

Coursera Capstone:

IBM Applied Data Science Project

Situating a New Shopping Mall in Lagos, Nigeria



1 Introduction:

Shopping malls have taken more and more place in our economic and social life and have also taken the place of traditional bazaars. Shopping malls are not only places to shop; they also have become places for having fun and spending time. Consumers spend a considerable time in shopping malls because they host a lot of stores and activities that attract consumers' attention and offer a lot of benefits. Shopping malls in Lagos, Nigeria have become the most attractive places to shop and hang out. Lagos consumers do grocery shopping, dine at restaurants, shop at the various fashion outlets, watch movies and perform many more activities. Shopping malls are like a one-stop destination for all types of shoppers. For retailers, the central location and the large crowd at the shopping malls provides a great distribution channel to market their products and services.

Property developers are also taking advantage of this trend to build more shopping malls to cater to the demand. As a result, there are many shopping malls in the city of Lagos and many more are being built. Opening shopping malls allows property developers to earn consistent rental income. Of course, as with any business decision, opening a new shopping mall requires serious consideration and is a lot more complicated than it seems. Particularly, 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.

Business Problem:

The objective of this capstone project is to analyze and select the best locations in Lagos, Nigeria to open a new shopping mall. Using data science methodology and machine learning techniques like clustering, this project aims to provide solutions to answer the business question:

“In Lagos, Nigeria, if a property developer is looking to open a new shopping mall, where would you recommend that they open it?”

“Where are the most promising neighborhoods with least competition and most likely business success?”

Target Audience of this project

This project is particularly useful to property developers and investors looking to open or invest in new shopping malls in Lagos, Nigeria. This report seeks to clarify the most promising neighborhoods with least competition and most likely business success.

2 Data:

To solve the problem, we will need the following data:

Area data of Lagos, Nigeria. This defines the scope of this project which is confined to the city of Lagos, Nigeria, the capital of the country of Nigeria in West Africa+.

Spatial data of the Lagos. Latitude and longitude coordinates of those areas, 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 areas.

Sources of data and methods to extract them:

This Wikipedia page

(https://en.wikipedia.org/wiki/List_of_Lagos_State_local_government_areas_by_population) contains a list of local government arears in Lagos Nigeria, with a total of 20 LGAs. We will use web scraping techniques to extract the data from the Wikipedia page, with the help of pandas packages. Then we will get the geographical coordinates of the areas using Python Geocoder package which will give us the latitude and longitude coordinates of the areas. After that, we will use Foursquare API to get the venue data for those areas. Foursquare has one of the largest database of 105+ million places and is used by over 125,000 developers. Foursquare API will provide many categories of the venue data, we are particularly interested in the Shopping Mall category in order to help us to solve the business problem put forward. This is a project that will make use of many data science skills, from web scraping (Wikipedia), working with API (Foursquare), data cleaning, data wrangling, to machine learning (K-means clustering) and map visualization (Folium).