BUSINESS OPPORTUNITY IN INDONESIA

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1. INTRODUCTION

Indonesia is densely populated, with a lot of business opportunity. Opening new businesses can be a challenge with constraints such as choosing the best location and choosing the business category. In this report, the population data in each city in Indonesia was compared with the venues data from Foursquare to find the best location and business category.

In this research, the most popular business category is analyzed through exploratory map data analysis. One of the significantly rising venues in Indonesia is convenience store, such as Indomaret and Alfamart, with a growth rate of 16.4% in 2009 (Pandin, 2009). It will be interesting to see the spread of convenience store around Indonesia to decide where to open a new store. Another type of rising venue in Indonesia is Indonesian restaurant, with a growth rate of 8.16% in 2015 (Przybylski, 2018).

In this research, the best location to open a business was determined by the density of venues relative to the population size. By comparing the number of venues in each city with the number of populations, we can estimate this density. This density value, which will be called VP (number of venues per population), represents business opportunity. A low VP value means there are still a few number of business venues in the city relative to the number of population, while a high VP value means there are a lot of venues. A low VP value can be used as one of the constraints to open a business in an area, which represents a big business opportunity.

2. DATA

There were two data sources, i.e.:

- Indonesia cities and location (latitude and longitude) data, collected and processed from https://worldpopulationreview.com/countries/cities/indonesia. The data was pre-processed into CSV file with the columns: City, Population, Lat, Lng
- Foursquare venues data for each city, from venues search endpoint. The collected data are the venue categories for each city, and the total number of venues.

3. METHODOLOGY

Here is the methodology for this research:

1. **Collect Indonesia Cities and Location Data**
   In total, there are 384 major cities collected from the source, with the total number of populations of 64,324,423. Each city will have the number of populations, latitude and longitude.

2. **Venues Data Collection from Foursquare API**
   From the Foursquare API, get the number of venues in each city, along with the number of venue categories for each city.

3. **Cluster the Cities**
   Cluster the cities into 10 clusters. This clustering is necessary since if we calculate the venues per city, the resulted numbers will be too small.

4. **Exploratory Map Data Analysis**
   Conduct an exploratory map data analysis to get the spread of venues for each cluster. Assign colors for each cluster from green to red, where green represents less venues and red for more venues. The green markers on the map represents potential areas to open new business.

4. RESULTS

This section will be divided into two parts, i.e. (1) venue categories, which is the analysis of the popular categories in each cluster, (2) venue density, which is the analysis of the total number of venues if compared to the number of population in each cluster. To give some context, below is the Indonesia map along with the name of the islands, as shown in Figure 1.

Figure 1. Map of Indonesia
(Source: https://www.lonelyplanet.com/maps/asia/indonesia/map_of_indonesia.jpg)

4.1. VENUE CATEGORIES

After collecting the number of venues by category for each city, we can calculate the total number of venues by category for all cities. The top 15 venue categories in Indonesia, based on the data from Foursquare from the 384 major cities, are shown in Table 1. Note that not all venues are profitable businesses, such as Office, Government Building, etc. Thus, we decided to only take the following categories: Indonesian Restaurant, Asian Restaurant, Café, Coffee Shop, Convenience Store.

Table 1. Top Venue Categories in Indonesia

#	Venue Category	Total Number of Venues
1	Office	388
2	**Indonesian Restaurant**	377
3	Government Building	234
4	Building	219
5	**Asian Restaurant**	191
6	Bank	173

#	Venue Category	Total Number of Venues
7	Mosque	161
8	Hospital	107
9	**Café**	102
10	Church	101
11	**Coffee Shop**	97
12	Medical Center	84
13	Diner	80
14	**Convenience Store**	79
15	Capitol Building	74

The cities were clustered using K-means into 10 clusters, based on their latitude and longitude. Each cluster will also have the total number of the five venue categories and the number of cities in the cluster. The clusters are shown in Table 2. The VP value is Venues divided by Population.

Table 2. City Clusters

Clus-ter	Venues	Population	Cities	VP	Indonesian Restaurant	Asian Restaurant	Café	Coffee Shop	Convenience Store
0	2,847	8,559,782	95	0.033	94	53	18	19	19
1	1,106	4,724,106	37	0.023	37	22	16	19	5
2	360	1,389,519	12	0.026	14	5	2	3	2
3	780	5,318,560	26	0.015	34	7	7	9	3
4	2,190	25,607,290	73	0.009	70	30	10	10	18
5	370	983,694	13	0.038	19	10	7	1	2
6	300	1,006,806	10	0.030	4	8	3	4	3
7	150	333,733	5	0.045	0	0	3	0	1
8	2,501	9,761,830	84	0.026	93	41	29	26	23
9	820	6,639,103	29	0.012	12	14	7	5	3

The next step is to plot the map that shows the total number of venue categories for each cluster. The number for Indonesian Restaurant is shown in Figure 2. In general, Java island (the small main island at the south of Indonesia) is the most populated island in Indonesia that contributes to 56.1% of the total Indonesia population. Furthermore, Java island has the highest number of venues if compared to other islands, in which the city clusters in Java have mostly yellow to red color (a high number of venues).

In terms of Indonesian restaurant, as seen in Figure 2, the West Java area is the best choice to open a restaurant in Java. As for the other islands, it is shown that most areas have still a small number of restaurants if compared to Java. However, the cluster around Medan city has a medium number of restaurants, and this is not surprising since Medan is the third most-populated city in Indonesia.

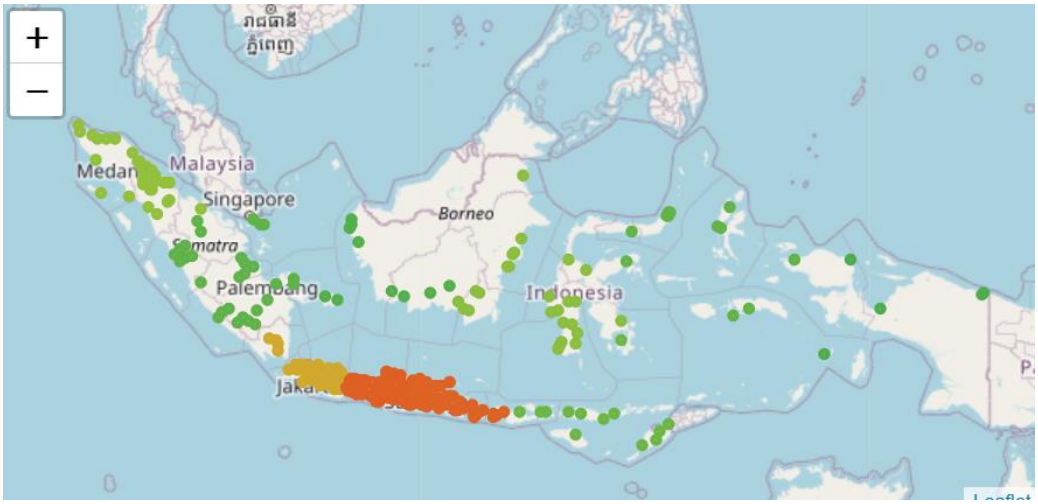

Figure 2. Total Number of **Indonesian Restaurant** per Cluster

In terms of Asian Restaurant, as seen in Figure 3, clusters outside Java island is also mostly green colored, which indicates a good business opportunity. In Java island, interestingly, the Central Java has the greatest number of Asian Restaurant if compared to West and East Java. Also, West Java has a yellow color which indicates a good business opportunity of Asian Restaurant in Java. Overall, the spread of Indonesian and Asian Restaurant is mostly similar.

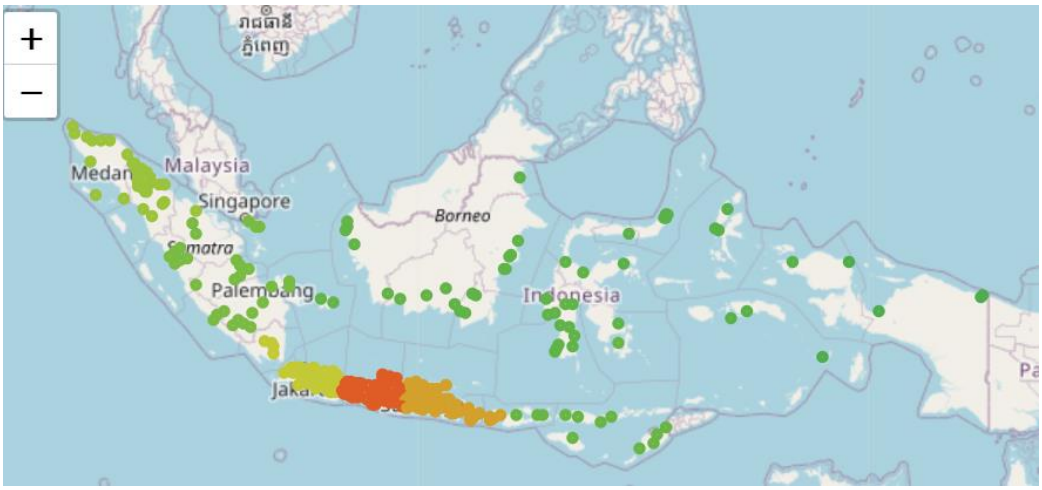

Figure 3. Total Number of **Asian Restaurant** per Cluster

The spread of Café, as seen in Figure 4, is a bit different with the restaurants. The East Java cluster has a lot of Cafés, while West Java is still green-colored. Interestingly, the cluster around Medan city is yellow colored which means that the number of Cafés is also growing outside Java.

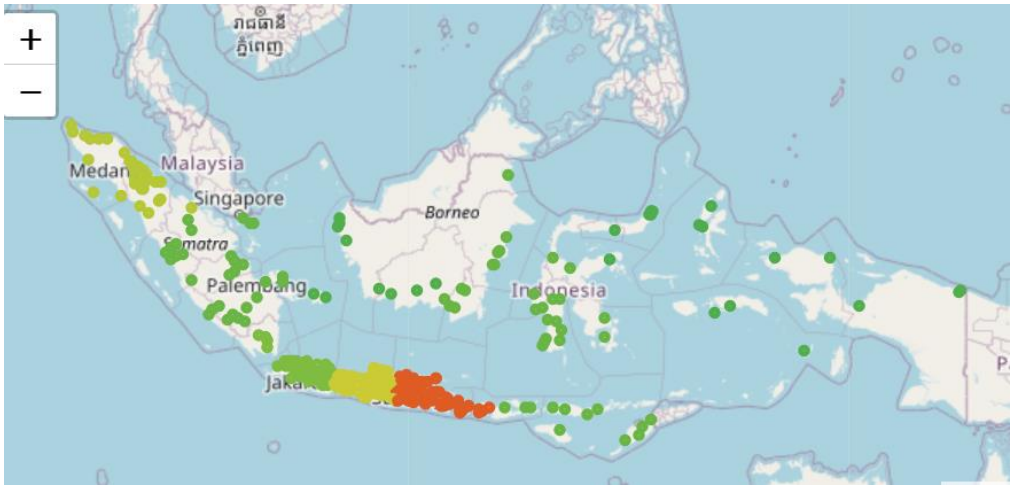

Figure 4. Total Number of **Café** per Cluster

The spread of Coffee Shop, as seen in Figure 5, is mostly similar with Café. This is not surprising since both categories target a younger audience. Interestingly, the cluster around Medan city is now orange colored which shows a high number of Coffee Shops. As for the Java island, West Java is still a preferable choice to open a new coffee shop as other regions in Java already have a high number of Coffee Shops.

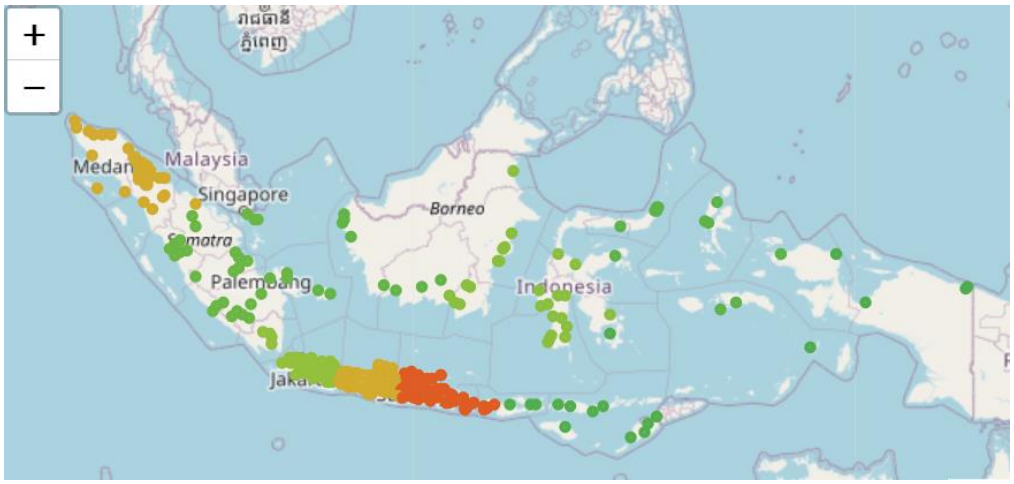

Figure 5. Total Number of **Coffee Shop** per Cluster

The number of Convenience Stores, as seen in Figure 6, are mostly very high in Java island. Based on my experience, we can easily find convenience store every 15 minutes of driving around Java. This is very different with the clusters outside Java, where the number of convenience stores are still low.

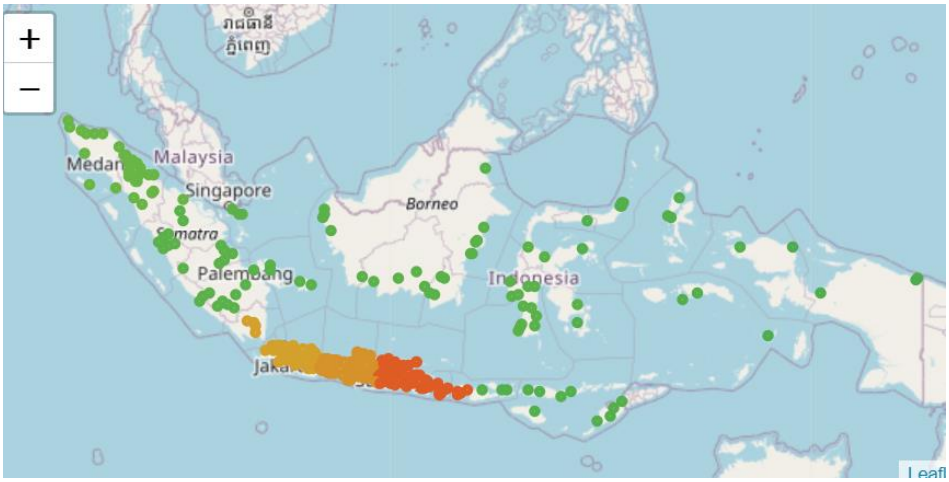

Figure 6. Total Number of **Convenience Store** per Cluster

4.2. VENUE DENSITY

This section is intended to see the overall business venues spread throughout Indonesia, based on Foursquare data. The main metric is VP, which is the total number of venues divided by population. The raw VP values are already shown in Table 2. The plot of the VP value on the map can be seen in Figure 7.

Using the VP values instead of the total number of venues give an interesting insight. Even though Java island has already a lot of venues, as previously shown in Section 4.1, the venues are still not enough to serve the population number. In Figure 7, Java island still has yellow to green color markers in terms of VP value. This shows that Java island still has a low VP value, which indicates a good business opportunity, with West Java as the best place in Java. Other parts of Indonesia that also have a good business opportunity is the southern part of Sumatra, eastern part of Kalimantan, and southern part of Sulawesi.

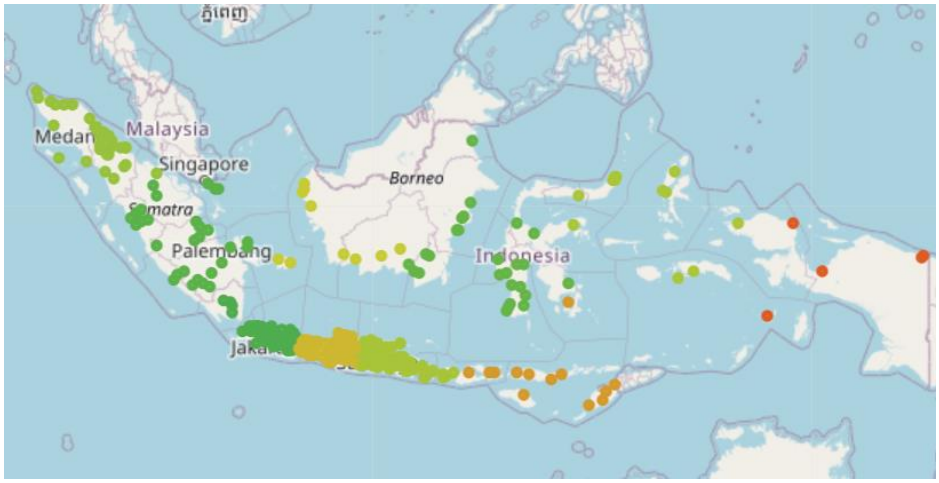

Figure 7. The VP (Venues per Population) for Each Cluster

5. DISCUSSION

There are five profitable business categories that were analyzed in this report, i.e. Indonesian Restaurant, Asian Restaurant, Café, Coffee Shop, Convenience Store. For all categories, West Java is the best choice to open a new business since it still has a small number of venues. Overall, Java has the greatest number of venues if compared to the other parts of Indonesia, with the exception of the cluster around Medan city.

The Foursquare API endpoint that we are using is the *search* endpoint which returns all nearby locations, which is a bit different with the *explore* endpoint which returns the popular locations. Plotting the venue numbers give an interesting insight to the overall spread of locations throughout Indonesia. Although we were not using all cities in Indonesia, since we can't find a reliable complete dataset, the number of major cities used in this research should be a good start.

Interestingly, when we cluster the cities into 10 clusters using K-Means, the Java island is clustered into three clusters which represents three provinces, i.e. West Java, Central Java, East Java. Other parts of Indonesia were also clustered neatly. Note that we have tried a lower number and a higher number of clusters but it didn't give us any additional insights, and thus we kept it to 10 clusters.

6. CONCLUSION

In this report, we have analyzed the potential business opportunities in Indonesia, which includes the types of business and which are the preferable locations to open a new business. Indonesia is highly active in terms of the creative economy, given its dense population and hardworking citizens. We can conclude that West Java is the best choice to open a new business for any business category, such as restaurant, café, coffee shop and convenience store. Based on the VP value, it is also shown that West Java has a small number of venues relative to the population size, which means there is less competition.

There are still a lot of challenges for opening a new business, where tiny details have to be considered. For example, a coffee shop should probably be opened nearby universities where there are a lot of young people, a convenience store should be in densely populated cities or villages. However, hopefully this research can be expanded in the future to include those tiny details.

7. REFERENCES

Pandin, M., 2009. *The Potrait of Retail Business in Indonesia: Modern Market,* s.l.: Indonesia Economic Review no. 25.

Przybylski, N., 2018. *Outlook on the Food Service Industry in Indonesia,* s.l.: Indonesia Investments.