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SWOT Analysis by Realizing Cluster Analysis to Reducing Risk of Hospitality Business Losses in Central Sulawesi

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Abstract

Hotels are a form of building or accommodation business that provide lodging services, as well as other facilities where all services are for the general public. The construction of hospitality in disaster prone areas can increase the risk of damage to hotel buildings. Reducing the risk of the hotel business can be done by building strategies or actions that are continuously carried out based on the perspective of what is expected by customers in the future. This study uses a SWOT analysis by realizing the use of cluster analysis to provide an overview of the location and reduce the risk of hospitality business in Central Sulawesi Province. From the internal and external results of SWOT in the hotel business, it can be concluded that investors must improve their strategy by prioritizing geographical location in building hotels by calculating that disasters can occur at any time.

INTRODUCTION

According to BNPB Indonesia's record in 2018, the tsunami and earthquake that occurred on 28 September 2018 in Palu, Central Sulawesi, caused more than two thousand deaths. Meanwhile, the total number of victims affected by the disaster has yet to be ascertained to date due to the liquefaction disaster and tsunami waves which resulted in victims being buried and dragged so that it is difficult to find. Indonesia is located at the confluence of three continental plates in the world, namely the Eurasian Plate, Pacific Plate and the Indo-Australian Plate. When the plates collide with each other there is a possibility that an earthquake will occur. In addition, Indonesia also has 127 active volcanoes. Natural disasters that often occur in Indonesia include floods, fires, tornados, landslides and earthquakes.

The results of the 2018 BNPB Indonesia record prove that from 2016 to the beginning of 2018, more than three thousand natural disasters have occurred in all regions in Indonesia. Central Sulawesi Province as evidence of the fact that Indonesia is a country that is crossed by the Ring of Fire or commonly known as the ring of fire so that earthquakes and volcanic eruptions often occur.

Seeing natural events that occur in areas of Indonesia, especially in Central Sulawesi Province, is an illustration of investors who want to develop the hotel business and should look more at the demographic location of an area. One step that can be done is to look at the historical disaster events that occurred in the area to be built hospitality. Efforts are made to directly realize the analysis that is often implemented in a company, namely SWOT Analysis (Strength, Weakness, Opportunity, and Threat) (Mira, 2018).

SWOT analysis which includes efforts to recognize strengths, weaknesses, opportunities, and threats that determine company performance. External information about opportunities and threats can be obtained from many sources, including

customers, government documents, suppliers, banks, partners in other companies. Many companies use the services of a scanning agency to obtain newspaper clippings, internet research, and analysis of trends. Domestic and global relevant (Daft 2010) Furthermore Rangkuti (2004) explains that the SWOT Analysis is the systematic identification of various factors to formulate corporate strategies. This analysis is based on logic that can maximize strengths and opportunities, but at the same time can minimize weaknesses and threats.

Natural disasters that occur in Central Sulawesi Province will certainly make investors able to implement a SWOT Analysis for progress and minimize the risk of loss of a hotel that will be built in the future. Investors must see the condition of an area and need accurate information but is constrained in a tool or data analysis that can help the process of gathering information. The aim is to reduce the physical risk that will be experienced by investors or entrepreneurs who are struggling in the hospitality sector.

Based on the explanation above, this study aims to determine the competitive strategy in the hotel business using SWOT Analysis by realizing the use of Cluster Analysis which is able to provide a description of the location or area in Central Sulawesi Province with disaster status. This can be a reference for investors in the hospitality sector in making decision to reduce the risk of loss that will be experienced due to natural disaster factors.

MATERIALS AND METHODS

The population used in this study is data on the number of disasters in Indonesia, while the sample used in this study is data on the number of disasters in Central Sulawesi Province in 2009-2019 or the last decade.

Data grouping in this study was conducted in a non-hierarchical way using the K-Means Method. The data used is sourced from the National Disaster Management Agency (BNPB). The data used is the number of natural disasters in Central Sulawesi Province from 2009 to 2019. The variables included in this study are floods, landslides, tornadoes, drought, and earthquakes. The number of samples used was 11 districts and 1 city. The purpose of using the K-Means Method is to group regions with characteristics of the number of disasters that are relatively the same so that it can be known which areas are prone to natural disasters. Data processing regarding the K-Means Method Group Analysis was performed using R software version 3.6.1 and subsequently conducted a SWOT Analysis. Data analysis which was carried out consisted of several stages as follows:
1. Make a descriptive picture of the data
2. Finding the optimal number of clusters by using the Elbow Method, Silhoette Method, and GAP Statistics
3. Divide the area according to the number of clusters obtained
4. Give the name of the cluster formed.
5. Perform SWOT Analysis. Strength (Strength), Weakness, Opportunity, and Threats.
6. Draw conclusions.

Table 1. Descriptive Statistics

Variable	Minimum	Maximum	Median	Mean
Flood	1	49	9	12
Landslide	0	3	1	0.91
Tornado	0	7	0	1.08
Drought	0	3	0	0.75
Earthquake	0	20	0	2.08

Source: *: data from Badan Nasional Penanggulangan Bencana (BNPB) (2019).

Table 2. Number of natural disasters according to clusters

Cluster	Flood	Landslide	Tornado	Drought	Earthquake
1	95	9	6	7	24
2	49	2	7	2	1

Source: *: data from BNPB (2019).

RESULT AND DISCUSSION

The characteristics of the data used in this study can be seen from the descriptive statistics presented in Table 1. The average natural disasters that often occur in Central Sulawesi Province are flood disasters with an average occurrence of 12 incidents with the highest number of occurrences of 49 incidents in Parigi Moutong Regency. The natural disasters of landslide, tornado, and drought are still considered safe because the average number of events is still small and the center of attention is earthquake natural disasters. There are as many as 20 cases of earthquakes in the city of Palu whose range of events was from September 2018 to 2019 so that from these data we can analyze which areas are potentially affected by disasters and subsequently obtain accurate information to build a SWOT Analysis in order to reduce the risk of physical loss to the hotel business in Central Sulawesi Province.
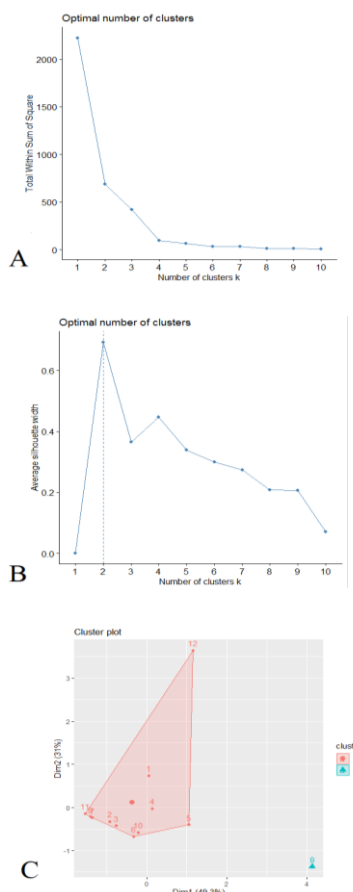

Fig 1. Grouping Using Cluster Methods and Strategies. A. Output R for the Elbow Method, B. Output R for the Silhoette Method, C. Output R Determination of Cluster Members.

The Sya Regency Hotel one example of a hotel damaged by a disaster, this is because this hotel is located in a disaster-prone area. The picture of the hotel can be seen in figure 2.

Fig 2. The Sya Regency Hotel Post Earthquake

In the SWOT analysis, there are two methods used to see the quality of the clusters, namely the elbow and silhoette methods. The elbow method is a method used by looking at the percentage of the comparison between the number of clusters that will form an elbow at a point. While the silhoette method is used to see the quality and strength of the cluster, how well an object is placed in a cluster. The graph of the elbow method and the silhoette method can be seen in figure 1.

In the K-means method there are several considerations for determining the optimal number of clusters. The most popular method approaches include the Elbow Method and the Silhoette Method. Following is the output of each method used.

Elbow Method

The output in figure 1 part A uses the Whitin Sum Square total value as a determinant of the optimal number of clusters or k. Based on figure 1 section A, it can be seen that the line experiences a fracture that forms an elbow when k is 1. So it can be concluded that the optimal number of clusters obtained from this method is 1.

Silhoette Method

Determination of the optimal k from the Silhoette method is to look at the average value of the Silhoette, assuming the higher the average values, the higher the k. Based on figure 1 part B, it can be seen that the highest average Silhoette value is at k = 2. So by using this method the optimal k is obtained when k = 2.

To find out the members of each cluster, the difference in distance between each object and each centroid is used. The value of the first centroid can be chosen randomly. The distance calculation is done by using the Euclidian distance equation in equation 2, where the object with the closest distance is made as a group. Based on figure 3 section C, it is known that with the number of clusters 2 formed cluster 1 consisting of 1 Kabupeten namely Parigi Moutung Regency. While

cluster 2 consists of 10 regencies and 1 city, namely Palu, Sigi, Donggala, Tojo Una-Una, Buol, Toli-Toli, Sigi, Bangkai, Bangkai Islands, Poso, and Morowali.

Cluster name determination can be seen based on the comparison of the mean values of each variable for each cluster. In this study, the number of natural disaster events by cluster can be seen in the following Table 2.

Based on Table 2, it can be done profiling for each group formed where cluster 2 is an area that has a number of natural disaster events, in the last decade period which is less than cluster 1. So it can be said that districts / cities that are included in the cluster area 1 is a province that is prone to natural disasters. Furthermore, the results obtained as an illustration to conduct a SWOT analysis (Strength, Weakness, Opportunity, and threat) in order to reduce the risk of physical loss due to natural disasters that occur.

SWOT Analysis

From the Analysis of Clusters carried out previously then carried out SWOT Analysis includes strengths, weaknesses, opportunities and threats to the hotel business namely:

Strength of the hospitality business:
1. Generate a large income.
2. Opening jobs.
3. For customers comfortable enough to live.
4. Clean bathrooms.
5. Satisfactory officer service.
6. Good morning breakfast.

Hospitality hospitality
1. The price is so expensive.
2. Not so many promotions for new customers
3. Less discount.

Hospitality business opportunities
1. Still many opportunities are opened because of potential customers
2. As the number one choice destination as a place to stay for the community / foreign tourists.

Threat
1. Many competitors offer relatively cheaper prices.
2. Location that is not strategic
3. Hospitality development in disaster prone areas.

Strategy

After knowing the strengths, weaknesses, opportunities and threats in the hotel business in the province of Central Sulawesi, a strategy will be developed in the future so that they will benefit and avoid the risk of loss. One center of attention that is

being considered for the future is the location of hotel development in an area.

Figure 2, It is The Sya Regency hotel located in Palu City. One of the many hotels affected by the 2018 earthquake yesterday. From this incident as an illustration to the investor that the City of Palu is a disaster-prone area and in building a hotel building must prioritize the location of the area to be built this can be proven in this research. In this study, the analysis of the Palu City group is included in the disaster prone area, namely the earthquake disaster, so that after looking at the conditions and information available, it can consider development that does not exceed the development limit (level) and more importantly, construction that is earthquake resistant. It is expected to reduce the risk of physical loss and be able to increase and promote an area in the hotel business.

Conclusion

Based on the results and discussions that has been done before, it is concluded that investors must always improve their strategies, especially for future views in the hotel business prospects that are more concerned with the geographical location in building hospitality because disaster can come at any time and it is hoped that before the disaster happens, we can consider carefully so that the end goal is to reduce losses generated which will help for the future.

Acknowledgements

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