Venues Analysis and Comparison of Two Fastest Developing Cities: Manisa&Gaziantep

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1.   Introduction

1.a.   Discussion of the Background

Developing markets offer huge opportunities for entrepreneurs as there is flux of income for residents many of which ends in consumption. Therefore, developing markets always attract more investment than not promising ones. In a developing market where to locate a specific kind of business is always a challenging problem. As the location of a business is one of the most important factors for its success. Depending on the content of the business, location selection can be based on competition, proximity to other businesses or room for growth, etc. Decision is left to the entrepreneur, however, a good analysis and picture of the markets should be provided for him/her to launch the business in the right place.

1.b.   Description of the Problem

Location data can be used for the initial analysis of markets within a place or even in multiple places. Data may contain only names and coordinates of venues or may contain other attributes such as venue categories. Because, Google Maps has limited the number of free calls with its API, other location data ought to be used for analysis purposes. In this study Four-Square API will be adopted to analyze the number of venues, venue locations, venue categories and venue clusters for selected markets.

To enlarge the scope of the study, two market places, which are distinct cities in this study, are analyzed and compared to give initial insights on the venues and venue cluster locations. In order to determine the cities to analyze, highest city development ratios approach is adopted as follows. (Note: Year 2020 is excluded due to the Corona Virus Effects on the markets)

No	City	GDP Volume in 2018 (in Billion Turkish Liras)	GDP Volume in 2019 (in Billion Turkish Liras)	Change Rate
1	Manisa	29.67	31.17	5.1%
2	Osmaniye	7.31	7.60	4.0%
3	Gaziantep	31.95	33.12	3.7%

Table-1. First Three Cities of Turkey with Highest Gross Domestic Product (GDP) Growth Ratio in 2019[1]

From the table above, we see top three cities with highest development ratios of GDP, but one city, Osmaniye, has low GDP volume with respect to other two cities. By only looking at the development ratios of the cities may lead us to take into account small markets as promising ones. For this reason, one step further to determine cities to analyze, national standings of cities in terms of GDP Volumes is examined as below.

No	City	GDP Volume in 2018 (in Billion Turkish Liras)	GDP Volume in 2019 (in Billion Turkish Liras)	Change Rate
1	Istanbul	540.35	549.33	1.7%
2	Ankara	154.27	151.16	-2.0%
3	Izmir	109.22	111.12	1.7%
4	Bursa	72.65	73.58	1.3%
5	Kocaeli	70.24	71.23	1.4%
6	Antalya	53.21	53.88	1.3%
7	Konya	36.84	36.17	-1.8%
8	Adana	33.76	33.78	0.1%
9	**Gaziantep**	31.95	33.12	3.7%
10	**Manisa**	29.67	31.17	5.1%

Table-2. Top 10 Cities of Turkey with Highest Gross Domestic Product (GDP) in 2019[1]

From the table above, Manisa and Gaziantep are observed in both the Fastest Developing Cities and in Top-10 Cities with Highest GDP volumes. For that reason this study will focus on to analyze and compare how these two cities are similar or different from each other in terms of venues. As they are located in west and east part of the Turkey, respectively, analysis may reveal also interesting results due to the geographical and cultural differences as well.

1.c.   Interest
Clearly, entrepreneurs who wants to decide where to launch their specific kind of business or who wants to see the picture of business clusters so as to detect the market need and to see whether there is a room for growth would benefit from this study. The power of this study stems from the fact that, it can be adjustable for anywhere and for any kind just by typing different city names at the beginning of codes.

2.   Data

2.a.   Data Source
In the study, location and venues data is acquired by using Four-Square API in Jupyter Notebook at IBM Cloud Watson Studio Service with Python Runtime Environment. Returned files from the API calls are JSON files with all the venues are within the 2000 meters radius from the coordinates of cities that are acquired via python's "geopy.geocoders" library.

Figure-1. Four-Square API Calls and Returned Values for Both Cities

In the study, there are 121 venues returned for Manisa City and 129 venues returned for the Gaziantep City. An important note here is that, number of venues returned from Four-Square API calls do not reflect the whole but only those are marked by users of Four-Square. However, these samples can still give us insights about the whole.

2.b. Data Cleansing

The returned JSON file has lots of key-value pairs, but not all of them are needed in the study. Thus, data cleansing is carried out to filter necessary attributes of each venue for both cities. Cleaned data ready for the analysis are transformed into distinct data frames with no lost-data. First five rows of each table is shown below.

Figure-2. Manisa City Venues Data Frame First Rows

Figure-3. Gaziantep City Venues Data Frame First Rows & Dimensions of Data Frames

In order not to lose any data before starting the analysis, venues without an address are also kept by assigning 'pass' markers to address values. We have still 121 venues for Manisa City and 129 venues for Gaziantep City after transforming JSON file into data frames. Now that we have our data ready and structured, we can begin to analyze and compare venues of two distinct cities.

[1] https://www.tepav.org.tr/upload/files/1602216836-7.Gece_Isiklariyla_Il_Bazinda_GSYH_Tahmini_2019___da_81_Ilin_Kisi_Basi_Geliri.pdf