

Opening an Italian restaurant in Berlin

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A.1. INTRODUCTION

In this project, we will try to find an ideal restaurant venue. This study would directly address stakeholders that are involved in opening an Italian restaurant in Berlin, Germany. We would strive to detect areas that are not already packed with restaurants, as there are several restaurants in Berlin. The places with no Italian restaurants in the vicinity are also of special concern to us. We will still want areas as close as possible to the city centre, assuming the first two conditions are satisfied. Based on this criterion, we will use our data science powers to deliver a handful of the most promising neighbourhoods. The advantages of each region would then be specifically articulated in order to enable stakeholders to select the best possible final venue.

A.2. DATA

Factors that affect our judgment, based on the concept of our dilemma, are:

- Number of established neighborhood restaurants (any type of restaurant)
- Distance to and number of Italian restaurants in the neighborhood, if any
- The gap between the community and the city center

We decided to use a regularly spaced grid of locations, centered around city center, to define our neighborhoods.

Following data sources will be needed to extract/generate the required information:

- Centers of candidate areas will be generated algorithmically and approximate addresses of centers of those areas will be obtained using Google Maps API reverse geocoding
- Number of restaurants and their type and location in every neighborhood will be obtained using Foursquare API
- Coordinate of Berlin center will be obtained using Google Maps API geocoding of well known Berlin location (Alexanderplatz)

B.1. Neighborhood and Candidates

- I create latitude & longitude coordinates for centroids of our candidate neighborhoods. We will create a grid of cells covering our area of interest which is approx. 12x12 kilometers centered around Berlin city center.
- Then, I create a grid of area candidates, equally spaced, centered around the city center and within about 6km from Alexanderplatz. Our neighborhoods will be defined as circular areas with a radius of 300 meters, so our neighborhood centers will be 600 meters apart.

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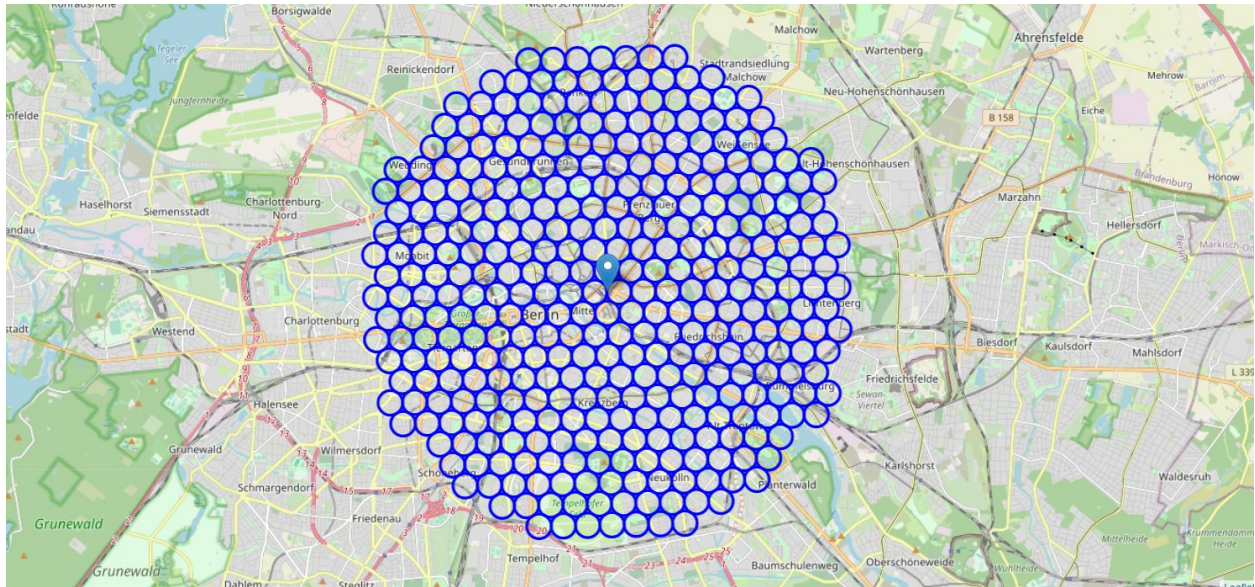
berlin_center_x, berlin_center_y = lonlat_to_xy(berlin_center[1], berlin_center[0]) # City center in Cartesian coordinates

k = math.sqrt(3) / 2 # Vertical offset for hexagonal grid cells
x_min = berlin_center_x - 6000
x_step = 600
y_min = berlin_center_y - 6000 - (int(21/k)*k*600 - 12000)/2
y_step = 600 * k

latitudes = []
longitudes = []
distances_from_center = []
xs = []
ys = []
for i in range(0, int(21/k)):
    y = y_min + i * y_step
    x_offset = 300 if i%2==0 else 0
    for j in range(0, 21):
        x = x_min + j * x_step + x_offset
        distance_from_center = calc_xy_distance(berlin_center_x, berlin_center_y, x, y)
        if (distance_from_center <= 6001):
            lon, lat = xy_to_lonlat(x, y)
            latitudes.append(lat)
            longitudes.append(lon)
            distances_from_center.append(distance_from_center)
            xs.append(x)
            ys.append(y)

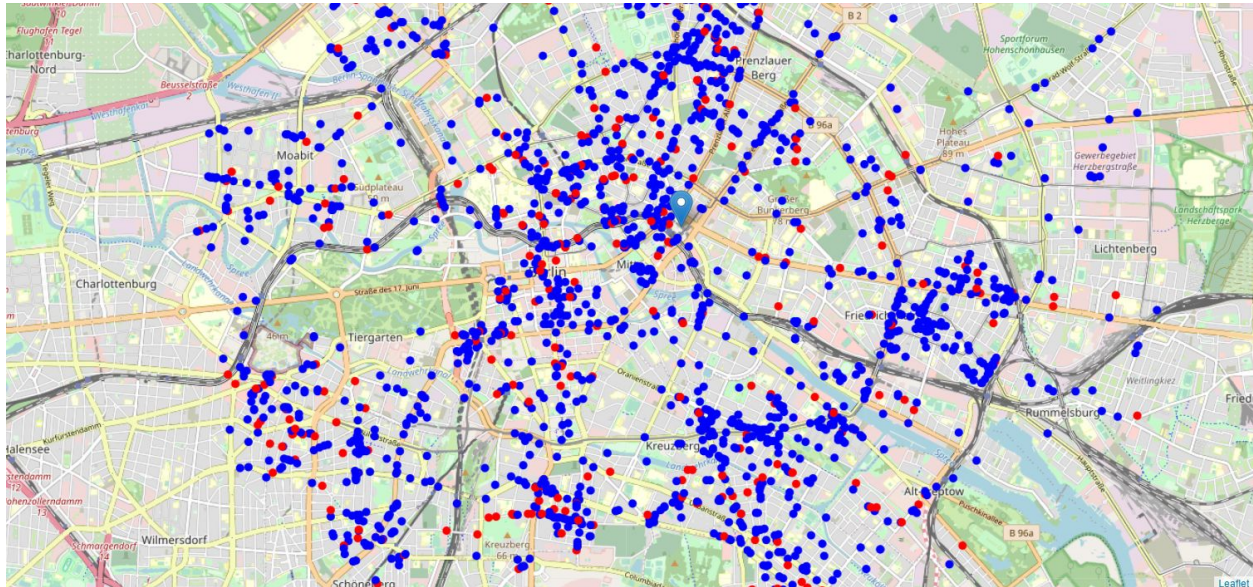
print(len(latitudes), 'candidate neighborhood centers generated.')
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364 candidate neighborhood centers generated.



B.2. Foursquare API

- Now, use Foursquare API to get info on restaurants in each neighborhood
- I'm interested in venues in 'food' category, but only those that are proper restaurants - coffee shops, pizza places, bakeries etc. are not direct competitors so we don't care about those. So I will include in our list only venues that have 'restaurant' in category name, and I'll make sure to detect and include all the subcategories of specific 'Italian restaurant' categories, as we need info on Italian restaurants in the neighborhood.
- Then go over our neighborhood locations and get nearby restaurants; also maintain a dictionary of all found restaurant:

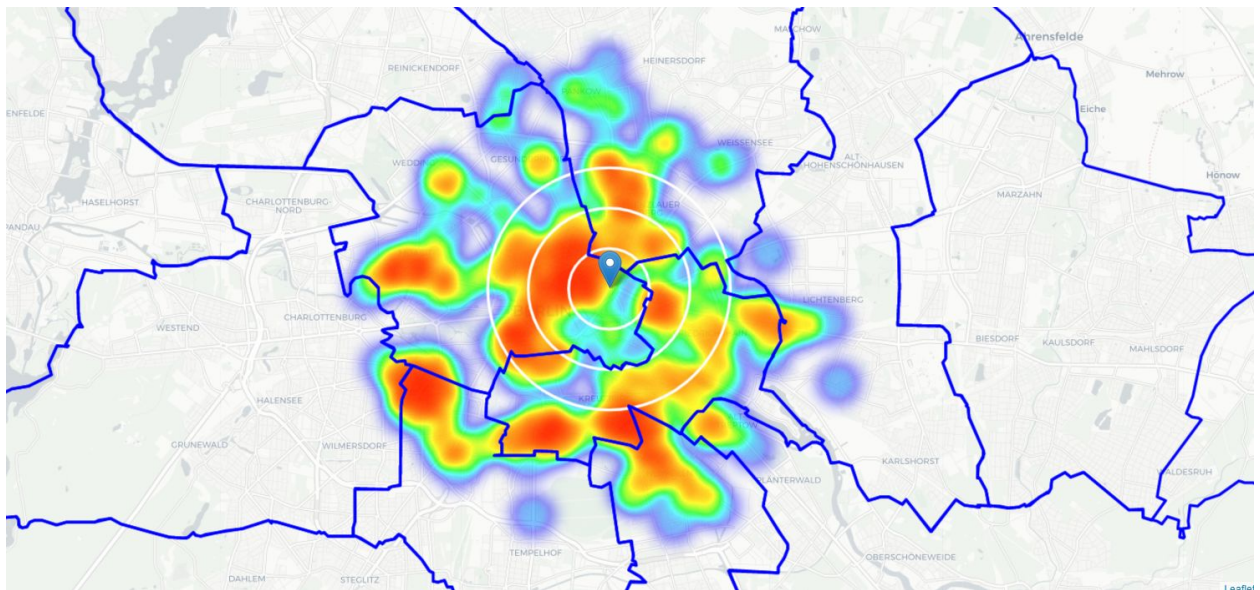
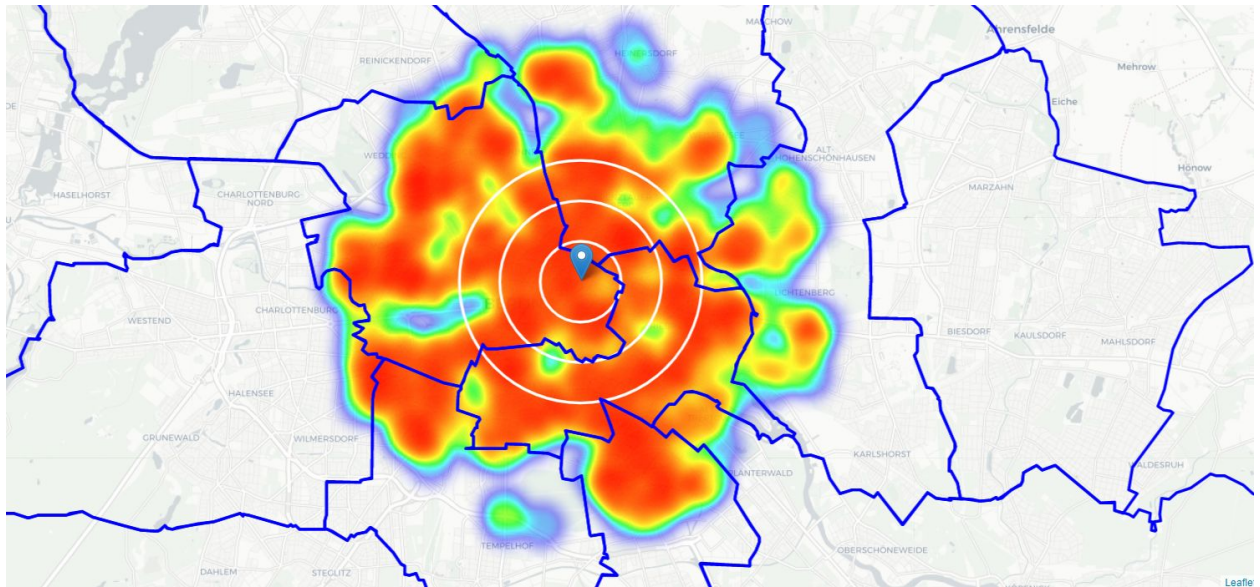


C. METHODOLOGY

- In this project, we will concentrate our efforts on identifying areas of Berlin with a low density of restaurants, especially those with a low number of restaurants in Italy. We're going to narrow our study to about 6 km across the city centre.
- We have collected the necessary data in the first step: location and sort (category) of each restaurant within 6 km of Berlin center (Alexanderplatz). We named Italian restaurants as well (according to Foursquare categorization).
- Calculation and discovery of 'restaurant density' across various areas of Berlin will be the second step in our study - we will use heatmaps to find a few promising areas near the center with a low number of restaurants in general (and no Italian restaurants nearby) and concentrate our efforts on those areas.
- In the third and final phase, we will concentrate on the most promising areas and build clusters of locations within them that follow some specific criteria set out in the conversation with stakeholders: we will take into account locations with no more than two restaurants within a radius of 250 meters, and we want locations without Italian restaurants within a radius of 400 meters. We will display a map of all these locations but also create clusters of those locations (using k-means clustering) to classify general zones/neighborhoods/addresses that should be a starting point for the final exploration of 'street level' and search by stakeholders for optimal position.

D.1. Create maps:

- Borders of Berlin boroughs on my map and a few circles indicating distance of 1km, 2km and 3km from Alexanderplatz



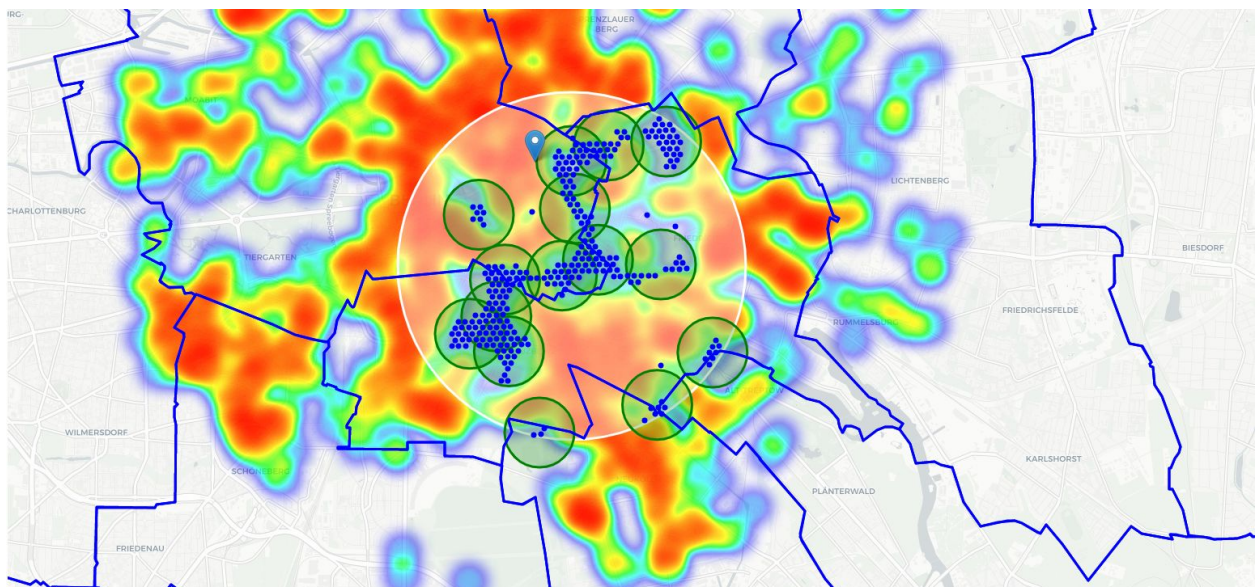
D.2. KREUZBERG AND FRIEDRICHSHAIN:

- Analysis of popular travel guides and web sites often mention Kreuzberg and Friedrichshain as beautiful, interesting, rich with culture, 'hip' and 'cool' Berlin neighborhoods popular with tourists and loved by Berliners.
- "Bold and brazen, Kreuzberg's creative people, places, and spaces might challenge your paradigm."* Tags: Nightlife, Artsy, Dining, Trendy, Loved by Berliners, Great Transit (airbnb.com)
- "Kreuzberg has long been revered for its diverse cultural life and as a part of Berlin where alternative lifestyles have flourished. Envisioning the glamorous yet gritty nature of Berlin often conjures up scenes from this neighbourhood, where cultures, movements and artistic flare adorn the walls of building and fills the air. Brimming with nightclubs, street food, and art galleries, Kreuzberg is the place to be for Berlin's young and trendy."* (theculturetrip.com)
- "Imagine an art gallery turned inside out and you'll begin to envision Friedrichshain. Single walls aren't canvases for creative works, entire buildings are canvases. This zealously expressive east Berlin neighborhood forgoes social norms"* Tags: Artsy, Nightlife, Trendy, Dining, Touristy, Shopping, Great Transit, Loved by Berliners (airbnb.com)
- "As anyone from Kreuzberg will tell you, this district is not just the coolest in Berlin, but the hippest location in the entire universe. Kreuzberg has long been famed for its diverse cultural life, its experimental alternative lifestyles and the powerful spell it exercises on young people from across Germany. In 2001, Kreuzberg and Friedrichshain were merged to form one administrative borough. When it comes to club culture, Friedrichshain is now out in front – with southern Friedrichshain particularly ranked as home to the highest density of clubs in the city."* (visitberlin.de)
- Popular with tourists, alternative and bohemian but booming and trendy, relatively close to city center and well connected, those boroughs appear to justify further analysis.
- Let's define new, more narrow region of interest, which will include low-restaurant-count parts of Kreuzberg and Friedrichshain closest to Alexanderplatz.

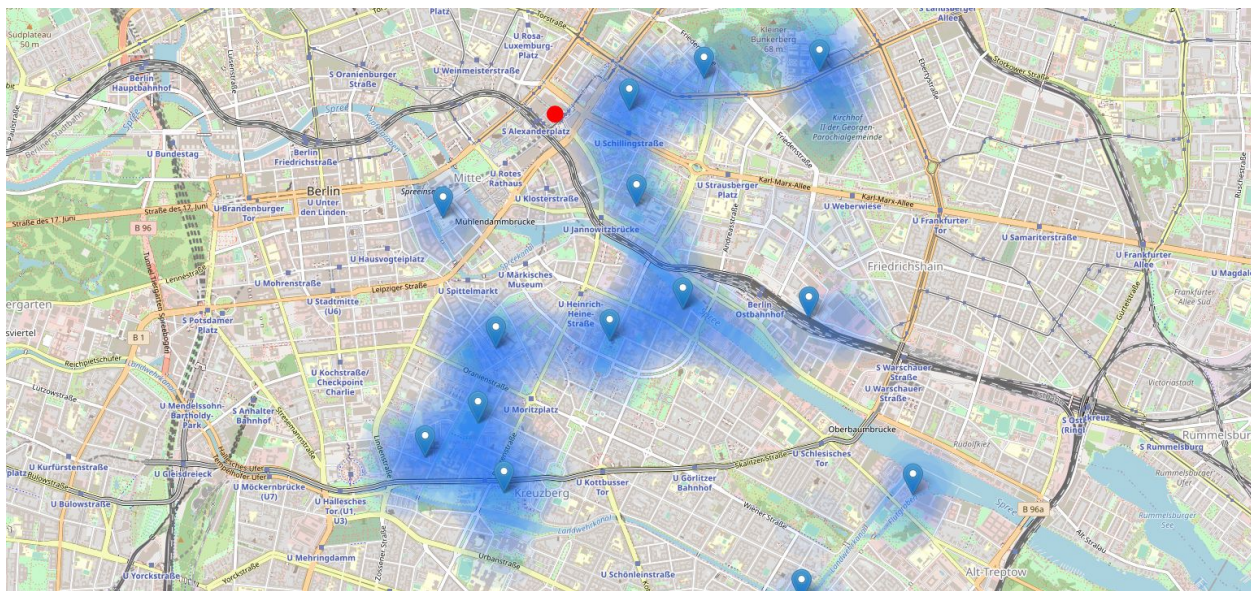
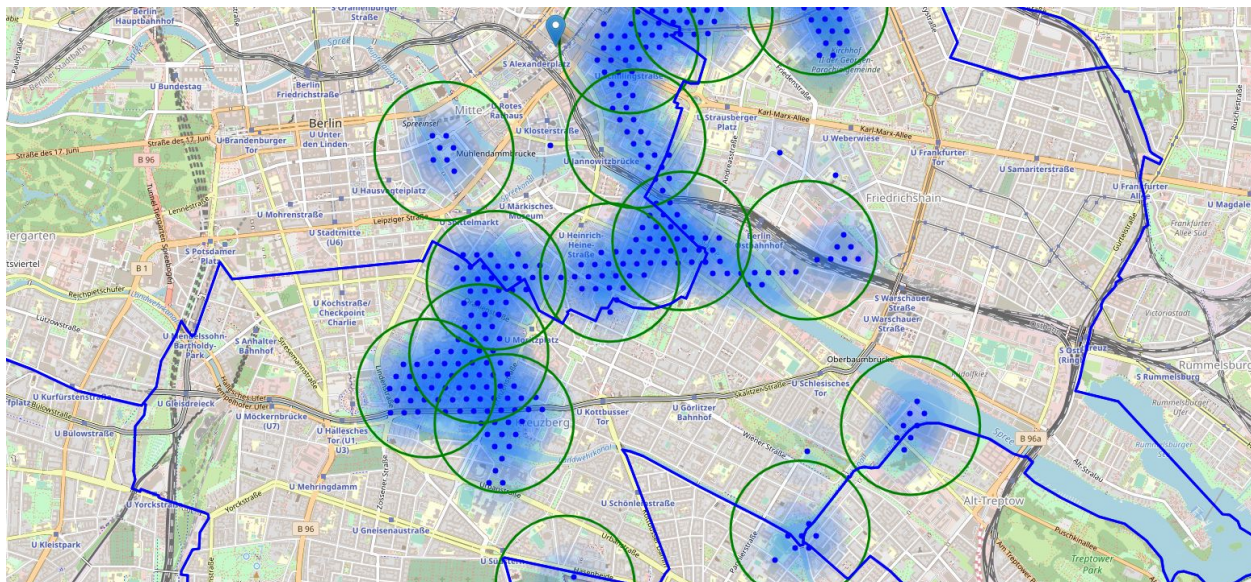


D.3. Finding center of zones containing good locations:

- We need to import KMeans from sklearn.cluster (this is important)



Results of good location:



E. DISCUSSION

- The results show us the great number of restaurants in Berlin (around 2000 in the area of interest which is 12x12km around our center - Alexanderplatz). Highest concentration of restaurants was detected north and west from Alexanderplatz, so we focused our attention to areas south, south-east and east. And to the end, our attention focused on Kreuzberg and Friedrichshagen which have a combination of popularity among tourists, closeness to city center, strong socio-economic dynamics and a number of pockets of low restaurant density.
- We first created a dense grid of position candidates (spaced 100 m apart) after concentrating our attention on this smaller region of interest (covering approx. 5x5 km south-east of Alexanderplatz); these positions were then filtered so that those with more than two restaurants in a radius of 250 m and those with an Italian restaurant closer than 400 m were omitted.
- Those candidates for the position were then pooled to create areas of concern with the largest number of candidates for the location. Using reverse geocoding, addresses of the centers of those zones were also created to be used as markers/starting points for more comprehensive local analysis based on other variables.
- The consequence of all this is 15 areas comprising the highest number of possible new restaurant sites, depending on the number and distance of established locations - both restaurants in general and restaurants in Italy in particular. This, of course, would not mean that for a new restaurant, certain places are necessarily ideal locations! The aim of this study was to provide information only on areas close to the center of Berlin but not crowded with established (particularly Italian) restaurants - it is very likely that there is a very good explanation for a limited number of restaurants in some of those areas, which would make them unfit for a new restaurant irrespective of the lack of competition in the area. Consequently, the proposed zones can only be viewed as a starting point for a more detailed review, which may potentially lead to a position that has not only taken into account nearby rivalry, but also other considerations and satisfied all other applicable criteria.

F. CONCLUSION

- I suggest you need to make research before starting to open any restaurant, of course anywhere in the world not only in Berlin.
- Money is not all to start a business so get your some knowledge, for your future.

