Coffee shop consumer behavior cluster

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Abstract

The consumption of coffee in Indonesia has been seeing seen an increase for the last 7 years. This phenomenon is supported by the rapid growth of coffee shops in several regions such as the city of Bogor. The large number of businesses in the same sphere has caused tight competition among producers in the coffee shop industry. One of the efforts that need to be done is understanding the consumer behavior of coffee shop customers and appeal based on product and coffee shop attributes. MM café is one of the many cafes in Bogor that is facing stiff competition in the coffee shop industry. The owner is required to assign clusters or grouping to identify customers according to specific sets of characteristics. The aim of this research is to identify characteristics and cluster consumer behavior based on product and coffee shop attributes. The sample selection in this research is based on the systematic random sampling technique on 115 respondents. The analysis is done by descriptive analysis, k-means cluster analysis, and ANOVA hypothesis testing. The results of the research show that there are two consumer clusters visiting MM café based on their evaluation of product and coffee shop attributes: cluster 1 consisting of 58 people are categorized as regular coffee drinkers with a high assessment towards indicators of product and coffee shop attributes, and cluster 2 with a total of 57 people consisting of coffee enthusiasts with an assessment towards indicators of product and coffee shop attributes lower than that of cluster 1. The result of the ANOVA hypothesis testing shows that 12 indicators of product and coffee shop attributes of (p=0,000) <5% significant rate (0,05) have a significant impact in dividing cluster 1 and cluster 2.

Keywords: Cluster, *coffee shop,* consumer behavior, coffee, Bogor.

Introduction

Nowadays, coffee have proven to be an excellent plantation commodity with a high economic value and plays an important role as a source of Indonesia's foreign exchange. A data acquired by the Department of Trade shows that coffee trade has been having a steady increase year after year, in 2018 the production of coffee in Indonesia increased from 10 to 15% from the previous year[1]. This condition prompts an increase in consumer demand for coffee. The increase of coffee consumption, in turn, drives coffee producers to get involved in the coffee shop business. The appeal of the coffee shop determines the number of consumers attending the shops. Consumers of coffee tend to have specific motivations for buying coffee based on their characteristics and behavior.

Consumer behavior in the process of deciding to buy coffee can be influenced by a number of factors: psychological, social, cultural, and personal. One of the personal factors influencing their decision is life style which actively impacts consumer behavior in buying decision. The life style pattern or way of life of a certain individual can be observed from their activities, interest, and opinions which form a "whole personality" to interact with their environment[2]. A number of coffee shops have a clear attribute in the consideration of consumers. In other words, an attribute of coffee shop is also a personality of the coffee shop. Coffee shop attributes will also attract consumers

to visit the coffee shop. The personality or attributes of a coffee shop reflect what is seen and felt by consumers towards a certain *café*[3]. Product attributes also play a part in determining consumer taste and selection in buying a product. These attributes consist of price, aroma and flavor, texture, brand, etc[4].

One of the coffee shops facing competition in the Bogor coffee shop industry is MM Café. MM Café has an appeal in that it supplies its own coffee beans derived from its own plantation in Pangalengan, Bandung Regency, West Java Province. The products offered by MM Café is specialty-quality Arabica coffee. The attributes of MM Café generally follow current trends such as live music, complete manual brewing instruments, wi-fi, and so on. These points of appeal attract consumers which prompt us to understand whether MM Café patrons are coffee enthusiasts or casual visitors who visit due to simple curiosity. Thus, based on the background that has been laid before, researchers are interested in determining the clusters of MM Café customers based on their consumer behavior.

Methodology

This research analyses consumer behavior clusters of a coffee shop. The subject of research are customers who visit the coffee shop. This research is conducted at MM Café located in the City of Bogor. The method of research is the survey method. The data are primary and secondary. As this research involves entire

individuals in a population, researchers use the probability sampling technique which involves random sampling. The model of sampling utilizes the systematic random sampling technique in which sampling is done with certain intervals in a sequence. The total number of samples in this research is 115 respondents.

In this research, data is collected via observation, interview, literature study, and questionnaire.

The analysis used in this research are: i. Descriptive analysis used to identify consumer characteristic, consumer behavior cluster, product and coffee shop attribute at MM Café. ii. K-means cluster analysis used to identify clusters of consumer behavior based on coffee shop and product attribute at MM Café. iii. ANOVA testing used to identify which indicators are differentiating factors in clustering,

Definition of research variables: i. Consumer characteristics in which buying decisions are determined by age and life cycle stage, economic situation, occupation, life style, personality, and consumer self-concept. The variable of this part contains information pf consumer's identity: age, gender, and level of income per month, ii. Consumer behavior is an action that directly attains, consume, and spends products and services, including the process of consideration before and after an action is conducted[5]. Variables of consumer behaviors include: (a) Buying decision which is an individual activity that is directly involved in the decision-making to but a product that is offered from seller to buyer, (b) Motivation which underlies an individual's action, (c) Perception which an individual undergoes to select, organize, and interpret the absorption of information to create an image, (d) Life style pattern in which individuals consume time and money. iii. Product and coffee shop attributes according to[6]: (a) Product is an item which can be offered to the market to observe, use, own or consume to fulfill a desire or need. Product attributes include taste, price, texture, and aroma. (b) Shop atmosphere which involves a blend of comfort and interior design aesthetic to create a casual, comfortable, and clean atmosphere (c) Location of coffee shop (d) Supporting facilities such as free internet hotspot, band performance/ live music, and so on. (e) Service, which is the process of need fulfillment via direct activity by other individuals.

The data used in K-means cluster analysis and ANOVA testing is the primary data received from handing out questionnaires.

Method of clustering[7]: i. Hierarchical: (a) Beginning clustering with two or more objects that have the closest similarities. (b) There are visible hierarchical divides between objects from the most similar to the least similar. Tools →Dendogram. ii. Non Hierarchical: (a) Starting by determining the number of desired clusters (two, three, or more), (b) After the number of clusters are identified, the process of clustering is conducted without

following the hierarchical process, (c) This method is commonly referred to as "*K-Means Cluster*".

ANOVA testing or F testing can be conducted by looking at significant levels or by comparing $F_{countable}$ and F_{table}. Testing with a significant level on Anova > α=0,05, therefore H_0 is accepted (along with differences) and vice versa[8]. In this research, ANOVA testing is done to identify which indicators become a differentiating factor in clustering based on the variable of product and coffee shop attribute.

Results and discussion

Consumer Characteristics: In general, consumers that visit MM Café is mostly male, aged ≤23, students/college students with a monthly income of Rp. 500.001,- – 2.500.001,-.

Cluster of Product and Coffee Shop Attribute of MM Café: In Table cluster 1 that is formed by indicators of product and coffee shop, there are two types of cluster based on indicators of product and coffee shop, product attributes consist of taste, aroma, menu variations, and price. Coffee shop attributes consist of comfort, interior design, speed of service, waiter response, payment, and location. A total of 58 people are cluster 1, who highly evaluate product and coffee shop attributes while 57 people belong to cluster two who evaluate MM Café's product and coffee shop attributes on a lower level than that of cluster 1.

Table-1: Cluster of Product and Coffee Shop Attributes.

Final Cluster Centers		
Indicators	Cluster	
	1	2
Taste, Texture, Aroma	4,16	3,67
Menu Variation	3,98	3,44
Price	4,29	3,58
Comfort	4,21	3,49
Interior Design	4,17	3,47
Speed of Service	4,12	3,49
Waiter Response	4,14	3,54
Waiter Politeness	4,22	3,54
Waiter Capabilities	4,29	3,53
Facilities	4,53	3,68
Payment	4,72	3,84
Access of Location	4,57	3,81

Number of Cases in each Cluster		
Cluster	1	58,000
	2	57,000
Valid		115,000
Missing		,000

Consumer Behavior Cluster Based on MM Café's Product and Coffee Shop Attributes: Consumer Behavior Cluster of MM Café based on Life Style variable: The cluster of MM Café consumer behavior in Table-2 based on variable of consumer lifestyle, it is known that cluster 1 is a category of casual coffee drinkers with a percentage of 51,7% or known as social drinkers who enjoy coffee to relax with family or friends[9]. This is proven with the number of consumers who admit that they lack the knowledge of coffee brewing methods, reaching a percentage of 63,8%. The method of coffee brewing commonly liked by consumers of cluster 1 are espresso based, with less bitter menu choices such as cappucino, mochacino, cafelatte, and so on.

Cluster 2 includes coffee enthusiasts with a 68,4% percentage, with a portion of 35,1% being caffeine addicts who require coffee daily though they don't necessarily consume coffee in coffee shops because most of them understand manual and automatic coffee brewing methods[9], this is proven with 68,4% of customers responding that they are knowledgeable about methods of coffee brewing. The method of coffee brewing that is popular among cluster 2 respondents are similar to that of cluster 1 respondents which is espresso-based with a percentage of 50,9%

In terms of coffee bean type favored by cluster 1 and 2, arabica has a larger percentage than robusta at 79,3% and 68,4 % respectively. Therefore, it can be concluded that consumers are more inclined to choose arabica coffee for its lower acidity and lower caffeine content than robusta[10]. The motivation indicator shows that other than for drinking coffee, reasons for cluster 1 and 2 to attend the shop lie in the facilities, ambience, service, and the location of the coffee shop. It can be inferred that the café trend is popular among tired workers who seek a place to relax, socialize with family and friends or business associates, and utilize the internet facility[11].

The highest visiting average of coffee shop customers of cluster 1 and cluster 2 indicate at once per week on a percentage of 60,3% and 54,4 %// This is according to the respondents due to their tight schedules and limited budget (in the case of college students. Indicators on with whom cluster 1 and 2 customers attend the shop show that they are most likely to attend the coffee shop in the afternoon at a percentage of 46.6% and 45.6%. This is according to the customers' response that they are only able to go in the afternoons due to classes or work at noon. Afternoon is also regarded as a perfect time to meet with friends before going home[12].

The indicator of financial cost in the consumption of coffee at the coffee shop among cluster 1 and 2 respondents are at Rp 50.000,00–100.000, this is inferred from the income level of customers, mostly students/college students who mostly have a stable monthly allowance.

Clusters of Consumer Behavior of MM Café based on Motivation Variable: Behavior consumer cluster of MM Cafe in table three based on variable of motivation shows that when MM café is full respondents in both cluster 1 and cluster 2 simply move and find another coffee shop. According to respondents, they don't want to suffer long waiting times and decide to attend another shop[12]. The indicator of preferred mode of promotion in cluster 1 is discounts while cluster 2 prefers menu variation. Discounts and menu variation according to respondents is a form of promotion that can directly enjoyed by customers and reduce the cost they have to incur when attending a coffee shop. This result falls in line with[12] that discounts are a favored form of promotion among customers.

Indicator of evaluation after visiting the *coffee shop* shows that cluster 1 and 2 customers generally feel satisfied with the service. This is proven by the high points given by customers in the evaluation of product and coffee shops attributes such as taste, price, menu variants, ambience, comfort, facility, and location as well as speed of service. Indicator on whether or not the customer will continue buying coffee if there is an increase in price shows that they will still buy coffee at MM café anyway. This correlates with the finding that customers would wait at the coffee shop until they are given a seat or buy their coffee take away. This is due to their assertion that the coffee in their café of choice is delicious and has its own unique flavor.

Cluster of Consumer Behavior of MM Café based on variable of Perception: Cluster of consumer behavior based on variable of perception in Table-4 shows that cluster 1 and cluster 2 customers were first informed about MM Café by friend or partner. This is because friends or partners are regarded as close associates with whom cluster 1 and 2 respondents share and trade information. Friends and partners usually inform the customers about their own experiences in a coffee shop before recommending them, so others would be interested in visiting the same coffee shop[12]. Indicator of benefits in visiting the coffee shop among cluster 1 and cluster 2 respondents is spending their leisure time. This correlates with the finding that customers mostly attend the coffee shop in the afternoon. This is because customers have more free time in the afternoon because of work and school at noon.

Cluster of Consumer Behavior of MM Café Customers based on Variable of Buying Decision: Clusters of consumer behavior of MM Café customers in table 5 based on buying decision variable shows that the people preferred by cluster 1 and 2 to accompany them to the coffee shop are friends/ partners.

According to the customers' response, this is due to the coffee shop being a preferable place to spend leisure time or hang out at. This is in line that the coffee shop is a comfortable place to gather with friends and hold business/organizational meetings[12]. Indicators on repeat visitations at the coffee shop show that most cluster 1 and 2 respondents answer Yes by visiting their coffee shop of choice more than once. This correlates with the high satisfaction customers experience as shown by the after-visit evaluation indicator.

Table-2: Clusters of Consumer Behavior Based on Lifestyle Variable.

	Consumer Behavior	Cluster 1 (n=58Respondents)		Cluster 2 (n=57 Respondents)	
		n	%	n	%
Category of coffee-drinker	Coffee enthusiast	28	48,3%	39	68,4%
	Casual drinker	30	51,7%	18	31,6%
Favored type of coffee	Arabica	46	79,3%	39	68,4%
	Robusta	12	20,7%	18	31,6%
Knowledgable about Coffee Brewing Methods	Yes	21	36,2%	39	68,4%
	No	37	63,8%	18	31,6%
Favored Brewing Method	Manual brewing	25	43,1%	28	49,1%
	Espresso base	33	56,9%	29	50,9%
Type of coffee-drinker	Caffeine addict	6	10,3%	20	35,1%
	Latte art hunter	10	17,2%	12	21,1%
	Frappucino fanatic	1	1,7%	2	3,4%
	Manual brew lover	13	22,4%	7	12,3%
	Social drinker	28	48,2%	16	28,1%
Other reasons for visiting coffee shop	Varying menu	3	5,2%	3	5,3%
	Curiosity to try	11	19,0%	9	15,8%
	Affordable price	3	5,2%	5	8,8%
	Facility, ambience, service, and location of coffee shop	40	69,0%	39	68,4%
	Promotion of sales	1	1,7%	1	1,8%
Frequency of visit	1 time per week	35	60,3%	31	54,4%
	2 times per week	15	25,9%	21	36,8%
	3 times per week	4	6,9%	2	3,5%
	$\geq$ 4 times per week	4	6,9%	3	5,3%
Time attending the coffee shop	Morning	0	0,0%	2	3,5%
	Noon	8	13,8%	6	10,5%
	Afternoon	27	46,6%	26	45,6%
	Evening	23	39,7%	23	40,4%
Cost incurred at coffee shop	<Rp 50.000	23	39,7%	17	29,8%
	Rp 50.001 – Rp 100.000	31	53,4%	30	52,6%
	>Rp 100.000	4	6,9%	10	17,5%

Table-3: Cluster of Consumer Behavior based on Motivation.

	Consumer Behavior	Cluster 1 (n=58 Respondents)		Cluster 2 (n=57 Respondents)	
		n	%	n	%
What is done when the coffee shop is full	Cancel on visiting coffee shops for the day	8	13,8%	12	21,1%
	Wait until they are seated	11	19,0%	9	15,8%
	Drink coffee in another coffee	39	67,2%	36	63,2%
Desired form of promotion	Discounts	21	36,2%	17	29,8%
	Exclusive gifts	0	0,0%	0	0,0%
	Special event	17	29,3%	19	33,3%
	Menu variation	18	31,0%	21	36,8%
	Increase in portion	2	3,4%	0	0,0%
Evaluation after attending coffee shop	Satisfied	37	63,8%	37	64,9%
	Unsatisfied	0	0,0%	20	35,1%
	So-so	21	36,2%		
Consumer behavior when price of coffee is increased	Still buying	26	44,8%	34	59,6%
	Cancel buying	11	19,0%	4	7,0%
	Reduce frequency of buying	19	32,8%	16	28,1%
	Move to a cheaper coffee shop	2	3,4%	3	5,3%

Table-4: Cluster of Consumer Behviour basd on Perception.

Consumer Behavior	Cluster 1 (n = 58 Respondents)		Cluster 2 (n=57 Respondents)	
	n	%	n	%
Information about Coffee Shop				
Mass/electronic media	11	19,0%	11	19,3%
Advertisement (billboard, banners)	2	3,4%	0	0,0%
Family	4	6,9%	9	15,8%
Friends/Partners	41	70,7%	37	64,9%
Benefits on Attending Coffee Shop				
Attain information about the development of coffee types	7	12,1%	4	7,0%
Hobby	11	19,0%	10	17,5%
As a symbol of social status	5	8,6%	3	5,3%
Lifestyle/trend	11	19,0%	9	15,8%
Spending leisure time	24	41,4%	31	54,4%

Table-5: Cluster of Consumer Behavior Based on Buying Decision Variable.

Consumer Behavior	Cluster 1 (n=58Respondents)		Cluster 2 (n=57Respondents)	
	n	%	n	%
With whom they visit the Coffee Shop				
Alone	6	10,3%	5	8,8%
Friends/Partners	39	67,2%	32	56,1%
Family	6	10,3%	4	7,0%
Business Associates	7	12,1%	16	28,1%
Interested in upcoming visits				
Yes	58	100%	57	100%
No	0	0%	0	0%
Cara memutuskan berkunjung ke coffee shop				
Planned	6	10,3%	6	10,5%
Depending on situation	34	58,6%	39	68,4%
Unplanned	18	31,0%	12	21,1%

The basic difference between cluster of MM café customers is seen from two variables which include lifestyle (encompassing category of coffee-drinker, knowledge of coffee-brewing methods, type of coffe-drinker) and motivation in the indicator of desired form of promotion. It can be concluded that customers belonging to cluster 1 are mostly casual drinkers with little to no knowledge of coffee brewing methods and who fall in the social drinker type. Their preferred method of promotion is price discount. On the other hand, cluster 2 consists of coffee enthusiasts who have a knowledge of coffee brewing methods and fall into the caffeine-addict type. Cluster 2 customers are more interested in menu variation as their preferred mode of promotion.

Indicators are differentiating factors in clustering: Table-6 is based on ANOVA hypothesis testing. ANOVA testing in cluster analysis is intended to understand which factors that significantly differ one cluster from another. The testing will refute H_0 id p-value < significant rate (5%). Testing results show that 12 indicators of product and coffee shop attributes (p = 0,000) <significant rate 5% (0,05) have a significant impact in differing cluster 1 from cluster 2. Indicators of product and coffee shop attributes according to the F value on the above table is the most influential indicator in terms of cluster differentiation especially in indicator of facility. MM Café has facilities such as comfortable seats, accessible wi-fi, power sockets, praying facilities, toilet, *smoking area,* wide parking space for cars and motorcycles as well as live music on Fridays, Saturdays, and Sundays. MM Café also has its own coffee roaster so customers can observe the coffee roasting process and see manual brewing instruments such as French press, syphon, Vietnam drip, V60, cold drip, and cold brew. On the other hand, MM Café also facilitates non-cash payments so customers no longer worry about paying when they have no cash on them.

Table-6: ANOVA Testing.

	ANOVA					
Indikator	Cluster		Error		F	Sig.
	Mean Square	Df	Mean Square	Df		
Rasa_Tekstur_Aroma	6,86	1	0,321	113	21,373	0
Variasi_Menu	8,513	1	0,416	113	20,459	0
Harga	14,662	1	0,336	113	43,701	0
Kenyamanan	14,724	1	0,334	113	44,06	0
Penataan_Tata_Ruang	14,035	1	0,341	113	41,209	0
Kecepatan_Pelayanan	11,391	1	0,375	113	30,356	0
Respon_Pramusaji	10,146	1	0,345	113	29,369	0
Kesopanan_Pramusaji	13,304	1	0,391	113	33,992	0
Kemampuan_Pramusaji	16,903	1	0,285	113	59,266	0
Fasilitas	20,784	1	0,254	113	81,698	0
Pembayaran	22,365	1	0,382	113	58,549	0
Akses_Lokasi	16,69	1	0,381	113	43,757	0

Conclusion

Consumers who attend MM Café are dominated by males aged ≤23. Are students/college students with an average monthly income of Rp. 500.001,- – 2.500.001,-.

There are two clusters of consumers based on indicators of product and coffee shop attributes at MM Café. A total of 58 respondents are classified as cluster 1 who has a higher opinion in evaluating product and coffee shop attributes. Based on their consumer behavior, cluster 1 respondents are casual coffee drinkers who have little to no knowledge of coffee-brewing methods and are considered social drinkers with price discounts being their preferred form of promotion.

A total of 57 respondents are cluster 2 with lower opinions on evaluating product and coffee shop attributes. Cluster 2 are mostly coffee enthusiasts with some knowledge of coffee-brewing methods as well as caffeine addicts and their preferred form of promotion is menu variation.

Hypothesis testing using ANOVA shows that 12 indicators of product and coffee shop attributes (p=0,000) <significant rate 5% (0,05) are significant in differentiating cluster 1 and cluster 2. The most influential indicator of MM Café's product and coffee shop attributes in differentiating the two clusters according to F value is facilities.

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