiety and Depression Scale (HADS), 36-Item short form health survey. The data fetched were using certain statistical tests such as ANOVA and Pearson coefficient tests. The overall results reveals that there was a significant correlation between low level physical activity and depression and anxiety among the elderly population in the community. Dhingra et al [15] has attempted to explore the relationship between fair and adequate compensation and Quality of Work Life (QWL) and also have worked to determine the most significant item impacting the fair and adequate compensation. In order to work on the aim of the study, data was fetched from 251 artisans who work in art metal ware handicraft sector in India through certain questionnaire. The results reveals that early payment of salary and overtime wages were found to be the most significant items that would facilitate adequate and fair compensation for the artisans working in the handicraft industries.

Similarly, Agustin et al [16] has attempted to provide a primary focus on the validity and reliability of an instrument of QoL. To work further on the framed objective, the conventional study has used 47 item questionnaire under the validation analysis with 613 respondents in Quezon City. The study has employed tests such as Kaiser Meyer Olkin (KMO) measure, Inter-Item correlation analysis and Bartlett's test. The study has stated that the tool designed was observed to be reliable hence it can be used for further validation in other countries or utilised in validating the QoL in various urban setting in the considered research region.

Likewise, Djafri et al [17] has attempted to determine, confirm and evaluate the appropriateness of the model in order to capture the correlation between various parameters to improve the social housing quality, provision, adequacy and Residents' quality of Life (RQoL). The study adapted quantitative research methodology. The data collection process was performed from 418 habitants of new urban centre of Hamla. The fetched data was analysed using Structural Equation Modelling. The study has stated that housing adequacy and residential quality were observed to have a vital role in the conceptual model of the existing study that in turn influenced the social housing provision and RQoL and it was also further impacted by other socio-economic features. Though several researchers have worked on environmental sustainability, there is a considerable lack of empirical and theoretical researches on the social sustainability on the basis of the social infrastructure. With regard to this, Grum et al [18] has worked to integrate the fore-mentioned concepts into the network which is referred as social sustainability. In order to work on the objective, the study used desk research. That I, a large volume of bibliographic materials were scanned and certain limited number of documents were reviewed. The documents were selected from different disciplines such as QoL, urban sociology, social sustainability, housing policy, social infrastructure. The results of the study disclosed that there is a considerable link between social infrastructure and QoL. The existing study has also revealed that there is link between social infrastructure factors such as vital objects and fundamentals, utility equipment and public infrastructure and factors of well-being structures such as QoL, reflections and users.

In terms of global urbanisation, offering a better QoL in cities are becoming a critical issues for the process of urban planning. But, the association between the built environment and subjective well-being are not understand with clarity. Mouratidis [2] has attempted to review the evidence in terms of the association of built environments with the subjective well-being. The study has identified leisure, work, residential well-being, health, social relationships, emotional response and travel as potential pathways. The conventional study has recommended certain strategies such as improve public transport by prohibiting cars, proffer easy access to services and facilities,

improve the condition for active travel. Dehimi [19] has attempted to evaluate and investigate the quality of urban life with the assistance of modern technologies with the experts and making them choose the strategies to evaluate and analyse the QoL using multi-criteria analysis. Followed by this, the study has attempted to conduct spatial modelling using geographical information system in order to extract the QoL analysis and an evaluation map in order to regulate its geographical ranges. Results of the conventional study has revealed that around 4.44% signify high QoL and 47.23% signify an acceptable level of QoL and 48.3% represent low QoL. The outcomes of the study also emphasised that geographical differences between the city centre and the suburbs can be determined spatially.

Table 1. Literature review

S.No	References	Objective	Methodology	Conclusion
1	[20]	The study analyses the neighbourhood satisfaction based on three models	The data is collected from different communities in 12 counties in western Virginia	Both community satisfaction and home satisfaction, in turn, play a role in life satisfaction
2	[21]	The study examines different dimensions of the QoL in Uruguay	The data is collected via International Social Survey Program	The results suggest that differences in overall happiness and in domain satisfaction can partly be explained by different levels of access to public goods
3	[22]	The study examines relation and confounder-adjusted relation among objectively-measured neighbourhood attributes and QoL domains	The data is collected from Active Lifestyle and the Environment in Chinese Seniors (ALECS) project,	The study concludes that Medium-to-high density, well-organised neighbourhoods open spaces and services meeting, daily needs may positively contribute to environmental and social QoL
4	[23]	The study investigates on the connection of neighbourhood and the QoL among elderly	The data is analysed via structural equations models	The study reveals that elderly in China requires greater emphasis on basic needs more than on higher life needs.
5	[24]	The study investigates how public services contributes improvement in QoL	The data is collected via survey. Statistical indicators and nonparametric correlation method was applied.	The study reveals that public policies should specifically focus on elders to overcome the problems which are faced by them, also it is required to find proper way to use their potential on the labour market
6	[25]	The study examines the examined factors outside the control of public service organisation which impacts on QoL	The data has been collected from secondary data sources	Two outcomes has been stated in the study. On the perspective of methodology it is required to provide evidence on the variation sources in QoL indicators at small area and use advanced methods to disentangle this disparity On the perspective of policy it is significant to

				consider the impact of public service organisation on QoL in areas that fall outside traditional domains.
7	[26]	The study has examined relation between perceived satisfaction, value for money, demand and spending preferences.	The data is collected via survey and examined via multiple regression analysis	The study has reported that difference in happiness is 37%, difference in satisfaction is 66% and difference in satisfaction is 57% with the overall quality of life
8	[27]	The study focuses on measurement and content of leisure and its connection to QoL	The study data is collected via survey and systematic sampling technique is used.	the study reveals that people engaging in social activities frequently are satisfied with the psychological benefits and higher levels of perceived QoL
9	[28]	The study explore how leisure activities enhances subjective well-being	The study collects information from Croatian citizens (N = 4,000)	The result delivers that leisure activity engagement contributes to subjective well- being, while the pattern of significant leisure activities somewhat varies across various age and gender groups.
10	[29]	This study examines the relation among social networks, social cohesion social support, and perceived safety of neighbourhood among ethnically diverse people	Data is collected via survey from the people living in 12 low-income public housing sites. sample of 1352 is collected	The research has explored potential pathway via which factors of social environment impact health and in untangling the complex set of variables that may impact perceived safety.
11	[30]	The study analyses that loneliness is a distress of feeling alone and has a significant impact on individual and health.	Sample is collected via survey an nearly 2240 data are collected	The study suggests that programs aiming to combat loneliness should go well beyond situational interventions and include more cognitive, value-centred interventions that enable individuals to define and pursue a meaningful vital plan.
12	[31]	The study analyse the association among social connectedness, spirituality, QoL, and hopelessness in older adults	The data is collected from 100 elderly people in Jammu	The study reveals that various attempts are made to enhance QoL of elderly people's by growing spirituality and social connectedness.
13	[32]	The study explores the development of discipline Facilities Management (FM) in a smart city viewing via considering the present and new services of FM under the Urban FM role as well as	The study is based on secondary data which collects information regarding maintenance management, energy management, and workspace management services	The concludes that planning in connecting neighbourhoods and communities by the Smart City method of enhancing data also considers prominent governance structures of FM, Urban

				FM, City Planning and Smart Cities.
14	[33]	The study aims on local government policies regarding post-COVID sustainable mobility, to understand, approaches and measures, policies, and the active role of ongoing action in shaping the future of urban mobility	Data from the populated Italian cities	The study provides experience on transformation of urban environment, in cities of Italy to cope with the COVID and improve the city resilience. Comparing with the result the study clearly shed lights on the awareness of local governments and policy maker's requirement of deep urban transformations on the basis of green principles.
15	[34]	The study has developed practical tools which reflects policies regarding UGS convincingly by examining and creating future scenarios which reflect UGS policies and urbanization patterns as development of urban and environmental conservation, in South Korean city where policies for UGS expansion have recently shown progress.	The analyses the data using multinomial logistic regression	The study has illustrated the possibility of simulating urban land use changes and their influence on ecosystem services using practical policy scenarios related to socioeconomic factors
16	[35]	The study explores the association among subjective and objective measures of neighbourhood quality by integrating the English indices of multiple deprivation into the BHPS	The data is collected from British Household Panel Survey	The study concludes that Singles are affected negatively while living with parents and couples by unemployment of husband. Couples having a new baby move into better neighbourhoods.
17	[36]	The study examines the overall housing history of people and assess temporary changes in living conditions in their particular housing careers.	The data is collected via survey directed by the World Bank Group	The study concludes that Socio-economic peoples like migrants tend to experience enhancement after moving to the city yet shows limited upward mobility later, an aspect that is rarely addressed in policy discourse on equitable access to adequate housing.
18	[37]	The study analyses the development of housing quality by local move	The data is collected via annual housing survey	The study concludes that implication for housing policy in future for different types of females are reviewed
19	[38]	This study assessed decay in urban places mainly in Ota's residential areas	The study is intensive on 4 vital residential quarters. They are Oruba, Ijana, Otun and Osi, where 10 percent of	The study findings improves the factors understanding is important

		which is a medium-sized city and fast expanding	1683 identified buildings. The data is collected via questionnaire	for regeneration of the study area
20	[39]	The study provide a better knowledge for urban poor in Rajshahi city on sources of water	The data is collected via questionnaire survey	The research reveals that there is no sufficient access of water in most of slum dwellers.
21	[40]	This study delivers a systematic method to understand better on urban water security, with a working definition and an assessment framework to be applied in peri-urban and urban areas.	A framework is proposed to evaluate the present and future state of water security	The study reveals that achieving urban water security requires a holistic and integrated approach with collaborative stakeholders to provide a meaningful way to improve understanding and managing urban water security.
22	[41]	The study examines the degree variation of social groups are satisfied with diverse ecosystem services by urban rivers	The data is collected via questionnaire survey about urban river ecosystem services	The study reveals that residents accorded high importance to urban rivers' ecosystem services yet exhibited slightly less satisfaction towards the provision of these ecosystem services.
23	[42]	The study analyses the influence on transportation system of community on the QoL provided to its residents.	Data is gathered from a nationwide liveability survey. Ordered probit models is used to analyse survey data.	The study delivers that there is a positive impact on community QoL has on overall life satisfaction.

Certain identified research gaps of the conventional studies are depicted below. Douglas et al [13] has only focused on built environment factors, certain other factors such as service provision, neighbourhood attachment and social factors are not considered. Dhingra et al [15] has considered only two demographic variables (gender and frequency distribution). The present study has been formulated in such a way that it bridges the research gaps of the existing studies.

3. Research Methodology

The present research uses the quantitative technique as the research methodology. Since the technique considers the social perspectives that are quantified and presented in a way instead of just considering the interpretations of the responses fetched from the respondents. In addition to this, the outcomes of the technique are more comprehensive as the data is collected from a precise samples and the analysis of such research technique is seemed to less complex. This data collection of the research is performed through a structured questionnaire. The data used in the study were collected through a survey conducted in the 3 study areas T.Nagar, Mylapore and Shollinagnallur of Chennai. Chennai is a major transportation hub for road, rail, air and sea transport, connecting major cities inland and abroad. It is also one of the major educational centres in India, with a number of colleges and research institutions. The study has chosen three main regions in Chennai city.

- T-nagar
- Mylapore
- Sholinganallur

With a population density of 26,553 people per square kilometre, Chennai is far ahead of the next most densely inhabited city in Tamil Nadu, Kanyakumari, which has 1,111 people per square kilometre [43]. Chennai is a major

transportation hub for road, rail, air and sea transport, connecting major cities inland and abroad. It is also one of the major educational centres in India, with a number of colleges and research institutions. Chennai is thus emerging as an important metropolis in the South Asian region. Smart City is an urban renewal and retrofitting programme by the Ministry of Housing and Urban Affairs (*MoHUA*), Government of India. Corporation of Chennai has shortlisted three neighbourhoods – T Nagar, Mylapore, Sholinganallur for development under smart city mission and is preparing a proposal towards Smart City Challenge which would include city wide smart urban solutions as well as identification of areas within the locality. As these considered areas represent different characteristics of Chennai city. T Nagar is the biggest commercial neighbourhood, Mylapore is regarded as a cultural hub and Sholinganallur is a newly added area that comprise several IT companies and young minds. The selected area will receive funds to improve basic infrastructure services for water supply, sewerage, storm water drains, transportation, and development of green spaces and meeting needs of the citizens.
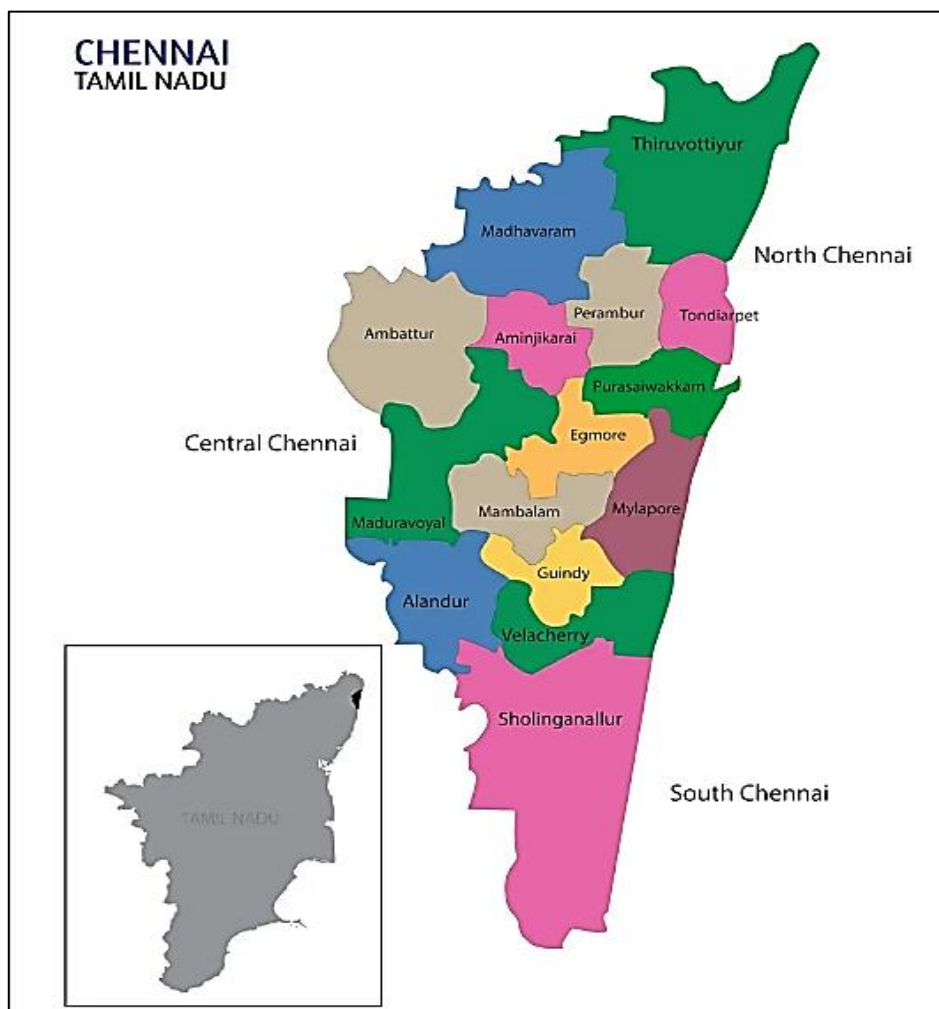
Figure 1. Chennai city map [44]

Based on relevant research, we identified the areas of life and their distinctive qualities that may provide relevant information for urban planning in the present study. Personal familiarity with the study region as well as local knowledge were found be to be beneficial. The present study has chosen certain domains of life such as Neighbourhood and Community, Public Services, Recreational Facilities, Shopping and Community, Participatory community, Neighbourhood Safety, Social Connectedness, Neighbourhood Connectivity, Built Environment, Urban Local Bodies, Housing and Residential Mobility, Neighbourhood Sanitation, Water Supply

services and Network and Mobility were the fourteen domains of life. The fore-mentioned domains are tabulated with the below table 1.

Table 2. Domains of life considered in the present study

Domains of life	Attributes	Studies
NC Neighbourhood and Community	Good Schools Housing costs recreational opportunities Appearance of neighbourhood Similarity Familiarity Close to natural areas Close to place of worship Openness or spaciousness of the area	[20] [21] [22] [23]
PS Public Services	Accessibility to nearby health facilities Accessibility towards public transport. Accessibility to the secondary schools Accessibility of Garbage collection in schools Quality grade of health facilities Roads and street maintenance Quality level of primary schools	[24] [25] [26]
RF Recreational Facilities	Accessibility towards recreational facilities quality and sports Outdoor places Access to parks/play area Inclusive environment	[45] [27] [28]
SC Shopping and Community	Access to main shopping area Proximity Street vendors and culture	[46] Community Quality-of-Life Indicators
CU Participatory community	Neighbourhood Association Serving a committee Communication with government official Addressing neighbourhood problems	Community Quality-of-Life Indicators
NN Neighbourhood Safety	Rate of crime safety of roads Police protection within neighbourhood areas police stations accessibility Abandoned buildings and Vehicles Poorly kept up yards	[29]
SCN Social Connectedness	Sense of community Friends /relatives Favouring neighbours Social visits	[29] [30] [31]
NCS Neighbourhood Connectivity	Knowledge of Neighbourhood residents Support from neighbours	[32]
BE Built Environment	Urban planning infrastructure Residential Regions development	[33] [34]

ULB	Urban Local Bodies	ULB and taxes	Zakaria Committee Finance Commission Planning Commission
RM	Housing and Residential Mobility	Transportation facilities Facilitation of amenities	[35] [36] [37]
NS	Neighbourhood Sanitation	Neighbourhood sanitation	[38] [39]
AIS	Water Supply services	Urban water security Water Services accessibility	[47] [40] [41]
NM	Network and Mobility	Connectedness of neighbourhoods	[42]

A total of 957 households were selected using a stratified random approach. For stratified sampling, the research region was separated into smaller groups based on common characteristics such as age, type of residence, public service access, social connection, and built environment. The seven point likert scale in present study helped the respondents to declare their level of satisfaction such as: completely satisfied to not satisfy. The two extreme points; completely satisfied or completely dissatisfied exhibits the extreme level of dissatisfaction or satisfaction. The objectives of the study has been analysed statistically using AMOS tool.

3.1 Variables of the study

The present study has taken Domains of life as the independent variable and satisfaction of individuals as the dependent variables.

3.2 Research instrument

The Research Instrument is a tool to measure, analyze and gather data on the proposed research interests. The tools is utilized in various sectors like education, health sciences and social sciences in order to analyze the students, clients and patients. The present study uses structured questionnaire which is primary data and segregated, via sampling approach. A structured questionnaire is distributed to the selected population to analyze the outcome of the study. The responses are fed into SPSS AMOS 22.0 which is the research tool.

The major factors analysed indulges in the questionnaire, are the questions deliberating level of satisfaction in relation to different domains lf life illustrated in table above. The correlations, impact, positive and negative relationships and regression analysis are examined. Finally, the appropriate measures are also suggested.

3.3 Sampling method

The research method utilises stratified sampling-method, a sort of sampling approach, wherein the entire respondent's population will be divided to smaller-groups or the smaller strata, for completion of sampling method. The groups are divided on the basis of age such as 7-14 years in one group, 15-40 years, 41-64 years and above 65. This strata, were formed based upon certain general characteristics in that population data. Once the population is divided to strata, researcher randomly chooses out the samples in proportional manner. The general characteristics, which can be considered for dividing the population to strata, are the category of residence, social connection, built environment, public service access and age attributes. The conclusions would attempt to draw out the conclusions from various strata or sub-groups. The strata of the population must be different and must not overlap with one another. This sampling method, were utilised whilst the researcher opt in understanding the existing association among the two groups.

3.4 Research questions

- What are the domains of life in its level of satisfaction that measures out the quality of life?
- Is there any significant association between the level of satisfaction in different domain attributes of life and the quality of life in the sub cities of Chennai (T.Nagar, Sholinganallur and Mylapore)
- Which domains of life have the highest impact on the QoL in Chennai city in terms of satisfaction?

3.5. Research Objectives

- To propound the different levels of satisfaction perceptions of the households in various domains of life obtained from different sub-cities of Chennai.
- To assess the relationship between Quality of life of the households in sub cities of Chennai and their level of satisfaction in different domains of life.
- To explicate the recommendations and the implications measures to enhance the quality of life for the households of Chennai regions in different domains of life.

3.6 Hypothesis of the study

$H_1 1$: There exists significant impact in the level of satisfaction of participants in various life domains, and the quality of life among the households (participants) residing in Chennai sub cities (Mylapore, Sholinganallur and T.Nagar)

$H_0 1$: There is no any significant impact in the level of satisfaction of participants in various life domains, and the quality of life among the households residing in Chennai sub cities (Mylapore, Sholinganallur and T.Nagar).

$H_1 2$: There are differences in the respondent's satisfaction level, among the different domains of life (defined above in table) related to their quality of life.

$H_0 2$: There are no any differences in the respondent's satisfaction level, among the different domains of life (defined above in table) related to their quality of life.

3.7. Data analysis

The research follows up with quantitative method, to fulfil the research objectives using SPSS AMOS 22.0 software. Qualitative analysis is performed in the study by collecting data and executing statistical, mathematical, and computational methods. The data is collected from the respondents through sampling technique via survey. The results are obtained in numerical terms. Various analysis is performed in the study like Correlation Matrix, Multiple Regression Assessment, Factor Analysis, and Factor Loading-Matrix.

3.8. Ethical considerations of the study

The study has followed certain ethics in performing analysis. The ethics followed in the research are before the researcher's survey assessment, information is passed to the respondents in the prior stage. The respondents are not forced by any means to give their responses. Only willing respondents are selected for the survey analysis. Only the responses to the questionnaire are asked of the respondents, their private reports or data are not forced to be exposed by them. Since the research study uses only original data for data analysis, it doesn't contain any false data. All the data organized and gathered would be kept highly confidential. These are the ethical consideration used by the researcher for the research analysis, which is accurate to their knowledge based upon this research study.

3.9 Sample Questionnaire

Sample questionnaire is attached in this section few of the questions asked in the survey are included and illustrated in table 3.

4. Results

The literature study confirmed the different parameters associated to explore perceived qualities of every domains of life, in prior to conduct the household survey. The factor-analysis supports to determine the life domains through grouping out QoL attributes to corresponding constructs or factors. The qualities are classified to their corresponding life domains, if it is valid or need further work.

4.1. Relation between Quality of Life and Satisfaction in Domains of Life

It seems crucial, for the policymakers in understanding which categories of life-domains possess highest impact upon life satisfaction. Hence this objective has been obtained, to view at the association between this QoL and life satisfaction with different life aspects, through explicating the primary domain within cities (study area) influencing QoL more.

Table 2. Correlation Matrix between Satisfactions in Surveyed Domains of Life

c	NC	PS	ULB	RF	SC	CU	NN	NCS	SCN	BE	RM	NS	A1S	NM
NC	1													
PS	.383**	1												
ULB	.225**	.370**	1											
RF	-.140**	-.260**	0.015	1										
SC	.167**	.216**	.177**	-.104**	1									
CU	.213**	.318**	.281**	-.186**	.214**	1								
NN	.164**	.182**	.226**	0.053	.151**	.243**	1							
NCS	.226**	.330**	.418**	.081*	.219**	.253**	.290**	1						
SCN	.165**	.366**	.384**	-.087**	.162**	.267**	.324**	.417**	1					
BE	.112**	.121**	.303**	.200**	0.021	.187**	.171**	.285**	.246**	1				
RM	-.066*	-.209**	.090**	.599**	0.031	-0.042	.122**	.216**	0.012	.339**	1			
NS	.076*	.117**	.223**	0.043	.124**	0.060	.312**	.258**	.178**	-.068*	0.018	1		
A1S	.144**	.219**	.210**	-.103**	.165**	.269**	.205**	.219**	.144**	.142**	-0.022	.145**	1	
NM	-0.053	-.187**	.068*	.586**	-0.001	-0.033	.095**	.190**	0.026	.295**	.627**	.087**	.099**	1
**. Correlation is significant at the 0.01 level (2-tailed).														
*. Correlation is significant at the 0.05 level (2-tailed).														

The correlation matrix, of the determinants (domains of life) represented in above test, in table 2. The association among the satisfaction in various domains of life (entities), for the respondents in the three cities are defined. To assess the association between different spheres of life, Pearson co-relation co-efficient has been determined to be the major investigation. The table 2 above illustrated co-relation matrix, that implies the existence of statistical significance association among the different life dimensions, assumed in the research, with its 0.05 significance level. This value of significance, indicates the positive association among different domains of life such as NC,PS, ULB, RF,SC,CU,NN,NCS,SCN,BE,RM,NS,AIS and NM. The outcomes revealed that satisfaction in neighbourhood safety, or built environment, or urban local bodies were all connected with one another, their satisfaction in one domain relies on another domain's satisfactory range.

The prominent domains-of life are determined through multiple regression-analysis with quality of life to be dependent variable. In the test, the respondents' poses their quality-of life after analysing the life satisfaction with every domains (aspects) of life, described above, with no intercept utilised in research. In the correlation matrix, depicted, the QoL with respect to different domains of lifer are considered to possess score of 1 that means, the complete dissatisfaction of household respondents in entire domains of life. This inferences indicated complete dissatisfaction in QoL for an individual. The relationship between life satisfaction and QoL in different life domains in those sub-cities acquired the below forms.

Table 3. Multiple Regression Assessment

		B	Std. Error	t	Sig.
	(Constant)	.335	.027	12.290	.000
	Level of satisfaction with Neighbourhood and Community	.075	.007	10.494	.000
	Level of satisfaction with Public Services	.070	.006	10.800	.000
	Level of satisfaction with Recreational Facilities	.103	.002	41.180	.000
	Level of satisfaction with Shopping and Community	.096	.008	11.775	.000
1	Level of satisfaction with Participatory community	.094	.008	11.227	.000
	Level of satisfaction with Neighbourhood Safety	.108	.006	18.344	.000
	Level of satisfaction with Social Connectedness	.077	.005	14.369	.000
	Level of satisfaction with Neighbourhood Connectivity	.161	.009	17.799	.000
	Level of satisfaction with Built Environment	.099	.008	12.829	.000
	Level of satisfaction with Urban Local Bodies	.201	.010	20.548	.000
	Level of satisfaction with Housing and Residential Mobility	.148	.011	14.038	.000
	Level of satisfaction with Neighbourhood Sanitation	.099	.007	14.344	.000
	Level of satisfaction with Water Supply services	.111	.008	13.071	.000
	Level of satisfaction with Network and Mobility	.122	.011	11.467	.000

The quality of life has been represented through below form.

$$QoL = 0.075 NC + 0.070\, PS + 0.103\, RF + 0.096\, SC + 0.094\, CU + 0.108\, NN + 0.077\, SCN + 0.161\, NCS + 0.099\, BE + 0.201\, ULB + 0.148\, RM + 0.099\, NS + 0.111\, AIS + 0.122\, NM \qquad - (1)$$

The total variance of QoL, as delineated by model in the equation 1 above seems to be 93% which is significant at 0.050. The co-efficient of the model, explicates the relative effect of every life domains upon the QoL. From this multiple-regression analysis, all the domains seems to be positive associated towards QoL, in their satisfaction range, that implies, if the satisfaction levels in the respective domains is greater, then the individuals would have better QoL. The model co-efficient, other side, reveals the relative effect of every domain upon those respondent's QoL. From the inferences of above multiple regression-test in table 3, in study area, the level of satisfaction with respect to urban local-bodies had a strongest impact upon the respondent's QoL with 0.201. To ensure, if this finding, has been influenced by large count of participants (respondents) having low income, an assessment performed which excluded the respondent groups having low incomes with lesser than 500 per month. The outcomes deliberated that this independent factor family income, in their satisfaction level, possess strongest impact upon their QoL for the entire groups. This implication stated in comparison to every domain of life, this factor family income, stands as highest contributor to define the quality of life, towards their QoL level, within sub-cities. The domain which stands as second high impact upon QoL, is level of satisfaction with respect to neighbourhood connectivity having 0.161. The satisfaction in accordance to the water supply services, neighbourhood safety and network and mobility all the parameters possess the similar impact upon QoL, within sub-cities, wherein this satisfaction level with overall public-services(0.70) and neighbourhood and community(0.75) possess least impact upon QoL. Those outcomes recommended that any of efforts to enhance

the QoL among the respondents in study area must concentrate upon the specific dimensions which had high impact neighbourhood connectivity

4.2. Factor Analysis of Quality of Life

Factor analysis was applied using 114 perceived QoL attributes that were obtained from the household survey
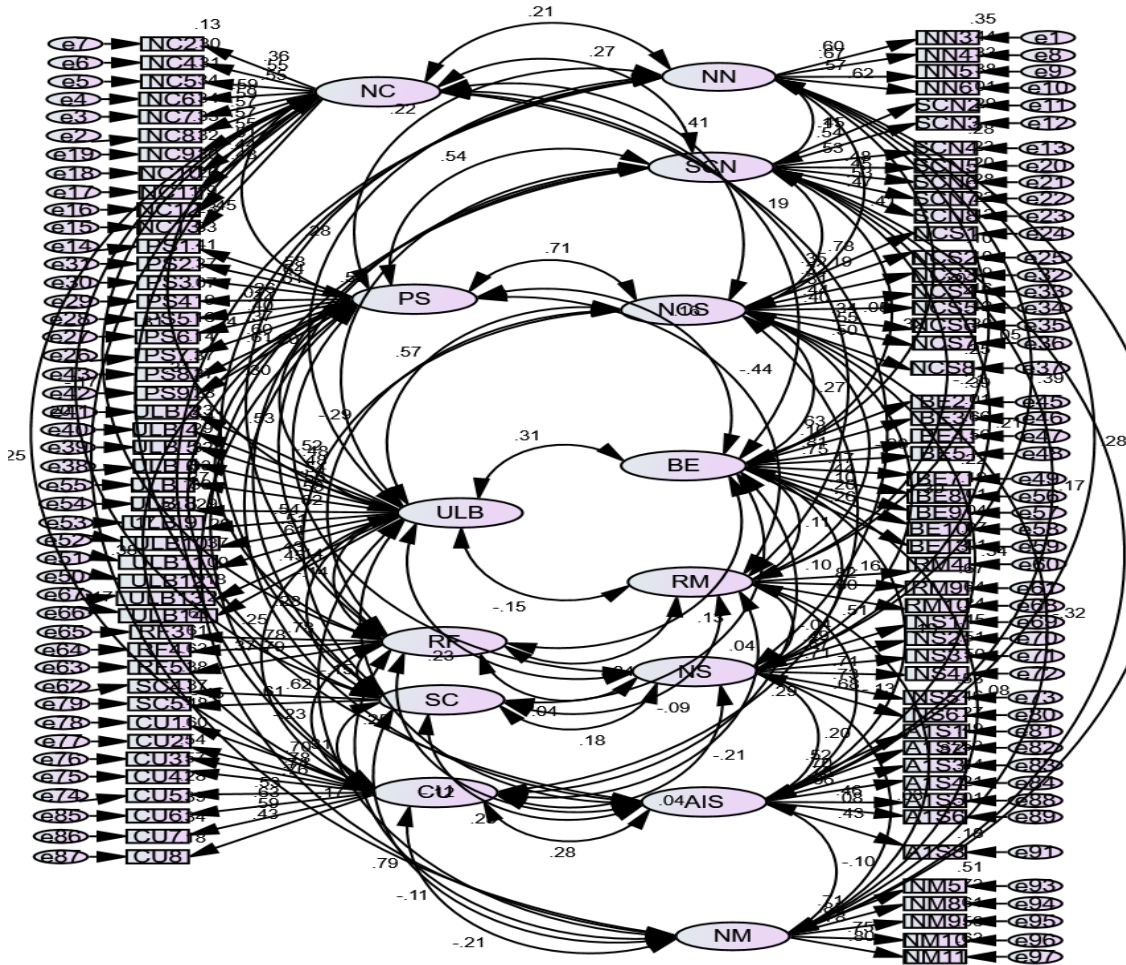
Figure 2. Relation between QoL and their domains and attributes

The figure 1 illustrated above, depicts the association between the different life domain satisfaction and their respective perceived-attributes that are all measured upon six point Liker-scale. Among those home ownership possess strong effect upon the housing satisfaction. Housing condition and the crowding in the other side possess least effect upon the level of satisfaction in housing primitives. Noise-pollutions seems to be most significance predictor for built-in environment level of satisfaction. The crime rates within neighbourhood are seems to be the better predictor of the neighbourhood safety in comparison to the safety attributes. The quality of primary-schools possess stronger impact upon the life satisfaction with public services quality. The accessibility of the health services also exhibits a stronger impact upon the respondent's satisfaction.

Table 4: Factor Loading-Matrix for attributes of QoL

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14
NC1	0.328													

NC2	0.435															
NC3	0.372															
NC4	0.606															
NC5	0.605															
NC6	0.619															
NC7	0.630															
NC8	0.615															
NC9	0.617															
NC10	0.617															
NC11	0.561															
NC12	0.508															
NC13	0.535															
PS1		0.607														
PS2		0.675														
PS3		0.657														
PS4		0.324														
PS5		0.549														
PS6		0.498														
PS7		0.474														
PS8		0.705														
PS9		0.682														
ULB1			-0.179													
ULB2			0.295													
ULB3			0.525													

ULB 4			0.545												
ULB 5			0.591												
ULB 6			0.605												
ULB 7			0.622												
ULB 8			0.659												
ULB 9			0.587												
ULB 10			0.573												
ULB 11			0.656												
ULB 12			0.449												
ULB 13			0.506												
ULB 14			0.516												
RF3				0.857											
RF4				0.858											
RF5				0.865											
SC3					-0.269										
SC4					0.824										
SC5					0.804										
CU1						0.741									
CU2						0.787									
CU3						0.754									
CU4						0.781									
CU5						0.618									
CU6						0.705									
CU7						0.678									

CU8						0.513								
NN3							0.714							
NN4							0.771							
NN5							0.703							
NN6							0.722							
SCN 1								0.088						
SCN 2								0.155						
SCN 3								0.674						
SCN 4								0.655						
SCN 5								0.569						
SCN 6								0.587						
SCN 7								0.604						
SCN 8								0.570						
NCS 1									0.353					
NCS 2									0.384					
NCS 3									0.366					
NCS 4									0.565					
NCS 5									0.556					
NCS 6									0.522					
NCS 7									0.654					
NCS 8									0.586					
NCS 10									-0.351					
NCS 11									0.233					
BE1										-0.067				

BE2										0.701			
BE3										0.159			
BE4										0.796			
BE5										0.737			
BE6										-0.173			
BE7										0.642			
BE8										0.600			
BE9										0.116			
BE10										0.312			
BE13										0.389			
RM3											-0.271		
RM4											0.136		
RM5											-0.154		
RM9											0.888		
RM10											0.893		
NS1												0.579	
NS2												0.748	
NS3												0.775	
NS4												0.760	
NS5												0.778	
NS6												0.740	
A1S1													0.604
A1S2													0.756

A1S3														0.780	
A1S4														0.744	
A1S5														0.578	
A1S6														0.094	
A1S8														0.536	
NM1															-0.294
NM2															-0.277
NM3															-0.356
NM4															-0.312
NM5															0.762
NM6															-0.368
NM7															-0.260
NM8															0.838
NM9															0.804
NM10															0.774
NM11															0.801

Extraction method: Principal Axis factoring

Rotation method: Varimax with Kaiser Normalisation

This table 4 defines the rotated factor-matrix, consists of rotated factor-loading. These loading represents how the variables, (in the table) were weighted for every factor. It also demonstrates the correlations among the variables and its factors. Since those are correlations, the possible values lies in range of -1 to +1. The low correlation clutters are removed in factor loadings, such that they are left out as empty spaces in the table. In case of orthogonal rotations, including varimax, factor structure and factor patterns matrices remains the same. The columns in the tables represent the rotated factors, which are been extracted.

As a total fourteen factors has been extracted, in accordance to the high loading of it. The first factor (F1) been loaded are referred as NC6 since this factor shows out the highest loadings on NC6 (neighbourhood and community attribute). The second, third, fourth, fifth, sixth, seventh and eight factors reveals highest loadings upon PS9, ULB8, RF5, SC4, CU2, NN4 and SCN3. Similarly the ninth, tenth, eleventh, twelfth, thirteen and fourteenth factors exposes high loadings on attributes satisfaction levels pertaining to NCS7, BE4, RM10, NS5, AIS3 and NM8 as all those factors, with maximum value(0.654, 0.796, 0.893, 0.778, 0.780 and 0.838)among the loaded value. Hence the correlations among the variables are hence evidenced as well in the rotated matrix components. The prominent factors (extracted), in terms of satisfaction levels are PS,ULB,RF,SC,CU,NN,SCN,NC,BE,RM,NS,AIS and NM contributing to their quality of life were been deliberated. The loading among the factors, if exhibited value, >= 0.70 implies the association among variables and factors seems to be excellent. The value 0.63 implies good association, wherein the factors with 0.45 have fair association and poor relation implied by 0.32 value.

5. Discussion

Various literatures have examined the QoL of people on the basis of various aspects like transportation, sources of water availability, and on elderly population. The literatures [19, 21] have discussed on the QoL of urban areas with assistance with the technology. The study reveals that there is a geographical differences on the QoL of people living in between the city centre and the suburbs also states that there is differences in overall happiness. Few of the literatures have discusses on the neighbourhood satisfaction and QoL [13, 20, 23, 29, 35]. These researches delivers that understanding the factors is important which impacts on the residential satisfaction also beneficial information to the policy makers of the urban regions and have considerable potential tool that can be incorporated into the evidence based planning tactics that improve the QoL for the habitants. Both community satisfaction and home satisfaction, in turn, play a role in life satisfaction also basic needs is more important than higher needs. The research has explored potential pathway via which factors of social environment impact health and in untangling the complex set of variables that may impact perceived safety. Further Singles are negatively affected when ceasing to live with parents and couples by a husband's unemployment. Couples having a new baby move into better neighbourhoods.

Few literatures have discussed on the QoL in cities and QoL of elderly population [3, 14, 38]. These study states that neighbourhood satisfaction, commute satisfaction and housing satisfaction are said to be reliable indicators of urban liveability. Further the elderly population satisfaction of QoL is not up to the level due to low level physical activities, anxiety and depression. Researchers have discussed the QoL of water resources and satisfaction of urban river ecosystem [39] [41]. Theses study has affirmed that most of the slum dwellers do not have reliable and sufficient access to water supply. Consequently residents accorded high importance to urban rivers' ecosystem services yet exhibited slightly less satisfaction towards the provision of these ecosystem services. Similar to water resources, satisfaction of transportation resources is identified [42] depicting there is a positive impact on community QoL has on overall life satisfaction.

The present study has analysed the Level of satisfaction with neighbourhood and community, public services, recreational facilities, shopping and community, participatory community, neighbourhood safety, social connectedness, neighbourhood connectivity, built environment, urban local bodies, housing and residential, mobility, neighbourhood sanitation, water supply services, network and mobility. From the analysis the present study has found there is dissatisfaction in specific domains. Additionally, the study has also determined extend to which those domains possess influence upon QoL.

6. Conceptual Bases and the Policy Implications

The citizens within Chennai city, exposes a form of discontent with major living aspects and the entire quality-of life. In this selected study-area, there are different active project focussed to enhance the QoL of the people. Those projects in this study are, were either been implemented inclusive the smart-city mission or PMAY or AMRUT [48]. For instance, in order to enhance Chennai city's housing conditions, such as condominiums conditions, with an aim to have concern upon low-income population. Provided the low satisfaction level with study regions, the state government must guarantee that the current activities were continued and those solutions related to housing

condition and amenities solutions for those households were developed. Mylapore and T.Nagar were the core sub-urban centres of the Chennai city, which has poor built-environment [49][49]. The city seems to get unliveable due to the lacking of pedestrian walkways (a section of T.Nagar has been pedestrian), inadequate home-construction and poor road-quality.

The present master plan of the city consists of housing development, improvement in road, rehabilitation, playground construction and green space-protection. However outcomes of the research deliberated that the built-in environment possess the least impact upon the QoL (having 0.01). If the QoL ought to get improved, other different domains must be focussed with more attention like in the form of city enhancement policies and urban schemes for a sustained QoL, in terms of life domain attributes in the sub-cities of Chennai.

7. Conclusion

The primary goal of the research, is in the determination and visualisation of the relationship between QoL and level of satisfaction with different surveyed domains of life such as Neighbourhood and Community, Public Services, Recreational Facilities, Shopping and Community, Participatory community, Neighbourhood Safety, Social Connectedness, Neighbourhood Connectivity, Built Environment, Urban Local Bodies, Housing and Residential Mobility, Neighbourhood Sanitation, Water Supply services and Network and Mobility. The correlation matrix with its significance value at 0.01 level, exhibited through SPSS AMOS, deliberated the positive relationship among various domains of life in terms of satisfaction. The source of dissatisfaction analysed through studying specific domains of life. Multiple regression-analysis utilised in determining extend to which those domains possess influence upon QoL in the sub-cities of Chennai. The model co-efficient obtained in multiple-regression test, depicts that the level of satisfaction with respect to urban local-bodies possess strongest impact upon the respondent's QoL, followed by neighbourhood connectivity. The factor analysis, implies that Housing condition and crowding showed out least effect upon the level of satisfaction in housing primitives. The outcomes of the research expounded the significance to map out spatial differences of QoL in terms of satisfaction as in certain domains of life such as ULB, income, Neighbourhood safety and connectivity, built-in environment shows contrasting heterogeneity levels. However from objective perception, there does not explore any correlation between urban spacing, planning and their quality of life in accordance to satisfaction with urban-infrastructure. This can be suggested in future studies, to enhance the life quality for those city dwellers, not alone to increase objectively the green space for, residents, in their satisfaction but concern to maximize the public accessibility and safety as well, ought to be incorporated.

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