

Coursera Capstone

IBM Applied Data Science Capstone

Opening a New Restaurant in Hanoi, Vietnam

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Introduction

Most of us eat out at least once a week, and this is why the restaurant industry is a lucrative business and is thriving perpetually in Vietnam. And of course, we all love to eat and will continue to enjoy food prepared outside of the home. This is also another reason starting a restaurant business in Vietnam is among the most amazing business ideas.

Although the COVID-19 epidemic is causing certain difficulties in relocation decisions and activities, Vietnam is still considered an attractive investment destination for many multinational companies in the world. Currently, doing catering business is a potential investment sector which is growing rapidly. Tastes and trend of Vietnamese diners are diverse and variable. They are eager to try new dishes. In large cities, it is not hard to find restaurants owned by foreigners which provides their traditional dishes of many nations such as: France, Italy, Japan, Korea, Singapore, Thailand, China, India... No matters how the economy changes, our food demand is an everyday issue.

But, you need to know that opening a restaurant requires a lot of effort. Running a medium and above restaurant requires a huge capital and year-long pay pack period as well as an effective marketing plan in order to compete with many competitors. Many foreigners have been living in Vietnam for a long time wish to open restaurants here to serve their traditional dishes. It is not only passion in culinary arts but also their pride helping them through homesick. Of course, as with any business decision, opening a new restaurant requires serious consideration and is a lot more complicated than it seems. Particularly, the location of the restaurant is one of the most important decisions that will determine whether it will be a success or a failure.

Business Problem

Suppose you want to open a restaurant in Hanoi, and you are wondering where is a suitable location to open a restaurant. You don't want to open a restaurant in a place that already has too many restaurants and want to have an overview of the restaurants that have opened in Hanoi.

The objective of this capstone project is to analyze and select the best locations in Hanoi, capital of Vietnam, to open a new restaurant. Using data science methodology and machine learning techniques like clustering, this project aims to provide solutions to answer the business question: In Hanoi, Vietnam, if someone is looking to open a restaurant, where would you recommend that they open it?

Target Audience of this project

This project is particularly useful to property developers and investors looking to open or invest in new restaurants in Hanoi, the capital city of Vietnam.

Data

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

- List of neighborhoods in Hanoi, Vietnam. This defines the scope of this project which is confined to Hanoi, the capital city of Vietnam.
- Latitude and longitude coordinates of those neighborhoods. 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 neighborhoods.

Sources of data and methods to extract them

This Wikipedia page (https://en.wikipedia.org/wiki/Category:Districts_of_Hanoi) contains a list of neighborhoods in Hanoi, with a total of 70 neighborhoods. We will use web scraping techniques to extract the data from the Wikipedia page, with the help of Python requests and BeautifulSoup packages. Then we will get the geographical coordinates of the neighborhoods using Python Geocoder package which will give us the latitude and longitude coordinates of the neighborhoods.

After that, we will use Foursquare API to get the venue data for those neighborhoods. 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 Restaurant 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). In the next section, we will present the Methodology section where we will discuss the steps taken in this project, the data analysis that we did and the machine learning technique that was used.