



K-Means Cluster Analysis of Consumer Behavior Toward Health and Green Fast Food Restaurant

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Abstract. The purpose of this study is to investigate customer behavior regarding healthy and ecologically friendly food products. This study evaluates the amount of environmental concern, health consciousness, and attitudes about the purchase of environmentally friendly and nutritious food products. On the basis of environmental concern, health consciousness, and attitude, a cluster analysis was undertaken with 212 KFC Naughty by Nature consumers. The results of the study classified customers into three distinct groups based on their purchasing patterns.

Keywords: Consumer Behaviour · Fast Food · Health Consciousness · Environmental Concern

1 Introduction

Understanding consumer behavior about the purchasing of fast food products is one method for identifying the causes of the success of the fast food industry. Consequently, a number of researchers studied the variables that affect consumers' fast food purchasing habits [1, 2]. Several theories were established to forecast diverse consumer behavior, one of which was related to Ajzen's Theory of Planned Behavior (TPB) (1985), the development of Ajzen and Fishbein's Theory of Reasoned Action (TRA). TPB is currently one of the most prominent social psychology models for comprehending and forecasting consumer behavior [3]. In the meantime, Han [4] established a Theory of Green Purchase Behavior (TGPB) that eco-friendly hotels and restaurants can embrace.

In response to consumer concerns about the environment and health, the fast food sector has engaged in a number of environmentally friendly practices projects and examined the level of food product safety in relation to health implications. KFC, one of the pioneers of fast food restaurants in Indonesia, capitalizes on this trend by introducing a new restaurant model that delivers healthy food selections without compromising environmental considerations. This restaurant has a different idea from other KFC locations, notably live-style dining with an open kitchen so that diners may directly observe the meal preparation process. In addition, this restaurant has an eco-friendly philosophy and continues to develop green practices and environmentally responsible initiatives.

In response to the intriguing phenomenon of environmentally friendly concepts and healthy food menus at KFC Naughty by Nature, the purpose of this study is to examine

the purchasing patterns of KFC Naughty by Nature customers. The marketing of KFC Naughty by Nature goods as healthier and more environmentally friendly than normal meals makes them highly appealing. In contrast to earlier research that used generic food choice motivations to predict consumer behavior [5–7], this study employed specific factors, such as health and environmental awareness, to predict consumer behavior. Theoretically, prior research confirms that the current use of consumer food products is linked to sustainability and health issues [8]. As a result, this study may contribute to the marketing literature on healthy and environmentally conscious consumer behavior and assist manufacturers and marketers in developing effective marketing promotion tactics for KFC Naughty by Nature goods. The following is then the structure of the study: Next, the research framework and theoretical discussion are presented. This is followed by a section on methodology and discussion. Finally, the consequences of this study's findings are discussed.

2 Review of the Literature

2.1 Health and Green Practice Restaurant

In developing nations, higher degrees of environmental consciousness are observed [9]. Today's restaurants see the possibilities of eco-friendly marketing and have engaged in green practice initiatives to gain a competitive edge by becoming more ecologically friendly businesses [10]. Green restaurants are “new or renovated establishments designed, constructed, managed, and demolished in an eco-friendly and energy-efficient manner” [11].

Fast food is believed to contribute to obesity rates due to its high calorie and fat content, which raises the customer's total calorie intake [12]. In order to prevent future health issues, consumer interest in healthy eating has increased [13]. Customers who desire a healthy lifestyle are more likely to be interested in purchasing nutritious meals [8]. Thus, restaurants that employ eco-friendly methods simultaneously contribute to the health aspect. For instance, restaurants may provide menu options sourced from organic agriculture or provide information regarding the nutritional and nutritional content of the meals presented.

2.2 Environmental Concern and Environment-Friendly Lifestyles

Environmental Concern is an amalgamation of environmental knowledge, values, and attitudes, as well as emotional participation and concern for the environment [14]. Environmental Concern refers to a person's assessment of the influence of human conduct on the environment and their propensity to engage in pro-environmental behavior [15]. From the standpoint of pro-environmental conduct [16], environmental concern is likely an important prerequisite for building ethical and moral norms regarding what consumers think acceptable and appropriate in connection to sustainable restaurant practices. Environment-friendly lifestyle, meantime, refers to the acts of those who promote the sustainable use of natural resources [4]. Individuals' relationship with the environment is reflected in their environmentally friendly purchasing behavior, which refers to the acquisition and consumption of things that have a low impact on the environment [17].

2.3 Health Consciousness and Healthy Lifestyles

The idea of health consciousness has been investigated in an effort to forecast consumer food preferences, buying intentions, and healthy eating behaviors [18]. When deciding which sorts of food to purchase, health or health consciousness has become a significant factor for many persons [19]. Health-conscious persons are distinguished by their concern for and sensitivity to health risks, their physical fitness, and their capacity to manage stress and nutrition [20]. Individuals with a high health consciousness tend to be more knowledgeable and aware of health and nutrition, however the degree varies [21, 22].

2.4 Consumer Attitude and Consumer Purchase Behavior

Predicting consumer behavior, according to Homer and Kahle [23], requires a logical progression from abstract ideals to values, attitudes, and then to specific acts in a particular situation. Attitude is defined by Fishbein and Ajzen [24] as a person's evaluation of specific acts as positive or bad. In addition, they describe attitude as a positive or negative evaluation of an item, activity, circumstance, or person. Attitude is a collection of thoughts regarding a specific item or activity that can be translated into a desire to act. Attitudes are evaluations of whether specific actions benefit or damage individuals. Attitudes influence intentions; the more positive an individual's attitude, the greater his or her willingness to engage in the activity. Thus, attitude predicts purchase intent and modulates purchasing behavior. In addition, clients must be aware of their views and motivations in order to overcome purchasing hurdles [25].

3 Methods

The authors use k-means clustering analysis to create a profile of consumer beliefs and behavior patterns around the buying of healthy and environmentally friendly fast food goods. The objective of this multivariate statistical technique was to identify naturally existing groupings from observations [26]. SPSS software was utilized to integrate cluster analysis as a means of analysis. Cluster analysis is an exploratory technique that consists of searching for n p -dimensional observations of groups of units that are comparable to one another, without knowing a priori if such homogenous groupings exist in the data set [27]. As a non-hierarchical algorithm divides the data set into a pre-determined number of clusters, K-means or iterative approaches are being examined [28]. Moreover, as implemented by Ketcher and Shook [28] in strategic management research, the non-hierarchical technique has two major advantages over the hierarchical clustering approach. The final technique maximizes in-cluster homogeneity and inter-cluster heterogeneity by: (1) permitting observations to swap cluster membership in cases when non-hierarchical procedures are less affected by outlier components; and (2) doing numerous passes of data.

4 Results and Discussion

Based on the results of data analysis, respondents' responses were then distributed into three cluster groups. The first cluster is a category of respondents who have a strong buying behavior of healthy and environmentally friendly food products, there are 149 respondents who are members of the first cluster, including the 22nd respondent with a cluster distance of 1,252 from the cluster center. Furthermore, based on the clustering process, there are 11 respondents who are members of the cluster, most of whom have sufficient buying behavior of healthy and environmentally friendly food products, including the 115th respondent with a distance to the center of the cluster as far as 1,171. Meanwhile, the other 61 respondents included in the cluster profiled have weak buying behavior of healthy and environmentally friendly food products.

4.1 Environmental Concern and Environment-Friendly Purchase Behavior

Environmental considerations and concerns have become an integral part of consumer decision-making and their purchasing of ecologically friendly and healthful food products. The results of the study's research indicate that cluster 2 is more environmentally conscious than other clusters, with a value of (6.59 points). However, the difference between cluster 2 and cluster 1 (6.53 points) in environmental consciousness is minimal. In contrast to other clusters, cluster 3 has the least regard for the environment (Fig. 1). The study of data reveals that consumers with a significant propensity to purchase healthy and ecologically friendly food items are highly sensitive to and concerned about the environment. Strong environmentally conscious consumers are more inclined to care about eco-social benefits, therefore they are more likely to purchase nutritious, eco-friendly food products that not only protect the environment but also contribute to the green market. In addition, Liu and Dong indicate that purchasing behavior may be influenced by the fact that environmentally conscious consumers may derive greater psychological advantages from purchasing eco-friendly products.

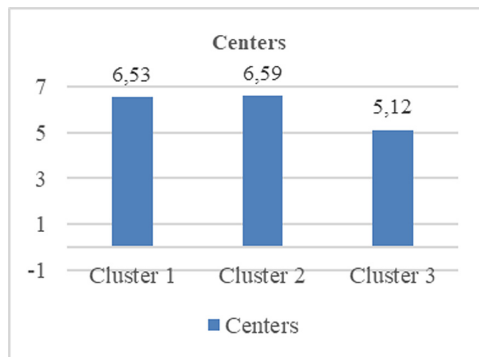


Fig. 1. Cluster centers of environmental concern.

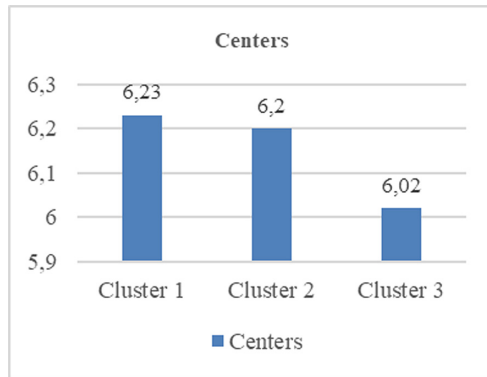


Fig. 2. Cluster centers of health consciousness.

4.2 Health Consciousness and Healthy Purchase Behavior

Based on the cluster analysis, the findings indicate that cluster 1 has a superior corporate culture in terms of the total level of customer health awareness. In contrast, cluster 3 shows the least health knowledge among consumers compared to the other two clusters (Fig. 2). Health-conscious consumers will have greater drive to improve their quality of life and will be far more inclined to seek out and select healthier food options [18]. Thus, the majority of respondents who purchase nutritious foods show a high level of health consciousness. Those who indicated higher levels of health awareness were also more critical of fast food businesses than those who reported lower levels of health awareness [29, 30]. In contrast, groups with lower perceived health awareness may feel that purchasing nutritious food depends on factors other than health, including taste, restaurant atmosphere, image, and so forth. This data supports the notion that people consume fast food for reasons such as taste, convenience, and cost, but health considerations may be overlooked [12].

4.3 Attitude Toward Green and Healthy Fast Food Products

According to the analysis (Fig. 3), cluster 1 has a more positive attitude toward healthy and ecologically friendly food products than the other clusters. In contrast, cluster 2 has the most negative attitude compared to the other groups. This research indicates that customers with a robust purchasing behavior have a robust attitude toward healthy and ecologically friendly foods. In Theory of Reasoned Action [24], attitude is regarded as the primary factor of customer purchasing intention. In the behavioral research stream of social psychology literature, Kotchen and Reiling [31] similarly identified attitudes as significant predictors of behavioral intentions. A positive buying attitude toward environmentally friendly products will foster constructive trust in the purchase, contributing to the formation of purchase intent [32]. When consumers are aware of efforts to improve the environment and human health, they will purchase more environmentally friendly items. Group 2 (cluster 2) has the weakest attitude compared to the other clusters. The respondent group reflects that their purchasing behavior of environmentally friendly and

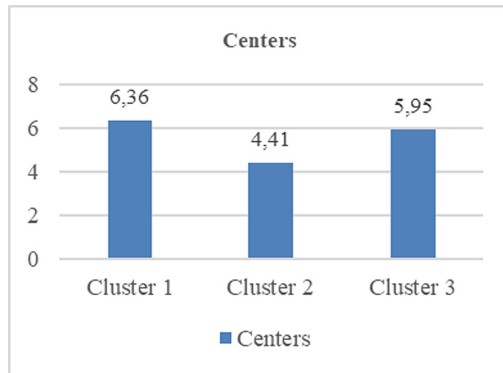


Fig. 3. Cluster centers of attitude toward green and healthy fast food products.

healthy products is influenced by factors other than their attitudes. For instance, according to the Theory of Planned Conduct (TPB), intentions and behavior are influenced not just by attitudes, but also by subjective standards and perceived behavioral control.

5 Conclusion

Based on the findings of research and data analysis, this study presents a cluster analysis by surveying 121 KFC Naughty by Nature customers. K-means or iterative technique is considered, as the means of analysis, as a non-hierarchical algorithm for partitioning the data set into a predetermined number of clusters. Based on the analysis that has been grouped into three distinct clusters by utilizing distance distribution to determine cluster membership, the following results have been determined: (1) the purchasing behavior of cluster 2 has the highest perceived environmental concern, while cluster 3 has the lowest perceived environmental concern. (2) Based on the level of health consciousness, cluster 1 has the highest level of health consciousness compared to the other clusters; (1) consumers with a high level of environmental awareness are more likely to care about the environmental impacts that occur, so they are more likely to purchase healthy and environmentally friendly food products that are considered more environmentally friendly; (3) cluster 1 has the highest level of health consciousness compared to the other clusters. Consequently, the majority of respondents with healthy food purchase behavior had a high level of health knowledge; (3) cluster 1 has a more positive attitude towards healthy and environmentally friendly food goods than other clusters. This research indicates that a greater propensity to purchase KFC Naughty by Nature items is correlated with a favorable attitude towards healthy and ecologically friendly food goods.

In addition to providing an analysis of the conversation regarding the state of environmental concerns, health consciousness, and consumer attitudes regarding their behavior, this study's findings can also be used to develop and enhance certain areas. First, this research has limits because the analytical technique used is a descriptive analysis that can be expanded to examine other pertinent information. Second, future research should

employ a longitudinal study to examine the proposed research paradigm. Thirdly, this research can be broadened to provide a more accurate depiction of environmentally conscious consumer behavior and to include food industries other than fast food.

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