Opening a New Shopping Mall in Mumbai, India

(IBM Applied Data Science capstone on Coursera)

Submitted by

Mr. Swapnil Nanabhau Pingale

swpnlpingale@gmail.com

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Introduction

- Visiting shopping malls is a great way to relax and enjoy themselves during weekends and holidays
- Can do grocery shopping, dine at restaurants, shop at the various fashion outlets, watch movies and perform many more activities
- Property developers are also taking advantage of this trend to build more shopping malls to cater to the demand
- Opening shopping malls allows property developers to earn consistent rental income
- The location of the shopping mall is one of the most important decisions that will determine whether the mall will be a success or a failure

Data

- List of neighbourhoods in Mumbai, India. This defines the scope of this project which is confined to the city of Mumbai, the capital city of the country of India
- Latitude and longitude coordinates of those neighbourhoods. This is required in order to plot the map and also to get the venue data.
- Venue data, particularly data related to shopping malls. We will use this data to perform clustering on the neighbourhoods.
- ***Data Sources***

1. https://en.wikipedia.org/wiki/Category:Neighbourhoods_in_Mumbai

Methodology

- Build a dataframe of neighborhoods in Mumbai, India by web scraping the data from Wikipedia page
- Get the geographical coordinates of the neighborhoods using geocoder
- Obtain the venue data for the neighborhoods using Foursquare API
- Explore and cluster the neighborhoods
- Use K-Means Clustering
- Select the best cluster to open a new shopping mall

Results

The results from the k-means clustering show that we can categorize the neighbourhoods into 3 clusters based on the frequency of occurrence for Shopping Mall:

- Cluster 0: Neighbourhoods with high number of shopping malls
- Cluster 1: Neighbourhoods with low number to no existence of shopping malls
- Cluster 2: Neighbourhoods with moderate concentration of shopping malls

Discussion

- The results also show that the oversupply of shopping malls mostly happened in the central area of the city
- Open new shopping malls in neighbourhoods in cluster 1 with little to no competition
- Property developers are advised to avoid neighbourhoods in cluster 0 which already have high concentration of shopping malls and suffering from intense competition.

Limitations and Future Scope

- only consider one factor i.e. frequency of occurrence of shopping malls
- Future research could devise a methodology to estimate other factors such as population and income of residents that could influence the location decision of a new shopping mall

Conclusion

- 3 clusters are created based on their similarities using K-means clustering
- recommendations are provided to the relevant stakeholders i.e. property developers and investors regarding the best locations to open a new shopping mall

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