

COURSERA CAPSTONE

IBM Applied Data Science

Capstone

Opening A New Shopping Mall in Lagos , Nigeria

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BUSINESS PROBLEM

- Which Location is the most suitable for building a shopping mall in Lagos, Nigeria.
- Objective: To analyse and provide suitable locations for a shopping mall in Lagos, Nigeria for Property developers.
- To give an insight on Shopping mall details in the suburbs of Lagos.

Data

- Data required:
 - ❖ List of Neighbourhoods in Lagos
 - ❖ Latitude and Longitude coordinates of the neighbourhoods
 - ❖ Venue Data
- Sources of data:
 - ❖ Wikipedia page - https://en.wikipedia.org/wiki/Category:Neighborhoods_of_Lagos
 - ❖ Geocoder package for latitude and longitude coordinates
 - ❖ Foursquare API for venue Data

Methodology

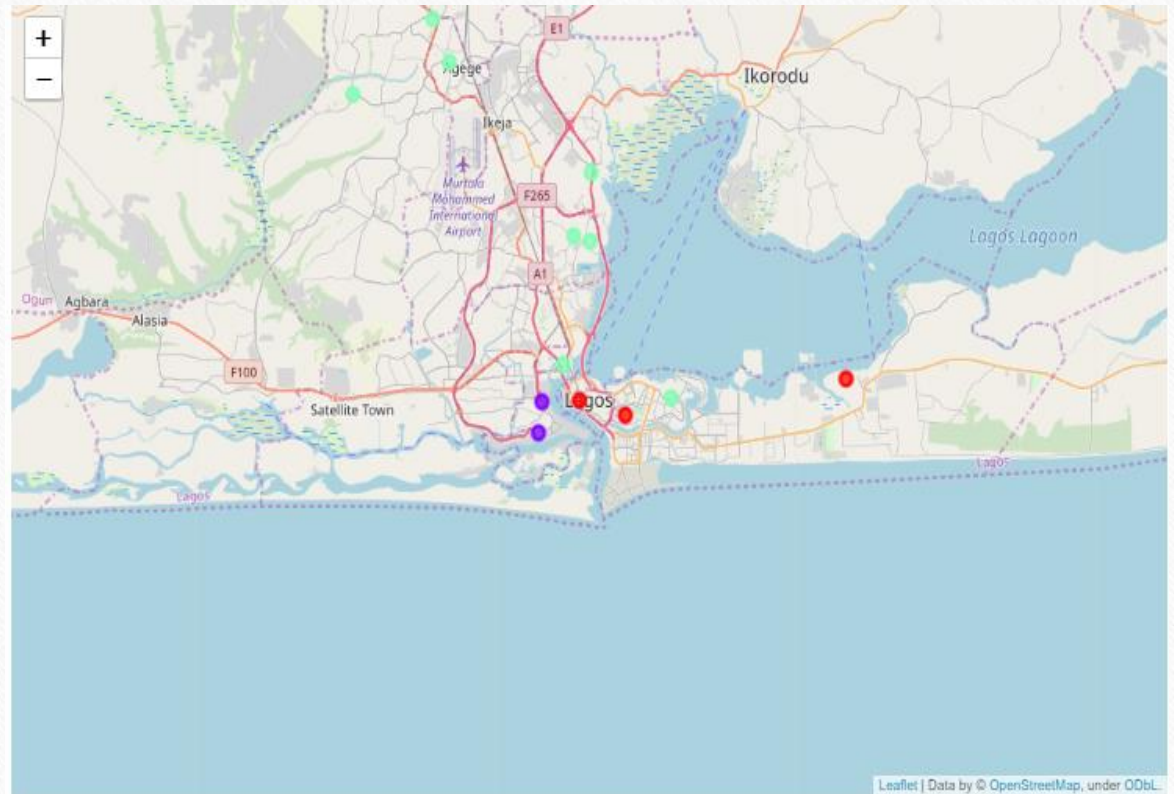
- Web scraping of Wikipedia page
- Get latitude and longitude coordinates using Geocoder
- Foursquare API to get venue data
- Group data based on frequency of occurrence of each venue category
- Filter venue category of shopping mall
- Perform clustering on the data by using k-means clustering
- Visualize the clusters in a map using Folium

Results

There are 3 categories of neighbourhoods based on the frequency of occurrence for Shopping Mall:

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

The results of the clustering are visualized in the map below with cluster 0 in red colour, cluster 1 in purple colour, and cluster 2 in mint green colour.



Discussion

- cluster 0 have high concentration are in Lagos, Nigeria and they are situated at the central area of the city.
- cluster 1 have moderate number of shopping mall in the neighbourhoods. This represents a great opportunity and high potential areas to open new shopping malls as there is very little to no competition from existing malls.
- shopping malls in cluster 2 do not have shopping malls at all. Property developers should capitalize on these findings to open new shopping malls in neighbourhoods in cluster 2 with little to no competition.

Recommendations

- Shopping malls can be opened in cluster 2 with no competition.
- The shopping malls location in cluster 1 can also be used.
- Avoid cluster 0 because the competitions are really keen.

```
kl_merged.loc[kl_merged['Cluster Labels'] == 0]
```

	Neighborhood	Shopping Mall	Cluster Labels	Latitude	Longitude
8	Obalende	0.059524	0	6.44694	3.41528
11	Victoria Garden City	0.117647	0	6.46575	3.54434
12	Yaba, Lagos	0.083333	0	6.45470	3.38876

```
kl_merged.loc[kl_merged['Cluster Labels'] == 1]
```

	Neighborhood	Shopping Mall	Cluster Labels	Latitude	Longitude
3	Apapa	0.333333	1	6.437950	3.364360
6	Ijora, Lagos	0.222222	1	6.453885	3.366317

```
kl_merged.loc[kl_merged['Cluster Labels'] == 2]
```

	Neighborhood	Shopping Mall	Cluster Labels	Latitude	Longitude
0	Abule Egba	0.0	2	6.64750	3.30306
1	Agege	0.0	2	6.62561	3.31262
2	Alimosho	0.0	2	6.60927	3.25580
4	Bariga	0.0	2	6.53500	3.39472
5	Iddo Island	0.0	2	6.47194	3.37917
7	Ikoyi	0.0	2	6.45606	3.44222
9	Ogudu	0.0	2	6.56947	3.39520
10	Somolu	0.0	2	6.53785	3.38534

Conclusion

- Property Developers and investors should always consider location before venturing into the shopping mall business.
- Over crowded and competitive spaces should be avoided.

THANK YOU!