A recommendation system for setting up a new restaurant aimed at corporates

Introduction :

India is an extremely densely populated country (one of the most dense), with more than 1.34 billion residents.
Obviously it is difficult to start a business here due to high real estate costs. So, an entrepreneur aiming at a corporate centric market should know the best places to set up shop.

A large population of Bangalore lies in this corporate demographic (more than 200 corporations), and 800+ startups, so eating snack foods out is more popular and convenient than ever, hence goal is to find the best places in Bangalore to setup a new food shop/ restaurant.
The example chosen is for Bangalore, but this project can be used for various different locations like Chennai, Mumbai, Delhi etc.

The objective is to find the optimal location for setting up a new business (based on the location of offices, eateries in Bangalore, India).
Also the relative distance of the business from the nearby offices, colleges etc. has to be minimized, while keeping in mind the customers that the place will attract, while maximizing the profits.

Target audience:

Target audience consists of entrepreneurs and small-scale businessmen/women interested in the food/ snacks industry, aiming at the corporate demographic for maximising profits.

Data:

1. We need a list of the corporate offices in Bangalore. Their latitude and longitude will be calculated using Geopy Nominatim (a Python Library). This data can be found on Wikipedia, as well as many other websites.
For instance: https://en.wikipedia.org/wiki/Category:Companies_based_in_Bangalore

2. Then we can use the FourSquare API to find the number of eateries in a 1km radius around each office. The API will provide us with Postal Code, Neighborhood, Venue, Venue Summary and Venue Category.

3. We can also use the FourSquare API to find all food related categories that we will filter.

4. Processing the Retrieved data and creating a structured DataFrame for all the venues, grouped by schools.

5. Selecting relevant venues (food related only).

6. The offices with the least number of eateries around them would be the best places to start a restaurant. (supply and demand).

7. Clustering the eateries to find the office areas with least competition around them.
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Methodology:

1. Collected a list of offices within Bangalore.

2. Used the Nominatim library to find their latitudes and longitudes.

3. Used the FourSquare venues API to find the food related categories to be looked at.

4. Devised a function to find categories of a given venue from our data

5. Used the FourSquare API to find the venues within a 1500m radius of each institute, and plotted these venues accordingly, to a unique colour scheme.

6. Analysed the number of eateries near each institute.

7. Clustered the institutes (due to overlap of eateries around them).

8. Clustered the eateries to find the locations with least number of eateries around it.
9. Found the sizes of each cluster.

10. Found the smallest and largest clusters. (smallest would be best for a new eatery, due to less competition, and largest clusters would be good locations to advertise a new eatery).

Results:

A good eatery aimed at corporates, or even at the general public would do well here due to sheer lack of competition in the vicinity; Also because they have a high office:eatery ratio.

Hence we find that the best place for a food shop aimed at companies will be either near Deloitte, Intel, EY or Dell in Bangalore due to the best companies:eatery ratio in the cluster.

We also find that 1st, 6th and 4th clusters have approximately 120 eateries near them. These could be great localities to advertise an upcoming new fast food shop or restaurant.

Hence these places would be good for setting up and advertising an upcoming new restaurant.