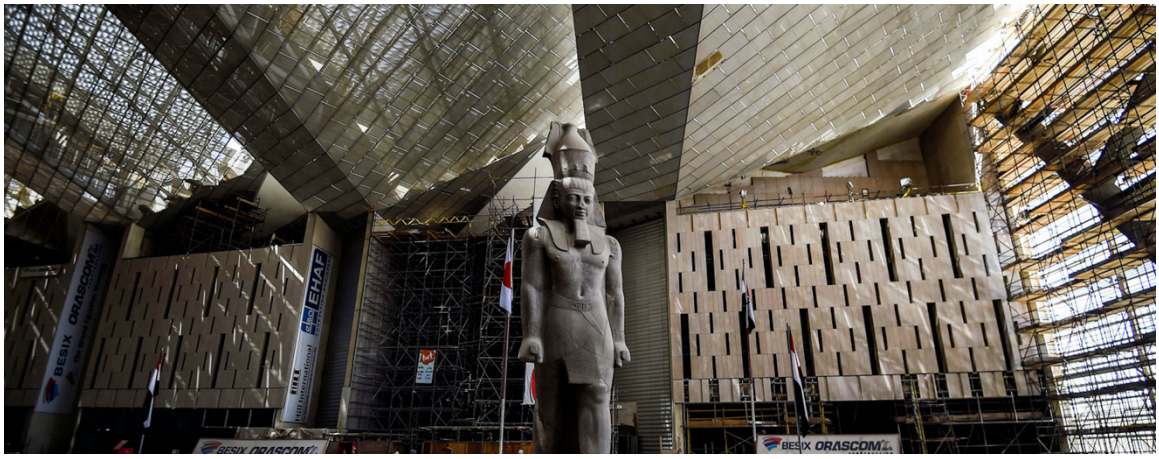
IBM DATA SCIENCE CAPSTONE PROJECT

(Final Report)

Venues to invest in around the Grand Egyptian Museum (GEM)



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Introduction

Egypt is currently building a megaproject called The Grand Egyptian Museum or GEM. The museum is projected to be the largest archeological museum in the world. The museum complex will be built on a plot of land approximately 480,000 square meters, which will be less than 2 kilometers away from the timeless wonder of the Giza Pyramids. As well as holding the entire collection of the famous king Tutankhamoun, the museum complex will be holding more than 100,000 artifacts. This will allow the museum to accommodate more than 15,000 visitors per day. While this seems like a very promising project for the Egyptian government in order to boost the tourism sector, it is also a great opportunity for investors looking to invest in what is expected to be a major touristic hub in one of the top touristic destinations in the world.

As exciting as this sounds, one cannot help but wonder, where should a potential investor put their money around such a project? In this project we will try to answer that question through a data oriented approach, by using our data science toolkit in order to acquire the data, clean the data, visualize it, and run some analysis algorithms in order to find similar museums that already exist around the world and try to get ideas of what category of venues would be the most successful around such project.

Business Problem.

The key objective of this capstone project is to try to find the best ways to invest money around a museum with such magnitude as the Grand Egyptian Museum GEM. Using our data science toolkit which includes data acquisition techniques, data wrangling, location data visualization, and machine learning algorithms such as clustering. We will be able to answer the question about what venues to invest in around a major museum.

Target audience.

This capstone project would be particularly helpful for potential investors looking to seize the opportunity to invest around the Grand Egyptian Museum megaproject. The capstone project is especially important now as the grand opening of the museum is projected to take place in early 2021. As mentioned above, the museum is likely to accommodate more than 15,000 visitors per day. Although the museum complex will include an area designated for cafes, restaurants, and a giftshop, one must also

keep in mind that the museum is next to one of the seven wonders of the world. So, the tourists' itinerary will not be limited to the museum in most cases. This will certainly boost the tourist' flow to the area and its neighboring zones, potentially turning it into a hub for tourists to enjoy a full cultural experience.

Data

In order to answer the question that we are asking, we will need the following data:

- A list of most visited museums around the world, adding to them the data of the GEM in order to study the demographic of the already existing venues in the vicinity.
- Location data of these museums, including addresses and coordinates (latitude and longitude).
- Venue data, which includes the venues that are currently existing and successfully functioning around these museums and the categories of said venues.

Data Acquisition.

First, we will be acquiring the museum data from the following Wikipedia page:

https://en.wikipedia.org/wiki/List_of_most_visited_art_museums

We will start by using BeautifulSoup module in order to scrape the table containing the data that we need. Next, we will access the location data of these museums through Geopy, including their addresses and coordinates. Afterwards, using the Foursquare API we will acquire the venue data around these museums, including the venue coordinates, so we can visualize them on the map, and the venue category. This will allow us to run a cluster analysis on the demographic of the venues around the museums and cluster the museums that have similar demographic. Finally, we will look into the venues around the museums in the same cluster as GEM, and point out those that are different from the ones in the area around GEM.

Methodology

In this project we will try to understand the demographic of venues around the most visited museums around the world. but first we have to explore each museum and the top venues around it. Then, we can run some cluster analysis using K-means algorithm in order to find out the similarities between these museums. More importantly, to find out which cluster the GEM belongs to. Afterwards, we can start taking a closer look at the venues around the museums that belong at the same cluster as the GEM. Finally, we will compare between the categories of venues around the GEM and the categories of venues around these museums, so we can determine which venues seemed to be successful given the same circumstances and demographic.

Results and Discussion

As our cluster analysis suggests, the area around the GEM has a very similar demographic to the Gyeongju National Museum's. This includes having a historic site and a history museum nearby; which is one of the factors shaping the demographic of the venues around these museums. By looking at the venues that exist around Gyeongju National Museum, we'll notice there are more outdoor activities for visitors to enjoy a well rounded cultural experience. This suggests that investing in an outdoor activity venue in the area around GEM is very promising. Especially considering Egypt's year-round warm and sunny weather. Also, we can notice a more diverse food and beverage scene around Gyeongju National Museum. This suggests that the area around GEM could benefit from more diversity in terms of food and beverage.

Conclusion

To conclude, our capstone project included the utilization of our data science toolkit in order to find out where should a potential investor invest their money around the Grand Egyptian Museum? Which is expected to open its doors for visitors in 2021. Our capstone project provided us with a valuable insight regarding the demographic of venues around GEM. According to our breif study of the area, in comparison to the area of the Gyeongju National Museum, the area around GEM could benefit from outdoor activity venues that would provide a more rounded cultural experience for visitors. In addition, the area could also benefit from a more diverse food and beverage scene, especially considering the diversity of the expected visitors to the museum.