



Istanbul Conference of Economics and Finance, ICEF 2015, 22-23 October 2015, Istanbul, Turkey

Local Government Budgeting For Gender Equality

Hakan TURAN^{a*}, Ayse SENTURK^b

^aHakan TURAN, Kocaeli, 41100, Turkey

^bAyşe SENTURK, Kocaeli, 41100, Turkey

Abstract

Today, gender responsive budgeting approach is adopted to participate in women's social, cultural and gender life more effectively in the economic sphere by local government. Gender responsive budgeting is to strengthen the equality perspective at all stages of the budget process to approaching gender equality in public institutions and organizations, or to reduce inequalities. Gender responsive budgeting, is reflected in the male-female equality instead of a separate budget for women. As stated in the 5018 Public Financial Management and Control Law, public institutions and organizations made strategic plans and the budget of institutions must be prepared depending on strategic plans. If expenditure is not in the strategic plan, an allocation in the budget is impossible. It is important that the preparation of the strategic plan is the basis for gender responsive budgeting. Allocations have been increasing day by day at modern societies that value to positive discrimination. This study has been investigated the gender equality approach in 39 districts in Istanbul. Data were obtained from TUIK's data population of 2014. To clarify the distinction created by the gender equality approach has benefited from the cluster analysis. Thus, the district has been determined whether the rates are close together in the same group. The hierarchical method was used in 39 districts because clustering number of sets wanted to predetermine. Ward's (variance) method depending on hierarchical clustering method is adopted. The results were visualized by Dendrogram. The Euclidean distance measure has been applied for determining the distance between criteria. Consequently, it is analysed in detail how the budgets of districts in Istanbul organized by gender equality approach.

© 2016 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the Organizing Committee of ICEF 2015.

Keywords: Dendrogram, hierarchical clustering, Istanbul, Euclidean distance, gender-based budgeting, Ward's methodmethod

* Hakan TURAN. Tel.: +02626415010; fax: +02626415019.
E-mail address: hakan.turan@tubitak.gov.tr.

1. Introduction

The aim of 5018 Public Financial Management and Control Law is to regulate the structure and functioning of public financial management, the preparation and the implementation of the state budget, the accounting for all financial transactions inasmuch as the effective, economic and efficient way of obtaining and using of public resources, accountability and financial transparency in accordance with the policies and objectives at development plans and programs (Republic of Turkey Ministry of Finance Strategy Development Unit, 2010). This law includes public institutions under the central government, social security institutions and consisting of local administrations under general administration for the financial management and control.

The municipalities prepare their strategic plans with regard to the local distinctive political, economic and social targets in accordance with the local cultural background that has a standard format. It is called as Their Local Equality Action Plans (LEAPs) which also consists of the redesigning the municipality structure so as to gender equality approach. For this purpose, there are a lot of target achievements in the LEAPs such as regional training courses at different branches, giving services for women's employment and development, social and care centers (Şenesen & Yücel, 2014).

The numerical policy of an organization is the budget that shows the social and economic priorities of a group. The aim of gender budgeting is not a different budgets for women. It purposed the gender-sensitive way for general budgets which includes planning, approving, executing, monitoring, and auditing processes. Gender budgeting ensures that the fair of women, men, and children. It is not just money. The target of it the allocation of all decisions with a fair way (Anglican Women's Empowerment, 2015). Gender-responsive budgeting is actually very simple. The public sources will be deployed at a fair rate among men, women and children (Gender in Local Government: A Source Book for Trainers, 2015).

We choose the districts of Istanbul Metropolitan Municipality for this research. It is obvious that the most crowded, busiest, largest and popular city of Turkey. Istanbul is a world within a world, a bustling city of cultures That's why, it is the best experimental subject for GBR in Turkey.

This paper assesses the present situation of the 39 districts of Istanbul Metropolitan Municipality for gender budgeting. For this analysis, we benefit from Hierarchical Clustering Analysis method.

2. Literature Review

Gender-responsive budgeting (GRB) is a perspective of devoting resources in defiance of the different requirements, relations and restrictions of women and men. It also includes disaggregating and analyzing government expenses and incomes based on their varied effects on varied classification of women and men, boys and girls. GRB includes an analysis and comprehension of the circumstance of varied classification of men and women, boys and girls to specify the gender divergences/disparities and adjusting convenient interferences in Development plans and budgets to scrutinize those (Gender Budgeting Guidelines by DAC, 2005).

In other words, gender budgeting stands for a gender essential evaluation of budgets, including a gender approach at all degrees of the budget process and reconstructing incomes and expenses so as to enhance gender equality. (European Commission, 2003).

GRB attempts seek to create ensuring political infrastructures, establish capacity and empower following mechanisms to back up responsibility to women. This web page enables governments, non-governmental organizations, parliaments and academics by means of sources for comprehension and performing GRB (<http://www.gender-budgets.org/>, 2015).

3. Hierarchical Clustering Analysis

Clustering Analysis is a method which enables classification by collecting certain groups in terms of the similarity between the units surveyed in a study. It ensures to demonstrate common features of units and creates general definitions regarding these classes (Kaufman & Rousseuw, 1990).

Clustering includes similarities in itself, contains the differences between other clusters (Kalayci, 2005). Grouping is arranged with reference to the similarities and differences in clustering analysis (Johnson & Wichern, 1992).

The objectives of the cluster analysis based on the user and usage purpose are as follows (Ball, 1970):

- 1) Determination of the correct types
- 2) Creation model
- 3) Estimate based on groups
- 4) Hypothesis testing
- 5) Data research (review)
- 6) Creation hypothesis
- 7) Data reduction

Distance in cluster analysis is calculated from the rows of the data matrix. Distance functions consist of four functions (MacQueen, 1967).

Minkowski Distance:

$$d_{\lambda}(x_i, x_j) = \left[\sum_{k=1}^p |x_{ik} - x_{jk}|^{\lambda} \right]^{\frac{1}{\lambda}} ; \lambda \geq 1 \quad (1)$$

Manhattan City-Block Distance ($\lambda=1$)

$$d_1(x_i, x_j) = \sum_{k=1}^p |x_{ik} - x_{jk}| \quad (2)$$

Euclid Distance ($\lambda=2$)

$$d_{\lambda}(x_i, x_j) = \left[\sum_{k=1}^p |x_{ik} - x_{jk}|^2 \right]^{\frac{1}{2}} ; \lambda \geq 1 \quad (3)$$

Mahalanobis Distance

$$d(x_i, x_j) = D^2 = (x_i - x_j)' S^{-1} (x_i - x_j) \quad (4)$$

Hotelling T² Distance

$$T^2 = \frac{n_1 \cdot n_2}{n} (\bar{x}_i - \bar{x}_j)' S^{-1} (\bar{x}_i - \bar{x}_j) \quad (5)$$

The most widely used clustering algorithms are grouped in two categories as non-hierarchical clustering and hierarchical clustering algorithms (Blashfield and Aldenferder, 1978). Hierarchical clustering is displayed with dendrogram or tree graph. Cluster number is initially not determined in hierarchical clustering method by practitioner. Hierarchical clustering method determines cluster number itself. There are two hierarchical methods including grouper and divider.

Hierarchical clustering is known as step sequential clustering method. Any unit or observation initially accepted in grouper hierarchical management as a cluster. Later, the two closest clusters (or observation) are combined by collecting in a new cluster (Hubert, 1974).

Divisive hierarchical method is the opposite of grouper hierarchical method. In this method, it is started with a large cluster which consists of all observations. Smaller clusters are created by extracting dissimilar observations (Everitt et al., 2011).

There are some hierarchical clustering methods. In this study, Ward's method is adopted since it is suitable for this study. Ward's method is known as minimum variance method. It aims to minimize the total within-cluster variance (Ward, 1962).

4. Practices For Gender Responsive Budgeting in Istanbul

In this study, the 39 districts of Istanbul were examined in terms of gender responsive budgeting. For this, hierarchical clustering method was applied. 11 criteria are determined to evaluate gender responsive budgeting. These criteria are as follows:

- 1) To support the artistic and professional skills training (C1)
- 2) To support women's shelters (C2)
- 3) To support the information centre for women (C3)
- 4) To support studies on gender equality (C4)
- 5) To support meeting on the awareness of women (C5)
- 6) To train for women's shelters and the personal working in the Information Centre for women (C6)
- 7) To provide the outsourcing in order to benefit from basic facilities of the poor (C7)
- 8) To offer education and consultancy service the issues on domestic violence, child sexual abuse, neglect and substance abuse (C8)
- 9) To train the topics on family planning, maternity, child health and child development topics (C9)
- 10) To train issues on literacy, vocational ownership, social facilities and skills development for women (C10)
- 11) Other (C11)

In this paper, values are taken in 2014. These are displayed in Table 1.

Table 1. Criteria values for gender responsive budgeting in districts of Istanbul

| Districts | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 |
|-----------|------|-------|--------|-------|--------|--------|--------|--------|-------|-------|--------|
| 1 | 0,64 | 0,03 | 0,01 | 0,05 | 0,02 | 0,001 | 0,002 | 0,002 | 0,001 | 0,003 | 0,002 |
| 2 | 0,56 | 0,03 | 0,02 | 0,01 | 0,001 | 0,002 | 0,05 | 0,011 | 0,002 | 0,003 | 0,001 |
| 3 | 0,67 | 0,001 | 0,002 | 0,04 | 0,06 | 0,01 | 0,001 | 0,002 | 0,004 | 0,003 | 0,03 |
| 4 | 0,65 | 0,03 | 0,01 | 0,014 | 0,016 | 0,015 | 0,002 | 0,001 | 0,001 | 0,003 | 0,01 |
| 5 | 0,55 | 0,038 | 0,0014 | 0,001 | 0,01 | 0,02 | 0,05 | 0,002 | 0,005 | 0,001 | 0,02 |
| 6 | 0,64 | 0,032 | 0,015 | 0,014 | 0,018 | 0,017 | 0,003 | 0,006 | 0,003 | 0,002 | 0,009 |
| 7 | 0,68 | 0,035 | 0,016 | 0,017 | 0,017 | 0,023 | 0,004 | 0,005 | 0,002 | 0,002 | 0,02 |
| 8 | 0,59 | 0,034 | 0,013 | 0,001 | 0,0014 | 0,005 | 0,04 | 0,003 | 0,002 | 0,003 | 0,001 |
| 9 | 0,66 | 0,033 | 0,016 | 0,015 | 0,017 | 0,018 | 0,06 | 0,005 | 0,004 | 0,001 | 0,003 |
| 10 | 0,68 | 0,036 | 0,014 | 0,02 | 0,021 | 0,02 | 0,005 | 0,003 | 0,001 | 0,003 | 0,03 |
| 11 | 0,72 | 0,034 | 0,018 | 0,017 | 0,018 | 0,019 | 0,007 | 0,003 | 0,002 | 0,004 | 0,04 |
| 12 | 0,58 | 0,032 | 0,003 | 0,02 | 0,001 | 0,0028 | 0,004 | 0,02 | 0,005 | 0,007 | 0,001 |
| 13 | 0,7 | 0,038 | 0,017 | 0,019 | 0,017 | 0,018 | 0,008 | 0,01 | 0,004 | 0,008 | 0,03 |
| 14 | 0,63 | 0,03 | 0,014 | 0,012 | 0,017 | 0,019 | 0,004 | 0,006 | 0,002 | 0,003 | 0,002 |
| 15 | 0,56 | 0,01 | 0,011 | 0,01 | 0,014 | 0,013 | 0,002 | 0,003 | 0,003 | 0,002 | 0,001 |
| 16 | 0,64 | 0,03 | 0,013 | 0,011 | 0,015 | 0,014 | 0,006 | 0,004 | 0,04 | 0,003 | 0,002 |
| 17 | 0,6 | 0,02 | 0,012 | 0,013 | 0,011 | 0,015 | 0,004 | 0,0018 | 0,011 | 0,001 | 0,003 |
| 18 | 0,59 | 0,01 | 0,011 | 0,009 | 0,008 | 0,014 | 0,003 | 0,001 | 0,009 | 0,003 | 0,001 |
| 19 | 0,61 | 0,03 | 0,011 | 0,013 | 0,013 | 0,015 | 0,004 | 0,0022 | 0,012 | 0,012 | 0,05 |
| 20 | 0,73 | 0,045 | 0,019 | 0,019 | 0,018 | 0,019 | 0,01 | 0,01 | 0,05 | 0,03 | 0,03 |
| 21 | 0,63 | 0,02 | 0,012 | 0,011 | 0,014 | 0,016 | 0,004 | 0,001 | 0,01 | 0,01 | 0,035 |
| 22 | 0,57 | 0,01 | 0,012 | 0,013 | 0,012 | 0,016 | 0,001 | 0,002 | 0,002 | 0,011 | 0,04 |
| 23 | 0,72 | 0,035 | 0,014 | 0,02 | 0,019 | 0,017 | 0,004 | 0,005 | 0,001 | 0,002 | 0,033 |
| 24 | 0,62 | 0,021 | 0,013 | 0,014 | 0,014 | 0,015 | 0,001 | 0,003 | 0,002 | 0,01 | 0,02 |
| 25 | 0,63 | 0,023 | 0,012 | 0,012 | 0,017 | 0,014 | 0,005 | 0,004 | 0,001 | 0,002 | 0,03 |
| 26 | 0,6 | 0,02 | 0,011 | 0,016 | 0,017 | 0,019 | 0,004 | 0,006 | 0,002 | 0,005 | 0,012 |
| 27 | 0,62 | 0,03 | 0,014 | 0,012 | 0,017 | 0,016 | 0,0013 | 0,004 | 0,001 | 0,001 | 0,016 |
| 28 | 0,63 | 0,029 | 0,013 | 0,014 | 0,016 | 0,015 | 0,0015 | 0,003 | 0,004 | 0,001 | 0,021 |
| 29 | 0,64 | 0,03 | 0,012 | 0,009 | 0,01 | 0,02 | 0,0012 | 0,002 | 0,003 | 0,002 | 0,036 |
| 30 | 0,74 | 0,033 | 0,013 | 0,019 | 0,019 | 0,018 | 0,03 | 0,004 | 0,003 | 0,004 | 0,02 |
| 31 | 0,6 | 0,02 | 0,01 | 0,012 | 0,014 | 0,011 | 0,01 | 0,002 | 0,001 | 0,002 | 0,0012 |
| 32 | 0,52 | 0,01 | 0,014 | 0,011 | 0,015 | 0,014 | 0,03 | 0,001 | 0,002 | 0,001 | 0,003 |
| 33 | 0,53 | 0,01 | 0,012 | 0,01 | 0,016 | 0,017 | 0,02 | 0,002 | 0,001 | 0,002 | 0,002 |
| 34 | 0,55 | 0,02 | 0,011 | 0,013 | 0,013 | 0,014 | 0,04 | 0,003 | 0,002 | 0,001 | 0,001 |
| 35 | 0,72 | 0,037 | 0,015 | 0,021 | 0,02 | 0,018 | 0,005 | 0,01 | 0,003 | 0,002 | 0,01 |
| 36 | 0,64 | 0,035 | 0,009 | 0,015 | 0,016 | 0,015 | 0,002 | 0,001 | 0,001 | 0,002 | 0,001 |
| 37 | 0,63 | 0,034 | 0,01 | 0,014 | 0,012 | 0,016 | 0,001 | 0,002 | 0,002 | 0,002 | 0,002 |
| 38 | 0,7 | 0,039 | 0,013 | 0,018 | 0,017 | 0,019 | 0,005 | 0,005 | 0,002 | 0,005 | 0,03 |
| 39 | 0,64 | 0,033 | 0,012 | 0,013 | 0,014 | 0,013 | 0,003 | 0,004 | 0,001 | 0,001 | 0,04 |

5. Results

Two groups are determined by means of hierarchical clustering method. Ward's (variance) method including on hierarchical clustering method is implemented. The Euclidean distance measure has been applied for determining the distance between criteria. These results are in Table 2. The number of the districts increased from 32 to 39 shortly before the 2009 local elections. In this study, the majority of districts in the Group 1 consist of municipalities which have long been institutionalized in Istanbul. These cities complete the institutional development and then give more space to work on gender equality. Therefore, the results of the study are not surprising.

Table 2. Agglomeration Schedule

| Stage | Cluster Combined | | Coefficients | Stage Cluster First Appears | | Next Stage |
|-------|------------------|-----------|--------------|-----------------------------|-----------|------------|
| | Cluster 1 | Cluster 2 | | Cluster 1 | Cluster 2 | |
| 1 | 13 | 38 | ,000 | 0 | 0 | 18 |
| 2 | 14 | 37 | ,000 | 0 | 0 | 15 |
| 3 | 11 | 23 | ,000 | 0 | 0 | 19 |
| 4 | 29 | 39 | ,000 | 0 | 0 | 16 |
| 5 | 27 | 28 | ,000 | 0 | 0 | 12 |
| 6 | 7 | 10 | ,000 | 0 | 0 | 18 |
| 7 | 6 | 36 | ,000 | 0 | 0 | 9 |
| 8 | 17 | 31 | ,000 | 0 | 0 | 13 |
| 9 | 4 | 6 | ,001 | 0 | 7 | 15 |
| 10 | 21 | 25 | ,001 | 0 | 0 | 16 |
| 11 | 32 | 33 | ,001 | 0 | 0 | 31 |
| 12 | 24 | 27 | ,001 | 0 | 5 | 20 |
| 13 | 17 | 26 | ,001 | 8 | 0 | 14 |
| 14 | 17 | 18 | ,001 | 13 | 0 | 29 |
| 15 | 4 | 14 | ,002 | 9 | 2 | 26 |
| 16 | 21 | 29 | ,002 | 10 | 4 | 20 |
| 17 | 2 | 34 | ,002 | 0 | 0 | 21 |
| 18 | 7 | 13 | ,003 | 6 | 1 | 30 |
| 19 | 11 | 35 | ,003 | 3 | 0 | 22 |
| 20 | 21 | 24 | ,004 | 16 | 12 | 24 |
| 21 | 2 | 5 | ,005 | 17 | 0 | 25 |
| 22 | 11 | 30 | ,005 | 19 | 0 | 30 |
| 23 | 12 | 15 | ,006 | 0 | 0 | 27 |
| 24 | 19 | 21 | ,007 | 0 | 20 | 34 |
| 25 | 2 | 8 | ,008 | 21 | 0 | 31 |
| 26 | 4 | 16 | ,010 | 15 | 0 | 28 |
| 27 | 12 | 22 | ,011 | 23 | 0 | 29 |
| 28 | 1 | 4 | ,012 | 0 | 26 | 33 |
| 29 | 12 | 17 | ,014 | 27 | 14 | 36 |
| 30 | 7 | 11 | ,017 | 18 | 22 | 32 |
| 31 | 2 | 32 | ,020 | 25 | 11 | 36 |
| 32 | 7 | 20 | ,023 | 30 | 0 | 37 |
| 33 | 1 | 9 | ,026 | 28 | 0 | 34 |
| 34 | 1 | 19 | ,030 | 33 | 24 | 35 |
| 35 | 1 | 3 | ,035 | 34 | 0 | 37 |
| 36 | 2 | 12 | ,043 | 31 | 29 | 38 |
| 37 | 1 | 7 | ,077 | 35 | 32 | 38 |
| 38 | 1 | 2 | ,156 | 37 | 36 | 0 |

Relationships between groups are in Figure 1.

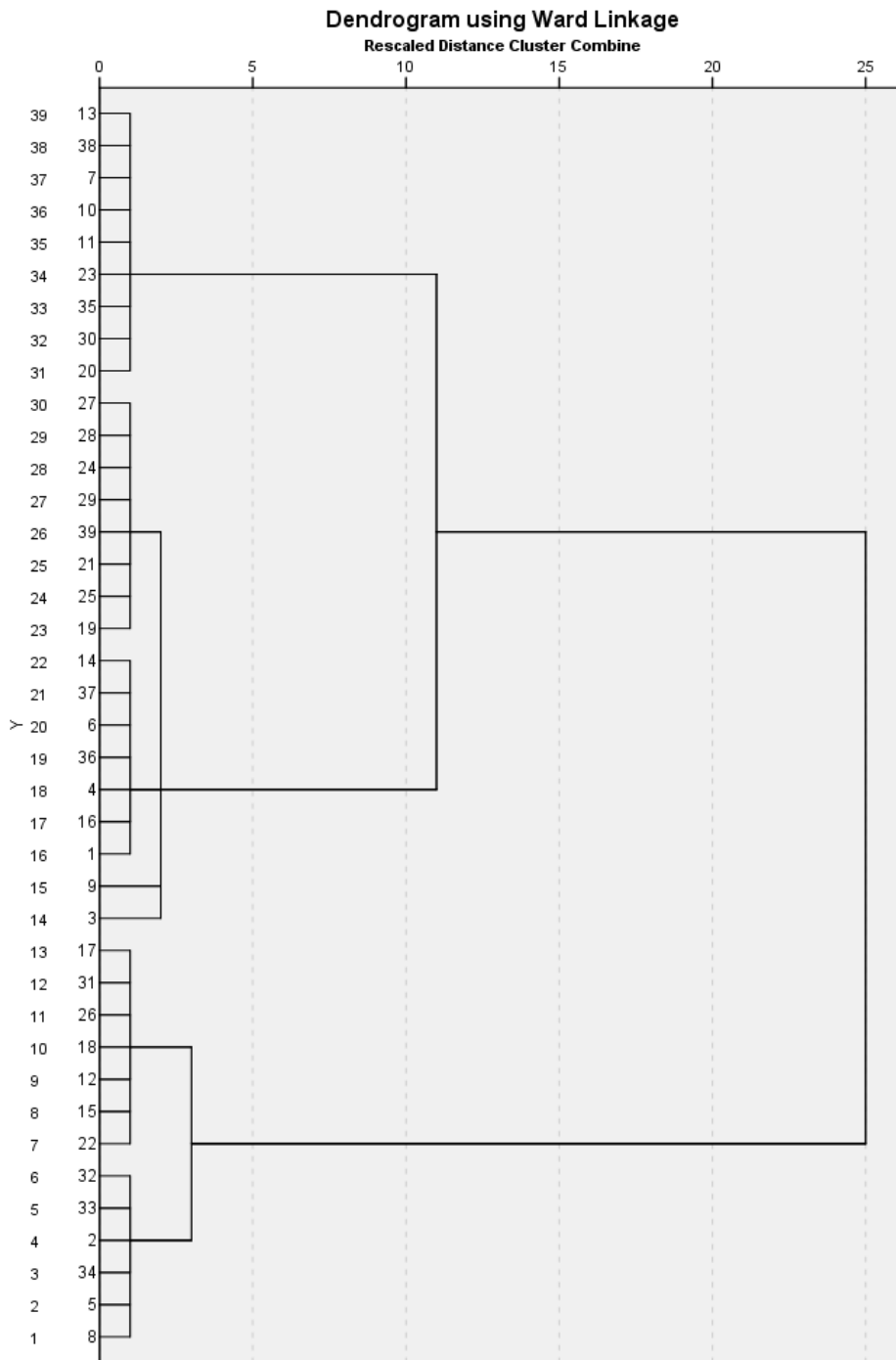


Figure 1. Dendrogram Graph

6. Conclusion

Evidence of gender inequality is a successful method for generating gender sensitivity and fundamental for improving efficient gender approaches. Male managers should happen gender sensitive during not obtaining women in terms of a critical mass of top status, Male managers must come to know to get and esteem status from the approach of the female.

The equal participation of women and men in local government decision-making is critical to ensuring that: any decisions made and budgets allocated are relevant to the living conditions and needs of local women and men; there is equity in provision of services and planning, and municipal funds are not only being spent effectively and efficiently, but also allocated to those who are the poorest. This is one of the motivations for women's involvement with local governments. For building capacity and strengthening monitoring mechanisms to support accountability to women benefit from gender responsive budgeting .It is obvious that gender responsive budgeting is a perfect tool to enhancing women's power at local governments.

The aim of this paper is to reveal out the effect of public policies at the local level on gender well-being. Hierarchical clustering method was implemented as a method. The research, which was carried out in 39 districts (Adalar, Avcılar, Arnavutköy, Ataşehir, Avcılar, Bağcılar, Bahçelievler, Bakırköy, Beşiktaş, Beykoz, Beylikdüzü, Beyoğlu, Büyükçekmece, Çatalca, Çekmeköy, Esenler, Esenyurt, Eyüp, Fatih, Gaziosmanpaşa, Güngören, Kadıköy, Kağıthane, Kartal, Küçükçekmece, Maltepe, Pendik, Sancaktepe, Sarıyer, Silivri, Sultangazi, Şile, Şişli, Tuzla, Ümraniye, Üsküdar, Zeytinburnu) investigated how gender responsive budgeting (GRB) tools and strategies had been used. According to the outcomes, Fatih comes into prominence. Sarıyer, Kadıköy, Şişli and Üsküdar follow these districts. The outcomes illustrates that old districts are more widespread than new ones. In addition this, different techniques can be implemented except the hierarchical clustering method for the future researches.

References

- Ball, G. H. (1970). Classification analysis. Menlo Park, CA: Stanford Research Institute.
- Blashfield, R. K. & Aldenderfer, M.S. (1978). The Literature on Cluster Analysis, *Multivariate Behavioral Research*, 13, 271-295.
- European Commission, Opinion on Gender Budgeting, Advisory Committee on Equal Opportunities für Women and Men, 2003, http://ec.europa.eu/employment_social/gender_equality/framework/opinion_on_gender_budgeting_en.pdf
- Everitt, B., Landau, S. & Leese, M. (2001). Cluster Analysis, London: Oxford University Press.
- Gender in Local Government: A Sourcebook for Trainers, http://www.un.org/womenwatch/directory/pdf/Source_BK_9-May.pdf (24.12.2015).
- Hubert, L. (1974). Approximate Evaluation Techniques for the Single-Link and Complete-Link Hierarchical Clustering Procedures, *Journal of the American Statistical Association*, 69, 698-704.
- Kalayci, S. (2005). SPSS Applied Multivariate Statistical Techniques, Ankara: Asil Publications.
- Kaufman, L., Rousseeuw, P. J. (1990). Finding groups in data: An introduction to cluster analysis, New York: John Wiley and Sons.
- MacQueen J. (1967). Some Methods for Classification and Analysis of Multivariate Observations, Berkeley: University of California Press
- Ministry of Gender, Labour and Social Development/Ministry of Local Government, Gender Budgeting Guidelines and Analytical Tools For Lower Local Governments, 2005.
- Republic of Turkey Ministry of Finance Strategy Development Unit, Public Financial Management and Control Law No. 5018, 2010.
- Senesen G. G. & Yucel, Y., Gender Responsive Budgeting: Theory and Practice in Perspective International Conference, Vienna University of Economics and Business, November 6-8, 2014.
- Ward, J. H., Jr. (1963). Hierarchical Grouping to Optimize an Objective Function, *Journal of the American Statistical Association*, 58, 236-244. <http://www.gender-budgets.org/> (25.12.2015)
- [http://www.episcopalchurch.org/files/Eng_gender_budget_booklet\(1\).pdf](http://www.episcopalchurch.org/files/Eng_gender_budget_booklet(1).pdf) (20.12.2015).