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QUALITY OF LIFE INDEX: A CASE STUDY OF ISTANBUL

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Özet

Bu çalışmada İstanbul'da 39 ilçe düzeyinde elde edilen veri setinin ışığında yapılan ampirik analizlerle bir yaşam kalitesi endeksi hazırlanmıştır. Çok boyutlu ve soyut olan yaşam kalitesi kavramının tek boyutlu, ölçülebilir ve somut bir hale getirilmesine imkân tanıyan araştırma yöntemlerinin kullanılarak İstanbul' da 39 ilçeye ait kentsel yaşam kalitesi endeksleri üretilmiştir. Bu bağlamda tartılı ağırlıklandırılmış ortalama yöntemi benimsenmiştir.

Anahtar Kelimeler: Yaşam kalitesi, Yaşam kalitesi endeksi, Sosyal ve ekonomik endeks, Ağırlıklandırılmış ortalama yöntemi
Jel Sınıflaması: I31, H70, Z13, Z18, C38

Abstract

In this study, the quality of life index is prepared at the level of 39 districts in Istanbul with empirical analyses made in the light of data set obtained by determining indicators of life quality of 39 districts in Istanbul. The quality of life indexes of 39 districts in Istanbul are produced by using research methods that ensures multi-dimensional and abstract concept of life quality to become one-dimensional, measurable and tangible. In this context, weighted average method is adopted.

Keywords: Quality of life, Quality of life index, Social and economic index, Weighted average method
Jel Classification: I31, H70, Z13, Z18, C38

1.INTRODUCTION

The quality of life is a concept made different definitions for many disciplines. In general, it can be considered as the sum of quantitative and qualitative value that an individual's lifestyle, health, relation with the community. (Şeker, 2010:117) The quality of life is analyzed by both medical of social science. On the other hand, the urban planning departments of universities are interested in life quality for scale of urban. This study aimed to

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measure life quality with the quantities indicators according to the economic and social perspectives.

2. THE CONCEPT OF QUALITY OF LIFE

It is very difficult, to make a single definition of the concept of life quality that includes large scope. In the literature, there are many definitions of the concept of life quality. Havighurst (1963) explained life quality as a concept that encompasses individual internal factors and external factors such as participation in social contacts and social activities in an individual's life. Dalkey and Rourke (1973) associated the life quality with life satisfaction. Shin and Johnson (1978) tried to explain the life quality according to how much they can realize to individual requests, how often they can join social activities and how they can benefit personal development opportunities.

Campbell, Converse and Rodgers (1976) aimed the indicators of life quality in their research. According to the research; health, marriage, family life, national government, friendship, housing, business, community, spirituality and religion, recreation and sports activities and financial status are determined as the indicators of life quality.

Life quality is a concept that includes not only financial and economic indicators but also the environment of living, physical and spiritual status, education, recreation, leisure time and social belonging (Gregory, 2009). McCall (1975) matched the life quality with happiness by saying that the best way of measuring of life quality is to know what people needs to be happy.

Table 1: The Indicators of Quality of Life

Campbell, Converse and Rodgers (1976)	Evans (1994)	Gregory, Johnston, Pratt, Watts and Whatmore (2009)	OECD Better Life Index (2015)	Eurostat Quality of Life Indicators (2015)	The Quality of Life Model, Quality of Life Research Unit (2015)
- Health - Family life - National government - Friendship - Housing - Business - Community - Spirituality/Religion - Recreational and sports activities - Financial status	- Satisfaction - Abilities - Social environment - Bio-socio-physical status - environment	- Financial status - Employment - Environment - Physical and mental condition - Education - Recreation - Leisure time - Social belonging	- Housing - Income - Business life - Social relationships - Education - environment - Democracy - Health - Life Satisfaction - Security - Work-life balance	- Living conditions - Productivity - Health - Education - Leisure and social affairs - Economic and physical security - Governance and fundamental rights - Natural environment - General life experience	- Physical status - Psychological status - Mental status - Physical ownership - Social inclusion - Social belonging - Work/school life - Free time - Physical and intellectual development

To summarize, life quality combines both quantitative and qualitative indicators. This paper aims to measure the life quality with quantitative indicators according to economic and social perspectives.

3. RESEARCH METHOD

In this study, urban life quality indexes of 39 districts in Istanbul are produced by using research methods that ensure multi-dimensional and abstract concept of life quality to become one-dimensional, measurable and tangible. In this context, weighted average method is adopted.

3.1. Data

As a result of analyses made, data to be taken as a basis in the research, are classified under three main categories such as; human and social capital indicators, economic structure and infrastructure and transportation. According to this, there are 44 indicators under the

human and social capital indicators, 43 indicators under the field of economic structure and 13 indicators under the environmental structure, at last totally 100 indicators are compiled for this research.[1]

- **Human and Social Capital Indicators**
  - Demographic Structure
  - Education
  - Health
  - Social Life and Environment
- **Economic Structure**
  - Economic Capacity
  - Trading and Financial Markets
  - Entrepreneurship
  - Tourism
- **Infrastructure and Transportation**
  - Infrastructure
  - Transportation

The human and social capital indicators are basic indicators for this research. There are 18 indicators under the demographic structure, 9 indicators under the education, 7 indicators under the health, 10 indicators under the social life and environment, at last totally 44 indicators are compiled for the human and social capital indicators.

[1] The indicators are collected from municipalities' reports, the central and local government offices.

Table 2: Human and Social Capital Indicators

Demographic Structure - Total Population - Area (km2) - Urbanization rate - Average Household Size - Population Growth Rate - Population density - 0-14 Age Group / Population - 15-64 Age Group / Population - 65 Years and Over / Population - Divorce rate - Literacy Rate - Literate Women Rate - High School Graduate Rate - Female High School Graduate Rate - University Graduate Rate - Female University Graduate Rate - PhD Graduates / Population (in thousands) - Master and PhD Graduates / Population (in thousands)	**Social Life and Environment** - Number of international sports center - Number of national sports center - Number of local sports center - Total sports center - Number of museum - Number of library - Number of Cinema - The active green area/parks per person - The passive green area/parks per person - Local Election Participation Rate
Education - Private Sector Investment Index in Education - Total student population - Number of students per classroom - Number of students per teacher - Number of students per teacher in early childhood education - Number of students per teacher in primary education - Number of students per teacher in secondary education - Number of students per teacher in high school - Number of students per teacher in high school classroom	**Health** - Number of Pharmacies per 10.000 People - Population per 112 Ambulance - Population per Family Physician - Total Number of Physicians per 10.000 People - Rough suicide rates (per 100 thousand) - General Fertility Rate (per 1,000 people) - Infant Mortality Rate

Source: Municipalities' Report, TÜİK, Istanbul Province National Education Offices, Istanbul Health Offices.

The economic structure includes four departments. There are 14 indicators for economic capacity, 7 indicators for entrepreneurship, and 9 indicators for trading and financial markets, 13 indicators for tourism.

Table 3: Economic Structure Indicators

Economic Capacity	**Tourism**
-Potential Demand	-Number of Arrivals to the facilities-Foreign
-Number of Shopping Mall	-Number of Arrivals to the facilities-Native
-Number of private hospital	-Average Length of Stay-Foreign
-Number of private school	-Average Length of Stay-Native
-Number of private university	-Rate of overnight stay-Foreign
-Number of state university	-Rate of overnight stay-Native
-Total Motor Vehicles	-Occupancy Rate-Foreign
-Car/ Population (in thousands)	-Occupancy Rate-Native
-Housing Sales	-Number of Five Star Hotels / Total
-Housing rents	-Number of Four Star Hotels / Total
-Local Government Budget Expenses	-Number of Three Star Hotels / Total
-Local Government Budget Income	-Number of museum
-Local Government Budget Expenditures Per Capita	-Number of company of hospitality industry
-Local Government Tax Income	
Trading and Financial Markets	**Entrepreneurship**
-Number of big size firm	-Established Firm Rate (Established Firm / Total Established Firms)
-Number of private corporation	-Closed Firm Rate
-Number of holding company	-Established/Closed Firm Rate
-Employment	-Established Firm Growth Rate
-Number of company per person	-Established Firm Per Person
-Diversity of industry	-Crude established Firm rate
-Number of industry company	
-Diversity of bank	
-Population per bank	

Source: Municipalities' Report, TÜİK, Istanbul Chamber of Commerce, Istanbul Tax Offices, Reidin Housing Index, the Banks Association of Turkey.

The infrastructure and transportation were separated two parts. Infrastructure has 7 indicators, transportation has 6 indicators for this research.

Table 4: Infrastructure and Transportation Indicators

Transportation	**Infrastructure**
-Connect to Metrobus	-Natural Gas Density
-Connect to Metro/Tramway	-Sewer Service / Municipal Population
-Connect to railroad	-Treatment Service / Municipal Population
-Connect to sea transportation	-Waste Service / Municipal Population
-Diversity of transportation	-Waste Services Offered Population
-Total Motor Vehicles / Area	-Water outages
	-Earthquake Risk

Source: Municipalities' Report, TÜİK, İETT, İGDAŞ, İDO, İSKİ, İstanbul Ulaşım AŞ, AFAD.

3.2. Methodology

The measurement units of most of these variables are different from others. While one variable is measured in square kilometers, the other one may have been measured in count.

Raw data obtained from primary and secondary resources firstly processed by data mining method and turned into a form in % value to be used in the index. Those transformed data is firstly standardized in order to define common and basic meaning included numbers of and different information sets and degraded to the uni-dimension.

For standardization $z = \frac{X-\mu}{\sigma}$ transformation has been applied.

μ: *arithmetic mean*

σ: *standard deviation*

The said data are different valuables with different measurement units such as population, area, cinema assets, and total tax collection. The valuables with different units cause misleading results. Therefore, the values have been standardized in order to liberate the variables from measurement units; in other words, to make them dimensionless. This way, the data is scaled under a certain threshold.

As a result of turning every data as positive direction, index is calculated with weights stated for each data. What weight shall data have, are depended on an Expert Opinion Survey that is applied to more than 40 academicians and experts and averages of the results are taken and weighted.

The index calculation by:

$$Index = \frac{\sum_i A_{ji} X_{ji}}{\sum_i A_{ji}}$$

A_{ji}: *The weight of the i lower variable of the j main variable*

X_{ji}: *The standardized value of the i lower variable of the j main variable*

3.3. Research Findings

In this study, a quality of life index is generated by using 100 different variables at the level of 39 districts in Istanbul. When looking at index results that are evaluated over 100 indicators; Beşiktaş is observed as in the first rank with the point of 0,911. Kadıköy, Bakırköy and Şişli are following Beşiktaş. The district which is in the last rank in the life quality index is Arnavutköy with its index value of -0,620. Sultanbeyli, Şile, Sultangazi and Esenler are following Arnavutköy and they are among districts of which life quality is the least.

In the other study that published 2011, the highest scores for the quality of life index were Kadıköy, Beşiktaş, Beyoğlu, Şişli and Fatih. (Şeker, 2011) The highest districts look the same in the both studies.

Table 5: Istanbul Quality of Life Index

Ranking	District	Score	Ranking	District	Score
1	Beşiktaş	0,911	**21**	Tuzla	-0,018
2	Kadıköy	0,886	**22**	Kağıthane	-0,020
3	Bakırköy	0,613	**23**	Ümraniye	-0,028
4	Şişli	0,574	**24**	Güngören	-0,119
5	Fatih	0,490	**25**	Adalar	-0,142
6	Beyoğlu	0,367	**26**	Başakşehir	-0,152
7	Üsküdar	0,347	**27**	Avcılar	-0,161
8	Sarıyer	0,347	**28**	Bağcılar	-0,190
9	Eyüp	0,183	**29**	Esenyurt	-0,194
10	Maltepe	0,161	**30**	Çatalca	-0,228
11	Kartal	0,128	**31**	Çekmeköy	-0,264
12	Küçükçekmece	0,114	**32**	Silivri	-0,304
13	Bayrampaşa	0,093	**33**	Gaziosmanpaşa	-0,333
14	Büyükçekmece	0,081	**34**	Sancaktepe	-0,391
15	Bahçelievler	0,053	**35**	Esenler	-0,421
16	Ataşehir	0,046	**36**	Sultangazi	-0,518
17	Pendik	0,032	**37**	Şile	-0,587
18	Zeytinburnu	0,027	**38**	Sultanbeyli	-0,601
19	Beylikdüzü	0,025	**39**	Arnavutköy	-0,620
20	Beykoz	0,025			

In this study, there are sub-indexes which reflects components of life quality are measured. According to this; Beşiktaş, Üsküdar, Kadıköy, Şişli and Ataşehir have the highest value in the demographic structure index. The highest scores for the education index are Beşiktaş, Kadıköy, Bakırköy, Üsküdar and Şişli; for the health index are Çatalca, Beykoz, Tuzla, Büyükçekmece and Sarıyer; for the social life index are Beyoğlu, Kadıköy, Beşiktaş, Bakırköy and Şişli; for the economic structure index are Şişli, Beşiktaş, Kadıköy, Fatih and Beyoğlu; for the transportation index are Kadıköy, Bakırköy, Beyoğlu, Fatih and Üsküdar; for the environmental structure index are Sarıyer, Şile, Adalar, Beykoz and Ataşehir.

Table 6. Sub-indexes of Quality of Life

Demographic Structure	Education	Health	Social Life	Economic Structure	Transportation	Environmental Structure
•Beşiktaş	•Beşiktaş	•Çatalca	•Beyoğlu	•Şişli	•Kadıköy	•Sarıyer
•Üsküdar	•Kadıköy	•Beykoz	•Kadıköy	•Beşiktaş	•Bakırköy	•Şile
•Kadıköy	•Bakırköy	•Tuzla	•Beşiktaş	•Kadıköy	•Beyoğlu	•Adalar
•Şişli	•Üsküdar	•B.Çekmece	•Bakırköy	•Fatih	•Fatih	•Beykoz
•Ataşehir	•Şişli	•Sarıyer	•Şişli	•Beyoğlu	•Üsküdar	•Ataşehir

When index results are graduated, it is revealed that there are five levels of urban life quality in Istanbul. In the first level there are 4 districts and in the second level there are 4 districts. There are 12 districts ranked in the third level and 11 districts fourth levels. In the group where the life quality is the least, there are 8 districts left. This situation shows that the urban quality in Istanbul is at the medium level generally and it indicates that there are important differences at several fields between districts which have first and fifth level life quality.

Table 7. Quality of Life Levels in Istanbul

1. Level		2. Level		3. Level		4. Level		5. Level	
Beşiktaş	0,911	**Fatih**	0,490	**Eyüp**	0,183	**Tuzla**	-0,018	**Silivri**	-0,304
Kadıköy	0,886	**Beyoğlu**	0,367	**Maltepe**	0,161	**Kağıthane**	-0,020	**Gaziosmanpaşa**	-0,333
Bakırköy	0,613	**Üsküdar**	0,347	**Kartal**	0,128	**Ümraniye**	-0,028	**Sancaktepe**	-0,391
Şişli	0,574	**Sarıyer**	0,347	**Küçükçekmece**	0,114	**Güngören**	-0,119	**Esenler**	-0,421
				Bayrampaşa	0,093	**Adalar**	-0,142	**Sultangazi**	-0,518
				Büyükçekmece	0,081	**Başakşehir**	-0,152	**Şile**	-0,587
				Bahçelievler	0,053	**Avcılar**	-0,161	**Sultanbeyli**	-0,601
				Ataşehir	0,046	**Bağcılar**	-0,190	**Arnavutköy**	-0,620
				Pendik	0,032	**Esenyurt**	-0,194		
				Zeytinburnu	0,027	**Çatalca**	-0,228		
				Beylikdüzü	0,025	**Çekmeköy**	-0,264		
				Beykoz	0,025				

4. CONCLUSION

Reasons of differences between districts in terms of life quality could be summarized as follows. Economic structure, demand potential and sector diversity of the districts are closely related with the income level which is one of the factors generates life quality, and determines the concentration of economic activities in the district. Economic structure affects the life quality significantly. Some factors such as demographic structure, household number and educational level of district could cause differences in terms of life quality. Some

privations in the field of health affect life quality negatively. Since population density and dependent population rates are high, they reduce the life quality. Infrastructure and diversity of transportation are among the most important factors that determined the life quality for Istanbul. Districts, where transportation diversity is insufficient, have disadvantages.

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