

Digital Marketing Analysis of Mie Gacoan Customer at Jakarta Using RFM and K-Means Clustering Methode

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Abstract

PT. Pesta Pora Abadi or Mie Gacoan is an Indonesian company within the Food and Beverages industry that produces food using noodles. Mie Gacoan is currently thriving with hype and sales, and with those momentum supporting them, they want to take advantage of this moment to expand their business by analysing their customer to market more their products, but they still don't know Segmentasi is a process of knowing customer characteristics to get profitable customers for the company. Segmentasi will be done by grouping the customers into x categories. This study aims to combine K-means clustering and RFM to analyze the customer segmentation of Mie Gacoan. This customer characteristics will help Mie Gacoan in decision making to prioritize their energy and resources to potential customers or profitable customers.

Keywords: Customer Segmentation; RFM; K-Means Clustering

Introduction

PT. Pesta Pora Abadi is an Indonesian company that is in the food and beverages industry with their product, Mie Gacoan (Fauzi, Permata, & Setiawan, 2023). Mie Gacoan is a franchise about spicy noodles that is currently booming in Indonesia. It has a wide area restaurant that sells food, snacks, and drinks that starts at a pretty low price which is around Rp. 10.000. Development in the era of digitalization is getting faster especially in the food and beverages industry (Demir & Dincer, 2020). Company must be able to adapt with technological advancements, market dynamics, and customer preferences in order to maintain their competitiveness in the industry (Kindström, Kowalkowski, & Sandberg, 2013). Mie Gacoan in making transactions, already records every transaction digitally, but their transaction data has not been analyzed, so the company does not know the criteria for customers who make transactions. The company also still applies the same treatment to all customers. So that there is no special treatment given by the company to customers who often buy mie gacoan, rarely buy, and customers who often buy in large and small amounts. The characteristics of every customer can be defined by RFM model (Recency, Frequency, Monetary) (Asmat, Suryadi, & Govindaraju, 2023). Recency is the last time a customer buys or does a transaction, Frequency is the amount of transaction done in a period of time, and Monetary is the amount of money spent in the customers' transactions (Widiyanto & Witanti, 2021).

Because every customer has a variety of characteristics, sometimes company struggle in marketing their products. Which is why it's important for companies to know the possibility and characteristics of their customers in buying their products (Womack

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& Jones, 2015). In this case, customer segmentation is required for the company to understand their customers' varying characteristics more comprehensively, thus the company can design the correct approach to each different customer segmentation (Hiziroglu, 2013).

Method

The following are the stages carried out in research based on images from the flow chart of the research method:

1. Data Collection

At the data collecting or data collection level, will be used data related to research. The dataset used is survey data with total data.

2. Data Analysis

In this second stage, data understanding or initial investigation will be carried out to recognize the data used such as what attributes and variables are in the data. Data analysis is also one of the stages in data processing with the aim of retrieving important information in the data.

3. Data Pre-Processing

Pre-processing is the initial process in data processing in exploratory data analysis so that it will produce data with the appropriate format and ready for use at the next stage.

The purpose of pre-processing is to make data easier to use when classifying. The following are the steps carried out during pre-processing:

- 1) Handle Missing Value: find empty data, then drop variables that have missing values or replace those missing values with average, median or mode of data.
- 2) Handle Outlier: is a value that has an extreme value. The way to handle data that has outliers is to calculate the inter quartile range.
- 3) Data Transformation: converting data categorical and data numeric with one hot encoded or feature scalling.

4. K-Means Clustering Implementation

The next stage is to implement a machine learning model using the K-Means Clustering model which is one of the unsupervised learning algorithms. In this stage, the results of clustering from the implementation and division of clusters into customer segments will be evaluated. The customer segmentation flow starts from the stage of preparing data then selecting the data to be in the cluster and determining the cluster value by applying the RFM method. The clusters for Mie Gacoan customers made by K-means clustering are as follow:

Based on table 1.x in cluster 1 the customers are on average 30 years old, live in jakarta ooo, have an income ranging from 0 to 10 million rupiah, ...

Rfm result -> Research Results?

5. Clustering Result

From the cluster division process, it can be identified the results of customer segmentation using K-Means. The result of clustering is in the form of groups of customers who have contributed to sales which are divided into certain segments according to purchasing behavior. Cluster 1 consist of customers who bla blabla in blablabla work blablalabalblasb... Cluster 2 is a cluster that consist of the core customer for Mie Gacoan who buys several products in one transaction.

The cluster that contributed to x% of the sales are from cluster 2 and 3, which consist of 57% of the total respondents. This cluster will be defined as the core customer for Mie Gacoan. There is also the Cluster 5 that even though contributes only 20% of the revenue, it consists of many customers that buy Mie Gacoan products in smaller quantities. They are also customers who often utilize the promo or discount offered by Mie Gacoan.

Results and Discussion

This research uses K-Means and RFM (Recency, Frequency, Monetary) analysis to determine company strategy (Rizki, Ginasta, Tamrin, & Rahman, 2020). The table used in this research is the final cluster center resulting from SPSS data processing (Kent, Jensen, & Kongsted, 2014). There are 14 categories used in this research, namely Gender, Age, Domicile, Type of work, Location of Mie Gacoan, Mie Gacoan's social media knowledge, Monetary, Last purchase (in days), Instagram, Tiktok, Promotions and discounts, Types of promotions and discounts, Promotion and discount information. If the k-means determination uses a scale then each category has a scale of 100%, but each item on the scale has a different scale. However, if the data used is nominal, the results will show direct calculations. The results of the k-means research used 5 clusters and the category used to determine value was the highest expenditure of each consumer (Kuo, Ho, & Hu, 2002).

RFM (Recency, Frequency, Monetary) results also have an influence on consumer priorities (Safari, Safari, & Montazer, 2016). RFM plays an important role in determining consumer groups and RFM divides them into three groups, namely core customers, potential customers and casual customers (Han, Ye, Fu, & Chen, 2014). The determination of each consumer group is based on total expenditure during the period October to December 2023. The cluster with the most expenditure will be classified as the main consumer.

Table 1
Final Cluster Centers Table

Category	Sub-Category	Cluster				
		1	2	3	4	5
Gender	Male	,49	,56	,59	,64	,64

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	Female	,51	,44	,41	,36	,36
Age	30		27	25	27	24
Domicile	Central Jakarta	,33	,21	,19	,43	,17
	South Jakarta	,67	,21	,30	,00	,37
	West Jakarta	,00	,21	,12	,00	,11
	East Jakarta	,00	,36	,21	,43	,24
	North Jakarta	,00	,00	,18	,14	,11
Type of work	Self-employed	,33	,21	,11	,00	,16
	Businessman	,00	,21	,23	,43	,09
	Student	,00	,14	,14	,00	,28
	Employee	,33	,36	,42	,29	,41
	Civil servants	,33	,07	,11	,29	,07
	Unemployed	,00	,00	,00	,00	,00
Incomes	0-10 Millions	,33	,64	,75	,71	,90
	10-20 Millions	,67	,21	,25	,14	,10
	20-30 Millions	,00	,14	,00	,14	,00
	#ERROR!	,00	,00	,00	,00	,00
Location of Mie Gacoan	Central Jakarta	,67	,21	,18	,43	,23
	East Jakarta	,33	,43	,26	,43	,28
	South Jakarta	,00	,29	,35	,14	,35
	North Jakarta	,00	,07	,21	,00	,13
Mie Gacoan's social media	Instagram	,67	,50	,40	,43	,46
	Youtube	,33	,43	,16	,29	,05
	TikTok	,00	,07	,37	,29	,35

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knowledge	Others	,00	,00	,07	,00	,14
Monetary	Purchase in one transaction	1.072K	456K	177K	788K	50K
Last purchase (in days)		32,33	15,36	26,16	14,29	42,83
Instagram	Do you know Mie Gacoan's Instagram?	1,00	1,00	,93	1,00	,87
Tiktok	Do you know Mie Gacoan's Tiktok?	1,00	1,00	,82	1,00	,78
Promotions and discounts	Knowledge about Mie Gacoan promos and discounts	1,00	1,00	,89	1,00	,78
	Use Mie Gacoan promos and discounts	1,00	1,00	,86	1,00	,75
Types of promotions and discounts	Buy 1 get 1	,00	,14	,12	,14	,16
	Flashsale	,00	,14	,19	,00	,16
	Bundling package	,00	,29	,33	,14	,19
	Special day discounts	,33	,36	,09	,29	,10
	Discount for minimum purchase	,67	,07	,18	,43	,16
	Don't use discounts or promos	,00	,00	,09	,00	,22
Promotion and discount information	Instagram	,00	,43	,37	,14	,33
	Youtube	,33	,36	,11	,29	,04
	TikTok	,67	,21	,28	,57	,34

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OnTheSpot	,00	,00	,18	,00	,15
Lainnya	,00	,00	,07	,00	,14

Based on the company customer cluster results in table 1.1, several personas from each cluster can be seen. Below are the personas for each cluster:

- Cluster 1 or Wood Customer

Wood customers have criteria and personas with male gender 49% and female 51%, age 30 years, for the percentage of each domicile, namely Central Jakarta 33% and South Jakarta 67%. For type of work, namely Self-employed 33%, Employees 33% and Civil servants 33%. Income in this cluster is 0-10 Millions 33% and 10-20 Millions 67%. Based on the location where consumers make purchases in Jakarta, 67% of consumers buy in Central Jakarta and 33% in East Jakarta. The process of promoting Gacoan Noodles uses several social media platforms, in promoting Gacoan Noodles using several social media platforms and after conducting cluster 1 consumer research, information was obtained regarding Gacoan Noodles from Instagram 67% and YouTube 33%. Consumer expenditure in purchasing Mie Gacoan from each transaction is IDR 1,072,000. The last purchase for cluster 1 consumers is 32 days. Mie Gacoan has several social media as a means of promotion and after conducting cluster 1 consumer research, they found out that social media was 100% Instagram and 100% TikTok. Consumer knowledge regarding 100% promos and discounts and the use of 100% promos and discounts. The types of promos used are special day discounts of 33% and discounts for minimum purchases of 67%. Information obtained regarding promotions and discounts from YouTube 33% and TikTok 67%.

- Cluster 2 or Silver Customer

Silver customers have criteria and personas with male gender 56% and female 44%, age 27 years, for the percentage of each domicile, namely Central Jakarta 21% and South Jakarta 21%, West Jakarta 21% and East Jakarta 36%. For types of work, namely Self-employed 21%, Businessman 21%, Student 14%, Employee 36% and Civil servants 7%. Income in this cluster is 0-10 Millions 64%, 10-20 Millions 21% and 20-30 Millions 14%. Based on the location where consumers make purchases in Jakarta, 21% of consumers buy in Central Jakarta, 43% in East Jakarta, 29% in South Jakarta and 7% in North Jakarta. The process of promoting Gacoan noodles uses several social media platforms, in promoting Gacoan Noodles using several social media platforms and after conducting cluster 2 consumer research, information was obtained regarding Gacoan Noodles from Instagram 50%, YouTube 43% and TikTok 7%. Consumer expenditure in purchasing Mie Gacoan from each transaction is IDR 456,000. The last purchase for cluster 2 consumers is 15 days. Mie Gacoan has several social media as a means of promotion and after conducting cluster 2 consumer research, they found out that social media was 100% Instagram and 100% TikTok. Consumer knowledge regarding 100% promos and discounts and the use of 100% promos and discounts. Promo types used are buy 1 get 1 14%, flash sale 14%, bundling package 29%, special days discount 36% and

discount for minimum purchase 7%. Information obtained regarding promotions and discounts from Instagram 43%, TikTok 21% and YouTube 36%.

- Cluster 3 or Diamond Customer

Diamond customers have criteria and personas with male gender 59% and female 41%, age 25 years, for the percentage of each domicile, namely Central Jakarta 19% and South Jakarta 30%, West Jakarta 12%, East Jakarta 21% and North Jakarta 18%. For types of work, namely Self-employed 11%, Businessman 23%, Student 14%, Employee 42% and Civil servants 11%. Income in this cluster is 0-10 Millions 75%, 10-20 Millions 25%. Based on the location where consumers make purchases in Jakarta, 18% of consumers buy in Central Jakarta, 26% in East Jakarta, 35% in South Jakarta and 21% in North Jakarta. The process of promoting Gacoan noodles uses several social media platforms, in promoting Gacoan Noodles using several social media platforms and after conducting cluster 3 consumer research, information was obtained regarding Gacoan Noodles from Instagram 40%, YouTube 16%, TikTok 37% and others 7%. Consumer expenditure in purchasing Mie Gacoan from each transaction is IDR 177,000. The last purchase for cluster 3 consumers is 26 days. Mie Gacoan has several social media as a means of promotion and after conducting research, cluster 3 consumers found out that social media was Instagram 93% and TikTok 82%. Consumer knowledge regarding promos and discounts is 89% and use of promos and discounts is 86%. Promo types are used, namely buy 1 get 1 12%, flash sale 19%, bundling package 33%, special days discount 9%, discount for minimum purchase 19% and Don't use discounts or promotions 9%. Information obtained regarding promos and discounts from Instagram 37%, YouTube 36%, TikTok 28%, on the spot 18% and others 7%.

- Cluster 4 or Bronze Customer

Bronze customers have criteria and personas with male gender 64% and female 36%, age 27 years, for the percentage of each domicile, namely Central Jakarta 43% and East Jakarta 43% and North Jakarta 14%. For types of work, namely Businessman 43%, Employee 29% and Civil servants 29%. Income in this cluster is 0-10 Millions 71%, 10-20 Millions 14% and 20-30 Millions 14%. Based on the location where consumers make purchases in Jakarta, 43% of consumers buy in Central Jakarta, 43% in East Jakarta and 14% in South Jakarta. The process of promoting Gacoan noodles uses several social media platforms, in promoting Gacoan Noodles using several social media platforms and after conducting cluster 4 consumer research, information was obtained regarding Gacoan Noodles from Instagram 43%, YouTube 29% and TikTok 29%. Consumer expenditure in purchasing Mie Gacoan from each transaction is IDR 788,000. The last purchase for cluster 4 consumers is 14 days. Mie Gacoan has several social media as a means of promotion and after conducting cluster 4 consumer research, they found out that social media was 100% Instagram and 100% TikTok. Consumer knowledge regarding 100% promos and discounts and the use of 100% promos and discounts. Promo types are used, namely buy 1 get 1 14%, bundling package 14%, special days discount 29% and discount for minimum purchase 43%. Information obtained regarding promotions and discounts from Instagram 14%, YouTube 29% and TikTok 57%.

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- Cluster 5 or Gold Customers

Gold customers have criteria and personas with male gender 64% and female 36%, age 24 years, for the percentage of each domicile, namely Central Jakarta 17%, South Jakarta 37%, West Jakarta 11%, East Jakarta 24% and North Jakarta 11%. For types of work, namely Self Employee 16%, Businessman 9%, Employee 41%, Student 28% and Civil servants 7%. Income in this cluster is 0-10 Millions 90% and 10-20 Millions 10%. Based on the location where consumers make purchases in Jakarta, 23% of consumers buy in Central Jakarta, 28% in East Jakarta, 35% in South Jakarta and 13% in North Jakarta. The process of promoting Gacoan noodles uses several social media platforms, in promoting Gacoan Noodles using several social media platforms and after conducting cluster 5 consumer research, information was obtained regarding Gacoan Noodles from Instagram 46%, YouTube 5%, TikTok 35% and Others 14%. Consumer expenditure in purchasing Mie Gacoan from each transaction is IDR 50,000. The last purchase for cluster 5 consumers was 42 days. Mie Gacoan has several social media as a means of promotion and after conducting research, cluster 5 consumers found out that social media was 87% Instagram and 78% TikTok. Consumer knowledge regarding promos and discounts is 78% and the use of promos and discounts is 75%. Promo types used are buy 1 get 1 16%, flash sale 16% bundling package 19%, special days discount 10% and discount for minimum purchase 16% and Don't use discounts or promotions 22%. Information obtained regarding promos and discounts from Instagram 33%, YouTube 4%, TikTok 34%, on the spot 15% and others 14%.

Table 1.2
RFM Segmentasi Table

Indicator	Core Customer		Potential Customer	Casual Customer	
	Cluster 2 Enthusiast Customer	Cluster 3 Flexible Customer	Cluster 5 Loyal Customer	Cluster 1 Luxury Customer	Cluster 4 Situational Customer
% of Customer	7%	27%	62%	1%	3%
% of Revenue	22%	24%	18%	17%	19%
Recency	4	3	3	3	4
Frequency	5	4	2	5	4
Monetary Value	6.396K	10.104K	6.701K	3.216K	5.518K
Spend Per Transactions	456K	177K	50K	1.072K	788K
Promotions & Discount	Special day discounts	a. Flashsale b. Bundling package	a. Buy 1 get 1 b. Don't use discounts or promos	Discount for minimum purchase	None
Promotions & Discount Informations	a. Instagram b. Youtube	On The Spot	Others	TikTok	None

Identifying the core customer is essential for businesses to tailor their products, services, and marketing strategies to meet the specific needs and preferences of this key demographic.

- Core Customer

The term "core customer" typically refers to the central or primary target audience for a business or product. It represents the group of individuals or organizations that are most likely to benefit from and engage with the offerings of a particular company.

- a. Cluster 2 atau Entusiast Customer
- b. Cluster 3 atau Flexible Customer
- Potential Customer
 - a. Cluster 5 atau Loyal Customer
- Casual Customer
 - a. Cluster 1 atau Luxury Customer
 - b. Cluster 4 atau Situational Customer

Conclusion

From the data that we have gathered and analyzed, it can be concluded that the shared value for social media is “Instagram”, and the shared value of promotions and discounts is “Bundling Package”. Core customers group that consist of 33% of Mie Gacoan’s total customer contributes for 52% of the revenue for October until December 2023. The shared value of cluster is cluster 2.

It is recommended for Mie Gacoan to do promotions for the core customers group first by making some new Bundling Package followed by special day discount, and after that innovate their “buy 1 get 1” promos for the potential customers group, for example like “buy 2 get 1” or “buy 1 get 2”. For social media, Mie Gacoan should first focus their digital marketing in Tiktok, and Instagram after that.

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