Popularity Analysis of Mobile Food Ordering Apps In Indonesia

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Abstract—**Food delivery services can now be easily accessed via mobile phone along with the technology development on mobile phone today. Food delivery services that provide services via mobile phones are called Mobile Food Ordering Apps (MFOAs). As there are many MFOAs users, it is important for MFOAs service providers to become the first choice service for MFOAs users. One way to find out if an MFOAs service is the user's first choice or not is to look at its popularity. This study aims to analyze the popularity of two big MFOAs company in Indonesia i.e. GoFood and GrabFood using star rating given by customer. Star rating extracted using MySQL and web scrapping method. Descriptive statistics performed for initial data analysis. Data then processed with normality and homogeneity test to see whether the data collected are normally distributed and are homogeneous or not. The result showed that data are not normally distributed and are not homogeneous. Therefore, Mann Whitney analysis is used. Overall result shows that GoFood have a higher restaurant rating compared to GrabFood all in food-category, beverage-category, and overall category which results in GoFood is more popular than GrabFood in terms of Mobile Food Ordering Apps.**

Keywords-mobile food ordering apps; star rating; GoFood; GrabFood; popularity

I. INTRODUCTION

Along with the rapid technology development on mobile phone, the numbers of mobile application for all industries have also increased and food industry is no exception [1]. The food industry is developing its services online. One of the services is food delivery service.

Food delivery services are divided into two types, namely aggregators and new delivery [2]. The aggregator is a traditional type of delivery which handle the delivery themselves, meanwhile the new delivery type has their own logistic networks - mostly with a third party so they can provide delivery for the restaurants that don't have their own delivery system [2].

Currently, food delivery services using third parties are becoming popular in Indonesia. The services are provided by a ride-sourcing company. Ride-sourcing is a special type of ridesharing; is a business-like service which offers services to transport passenger or deliver goods and foods based on mobile application [3]. Food delivery service provided by ride-sourcing have been spreading and usually called 'delivery sourcing', which also based on mobile application [3]. Food delivery services provided through a mobile application are called the Mobile Food Ordering Apps (MFOAs). In Indonesia, this service is provided by m-commerce companies.

There are two m-commerce companies in Indonesia with delivery sourcing services namely Gojek and Grab, which the names of food delivery services, respectively, are GoFood and GrabFood. Both food delivery service uses their drivers to buy and deliver the customer's food. It is known that there are more GoFood users than GrabFood users.

GoFood is a food delivery service on mobile phone which is one of the service features of Gojek. GoFood service is presented by Gojek in 2015. To use this service, there is no need to download a new application because Gojek integrates this service in its application. It is estimated that currently the number of GoFood restaurant partners has touched 300 thousand. This has increased 2.4 times compared to the beginning of 2017 with 125 thousand partners [4]. Another mobile phone-based food delivery service that provides similar services is GrabFood.

GrabFood is a food delivery service developed by Grab. GrabFood service was launched by Grab in 2016. The development of GrabFood soared from 13 cities in January 2018 to 178 cities in 2019 [5]. GrabFood services are more or less the same as GoFood. GrabFood service has also been integrated with its main application, Grab. Because the majority of their services and features are similar, GoFood and GrabFood can be considered as competitors.

Based on a survey of 1,054 respondents, the results show that more customers use the GoFood app rather than GrabFood app [6]. The survey was given to respondents who uses either GoFood or GrabFood as their food delivery app. The survey results showed that 71.7% of 1,054 respondents use GoFood as their go-to food app, and 39.9% use GrabFood [6]. This shows that the majority of users / consumers of mobile food ordering apps use the services provided by GoFood compared to GrabFood.

With the level of competition that exists, it is necessary to know the popularity of food delivery services as a company reference to find out the current level of popularity, and what steps should be taken in the future, both to maintain and increase popularity. This study aims to analyze and compare the popularity of two big MFOAs company in Indonesia namely GoFood and GrabFood by using star rating given by customer displayed on the merchants (restaurants) tab in the MFOAs website. The research area in this study includes restaurants in the GoFood and GrabFood applications with various categories (rice, coffee, etc.) located in Jakarta area.

II. LITERATURE REVIEW

A. Mobile Food Ordering Apps (MFOAs)

Mobile Food Ordering Apps (MFOAs) is a convenient and innovative mobile application for mobile phone users as an alternative to access restaurants, order food, and pay (using various methods such as cash on delivery, debit cards, credit cards, or e-wallet) without physical interaction with restaurant staff [7, 8]. By using this application, customers can easily and effectively access and also order their food from various restaurants at the time and location as they wish [1].

Applications such as MFOAs can also give more comprehensive, up-to-date and accurate restaurant information and menu options [1]. Common problems experienced by conventional food services such as long waiting times, traffic and distance, miscommunication, late delivery, or handling customer complaints can be overcome by using an online food ordering application via mobile phone. This is because the online food ordering application via mobile phone has innovative characteristics that can help customers and restaurants overcome the problems mentioned above [1].

B. Star Rating

There are two types of rating: qualitative (online review) and quantitative (star ratings) [9]. Star ratings given by customers range from 1 star which usually means bad service to 5 stars which means excellent service. Star ratings serve a useful and convenient source of information [10], also appear to be a direct and clear way to communicate overall consumer ratings and can also considered to be the representative of customer's satisfaction [11].

The existence of customer's rating can provide an overview of the products and services to be purchased so that it helps customers in the decision-making process to finally buy the products or use the service. This makes it easy because there is no need for physical contact or no need to meet directly with other customers to ask for opinions [12]. Star rating is also a form of evaluation that reflects customer satisfaction after buying products and services [12].

Star ratings are structured data, so consumers can understand these ratings easily compared to textual information [13]. Star ratings are generally used by companies or organizations to improve their products or services and to communicate with their customers [9]. Therefore, companies have to manage their star ratings effectively because star ratings can have a good impact on company's performance [13].

III. RESEARCH METHODOLOGY

In this section, information about the process of data collection and data processing will be explained.

Figure 1 shows the steps taken to process data in this study. Data used in this study is the star rating data. This star rating data is displayed in each restaurant listed in the MFOAs website or application. Data mined from the website of each application are star ratings, restaurant names, and restaurant categories. Data collection is limited to restaurants in Jakarta.

The data collection process is done by conducting data mining for star rating of GoFood using MySQL and web scrapping for star rating of GrabFood. Data collection methods for the two services are different due to the differences in the appearance of GoFood and GrabFood websites.

After the data was collected, data was first processed and analyzed using descriptive statistics. After the descriptive statistics result have been generated, data processing continued with data normality test and homogeneity test. After that, *Mann Whitney* analysis is then performed and the overall results can be obtained. All data processing activities are statistically carried out with SPSS software.
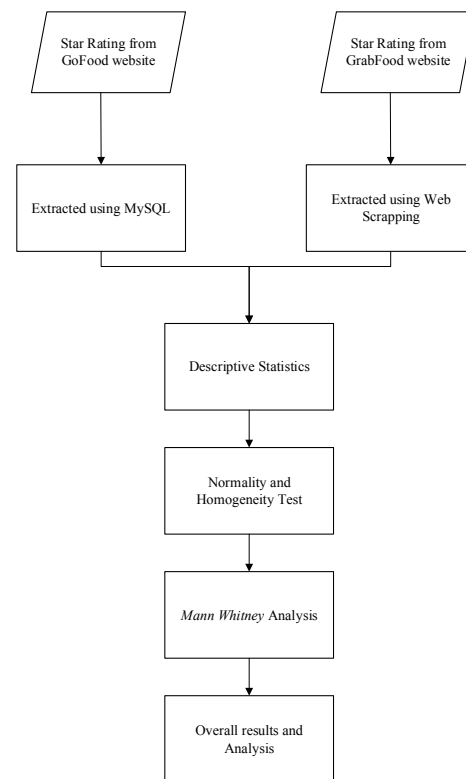

Figure 1. Research methodology.

IV. RESULTS AND DISCUSSIONS

As MFOAs becoming more popular, it is important for companies to thrive in the competition by understanding their competitors then make a strategic plan and decision for service development [5]. Therefore, it is necessary to analyze and compare the popularity of various MFOA to be considered by the company in developing its products and services because it can have an impact on the company.

A. Descriptive Statistics

In descriptive analysis the data will be analyzed based on the minimum, maximum, standard deviation and average rating of food and beverage product purchasing services on GoFood and GrabFood.

TABLE I.   DESCRIPTIVE STATISTICS RESULT

Rating From		N	Min	Max	Std. Dev	Mean
Grabfood	Food	210	2.40	5.00	0.37	4.41
	Beverage	58	3.00	5.00	0.43	4.49
Gofood	Food	224	3.90	4.90	0.16	4.57
	Beverage	63	4.00	4.90	0.18	4.62
Overall	Grabfood	268	2.40	5.00	0.38	4.43
	Gofood	287	3.90	4.90	0.16	4.58

Table I shows the descriptive statistic results from star rating data. In the descriptive results with the food-category restaurant, the average rating of the restaurant on GrabFood has a rating of 4.41 and GoFood with a rating of 4.57 which means that in general consumers judge restaurants to provide good products for consumers. The average rating on the type of food products shows that the rating of restaurants on GoFood is higher than GrabFood.

In the descriptive results with the beverage-category restaurant, the average rating of the restaurant on GrabFood has a rating of 4.49 and GoFood with a rating of 4.62 which means that in general consumers judge restaurants to provide good products for consumers. The average rating on beverage products shows that the rating of restaurants on GoFood is higher than GrabFood.

In the overall descriptive results (combinations of food and beverage), the average rating on GrabFood is 4.43 and GoFood with 4.58 which means that overall, consumers judge restaurants to provide good products for consumers. The average rating on food and beverage products shows that the rating of restaurants on GoFood is still higher than GrabFood. Graphical summary of the mean data in descriptive statistic results is shown in Figure 2.
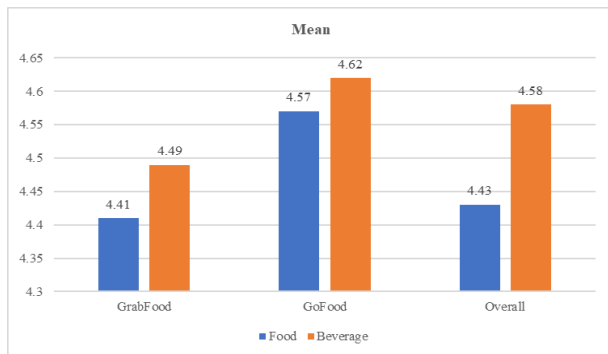

Figure 2.   Descriptive statistics graph.

B. Normality and Homogeneity Test

Normality test is done to see whether the data is normally distributed or not. The following are the results of normality test on data collected. In the normality test, data are normally distributed if the significance value is greater than 0.05.

The normality test results below indicate that the rating variables of the beverage, food, and overall categories (food and beverages) have a significance value of Kolmogorov Smirnov less than 0.05 which is worth 0.000. Therefore, it can be interpreted that the data in this study are not normally distributed.

TABLE II.   NORMALITY TEST RESULT

Variable	Shapiro Wilk		Result
	Statistic	Sig.	
Food (Grabfood-Gofood)	0.206	0.000	Not normally distributed
Beverage (Grabfood-Gofood)	0.253	0.000	Not normally distributed
Overall (Grabfood-Gofood)	0.209	0.000	Not normally distributed

Homogeneity testing is then performed, where the data is homogeneous if the significance value of Levene Statistics is greater than 0.05. Homogeneity test aims to determine whether the data comes from the same population or not.

TABLE III.   HOMOGENEITY TEST RESULT

Variable	Levene Statistics		Result
	Statistic	Sig.	
Food (Grabfood-Gofood)	65.311	0.000	Not homogeneous
Beverage (Grabfood-Gofood)	29.874	0.000	Not homogeneous
Overall (Grabfood-Gofood)	98.143	0.000	Not homogeneous

Homogeneity test is used to find out whether some population variants are the same or not. Variables are said to be homogeneous if the significance value is greater than 0.05. The results above found that the rating variables of beverage, food and overall categories (food and beverages) have a significance value of Levene Statistics less than 0.05 which is worth 0.000. From these results it can be concluded that the data are not homogeneous. The results of the assumption test that is the test of normality and homogeneity show that the data in the study included non-parametric data, so the hypothesis test was performed using a non-parametric test namely Mann Whitney.

C. Mann Whitney Analysis

Mann Whitney analysis is used if data are non-parametric or not normally distributed and not homogeneous. Based on the results above, data collected are not normally distributed and not homogeneous, therefore, Mann Whitney analysis is used.

The results obtained are the significance value in food-category between GrabFood rating and GoFood rating that is equal to 0.000 so that the significance value is less than 0.05. From these results it can be concluded that there are

differences in GrabFood and Gofood ratings in food-category. In the descriptive results with the food-category restaurant, the average rating of the restaurant on GrabFood has a rating of 4.41. From a scale of 1-5 obtained an average value of 4.41, which means that in general consumers assess restaurants provide good products for consumers. The average value of a restaurant on GoFood has a rating of 4.57 which means that in general consumers judge restaurants to provide good products for consumers. The average rating on food-category products shows that the rating of restaurants on GoFood is higher than on GrabFood. Statistically the difference in average rating in the food category between GrabFood and GoFood is considered significantly different.

TABLE IV.   MANN WHITNEY ANALYSYS TEST RESULT

Variabel		N	Mean	Z Statistic	Sig.	Result
Food	Grabfood	210	4.41	-5.352	0.000	Significant
	Gofood	224	4.57			
Beverage	Grabfood	58	4.49	-0.737	0.461	Not significant
	Gofood	63	4.62			
Overall	Grabfood	268	4.43	-5.125	0.000	Significant
	Gofood	287	4.58			

The significance value between GrabFood drink rating and GoFood is 0.461 so that the significance value is greater than 0.05. From these results it can be concluded that there is no difference in GrabFood and GoFood beverage ratings. In the descriptive results with the beverage category restaurant, the average rating of the restaurant on GrabFood has a rating of 4.49. From a scale of 1-5 obtained an average value of 4.49 which means that in general consumers judge restaurants to provide good products for consumers. The average value of a restaurant on GoFood has a rating of 4.62 which means that in general consumers judge restaurants to provide good products for consumers. The average rating on the type of beverage product shows that restaurant ratings on GoFood are higher than GrabFood. Statistically the difference in average rating in the beverage category between GrabFood and GoFood is judged to be the same or not different.

The results obtained are the significance value on overall category between GrabFood and GoFood is equal to 0.000 so that the significance value is less than 0.05. From these results it can be concluded that there is a difference between the overall product rating between food and beverage category in GrabFood and GoFood. In the overall descriptive result, average rating of the restaurant on GrabFood has a rating of 4.43 which means that in general consumers judge restaurants to provide good products for consumers. The average value of a restaurant on GoFood has a rating of 4.58 which means that in general consumers also judge restaurants to provide good products for consumers. The average rating on overall category shows that restaurant ratings on GoFood are higher than on GrabFood. Statistically, the overall average rating difference between the combination of food

and drink category between GrabFood and GoFood are considered different.

V.   CONCLUSIONS

In this paper, we focus on the problem of popularity analysis over two big MFOAs in Indonesia which are GoFood and GrabFood. Specifically, we first extract star rating data form both MFOAs website, with the limitations of only using restaurant located in Jakarta. With this information, we further examine and analyze the popularity between GoFood and GrabFood using statistical process with SPSS. All of the data processing process showed that GoFood have a higher customer's rating and value compared to GrabFood. Means that GoFood have higher popularity compared to GrabFood. This result is in line with a previous survey which stated that there are more people using GoFood services than GrabFood. This can be caused by several things, namely, the number of restaurants registered with each MFOAs, the prices offered, and so on.

It can be considered for future research to research about the factors that determine the popularity of each MFOAs. The scope of restaurant can also be expanded, not only in Jakarta.

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