

Conference Paper

Analysis of Sugar-Free Claimed Beverages and Its Potential Customers

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Abstract

According to Ministry of Health Republic of Indonesia, obesity and diabetes have increased significantly within 31 provinces in Indonesia. To avoid these two food-related diseases, people start to be health conscious and show their interest of healthy eating. As a result, more and more beverages companies participate in the healthy trend and develop many healthier drinks with sugar free label to respond the market. Thus, the study is executed in order to understand sugar free beverages market and understand the effect of sugar free label on packaging toward purchase intention. The research is conducted in the form of online questionnaire and experiment to 149 respondents domiciled in Bandung, Indonesia. The questionnaire data is analyzed using cluster analysis. It shows that there are 4 clusters which have distinctive demographic, psychographic, and behavioral characteristics toward sugar free beverages market. The experiment is analyzed using paired t-test and indicates that sugar free claims on beverages packaging increase peoples willingness to buy. This study is expected to help sugar free beverages industry to target the right customers and apply appropriate strategy according to the potential customers characteristics.

Keywords: segmentation, cluster analysis, purchase intention, experimental, sugar-free beverages

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Received: 7 August 2018

Accepted: 15 September 2018

Published: 22 October 2018

Publishing services provided by
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Selection and Peer-review under the responsibility of the ICE-BEES 2018 Conference Committee.

1. Introduction

Health problems that occur as the main effect of too much sugar consumption are obesity and type 2 diabetes [1]. Obesity is a condition where calories accumulate inside the body in the form of fat which can lead to other mortal diseases such as diabetes. Adults are considered obesity when they have Body Mass Index greater than or equal to 30kg/m² [2]. Based on the data from Ministry of Health Republic of Indonesia in 2013, 14.76% of Indonesian people suffer from obesity and it is 32.9% more likely to affect women, increasing up to 17.5% from 2010 (15.5%) [3].

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Another research from Ministry of Health Republic of Indonesia claimed that a total of 31 provinces in Indonesia (93.9%) showed significant increase in the prevalence of diabetes [3]. World Health Organization explained that diabetes is a disease where the level of the blood glucose is too high. Dr Margaret Chan as the Director-General of the World Health Organization claimed that the most common kind, type 2 diabetes is often associated with excess body weight which results in less responsive to insulin.

Since there is a rise in obesity and diabetes, people start to show positive attitude toward health consciousness. A global market research company, Mintel explained that 62% of urban Indonesians planned to have healthier dietary in 2016 [4].

The beverages industries respond to this trend by developing many varieties of healthier drink products and succeed to gained market share rapidly. This is marked by the emergence of many drink products with sugar free claims. Mintel showed that Indonesia is the top two fastest growing consumers of healthy drink in Southeast Asia region within the next five years with the growth rate rises up to 13.8 percent. They also explained that more than 40 percent of urban Indonesians avoid the consumption of sugar [5] and almost a third (31.8 percent) of Indonesian population consider sugar-free drinks [6].

The aim of the present work is to answer the curiosity upon exploring the potential market of sugar-free beverages and identifying whether sugar-free label on packaging affect customer purchase intention.

2. Theoretical Foundation

2.1. Segmentation

The idea of segmentation is that a product will usually not satisfy all consumers [7]. Blackwell, Miniard and Engel (2001) suggest that differences in individual behavior such as buying pattern and motivations results in a need for segmentation [8]. Kotler and Armstrong identify market segmentation as “dividing a market into distinct groups of buyers who have distinct needs, characteristics, or behavior and who might require separate products or marketing mixes” [9]. There are four basic variables of segmentations which are geographic, demographic, psychographic, and behavioral [10]. A company usually applies different combination of those categories while doing segmentation in order to have accurate market groups. Through categorizing market into smaller segments, the firm is able to shape better strategy to sell its product more effectively and efficiently [11].

2.2. List of values

Kahle invented the List of Values in order to assess cultural values which determine the behavior of consumers [12]. The List of Values has become a primary solution concerning market and consumer research and was used to study the differences between the new and traditional rating methods [13]. There are nine core values in the LOV which are self-respect, security, warm relationships with others, self fulfillment, a sense of accomplishment, being respected, a sense of belonging, fun, enjoyment, and excitement [14].

2.3. Customer loyalty

Customer loyalty is defined as a profound commitment toward a product, service, brand or organization of a buyer [15]. In accordance with theoretical developments, there were many researchers [16–18] suggested the combination of attitudinal and behavioral approaches to evaluate customer loyalty. Dick and Basu are researchers which also developed loyalty measurement based on the composite of attitudinal and behavioral framework [19]. According to them, the assessment of customer loyalty is based on both relative attitude and repeated patronage. Attitude is a buyer position toward a product while patronage means purchase levels of a buyer. The authors defined clearly that loyal customers characteristics are less likely to find alternatives, hard to be convinced by competitors, and willing to convey positive word of mouth communication to others [19].

2.4. Food labeling

National Agency of Drug and Food Control Indonesia supported by the law No. 23/1992 article 21 regarding Food and Health Safety reminded that every packaged food and beverage must be labeled to protect people from foods and beverages that do not comply with the provisions of health standards and or requirements [20]. Supported research by Eagly and Chaiken also indicates that food labels helps consumers toward purchase decision process [21] and it is understood better among people with higher education [22]. However, according to Garetson and Burton, food claims sometimes only affect slightly on product performance [23] and it may be interpreted wrongly [24].

2.5. Purchase intention

Purchase intention is the likelihood of a customer toward buying a certain product [25-27]. According to Chang and Wildt, willingness to buy and willingness to return are the attributes used to evaluate consumers' purchase intention [28]. Also, the process of additional information in the memory also affects customer's motives toward purchasing sugar-free beverages [29]. Considering sugar-free beverages and other healthy drinks, consumers often put more effort to purchase the product since they are looking for certain advantages [30].

2.6. Integrated marketing communication

Schultz proposed that Integrated Marketing Communication (IMC) is a process of development and application of communication programs adjusted to suit target markets [31] while according to Armstrong and Kotler, IMC stands for "carefully integrating and coordinating the company's many communications channels to deliver a clear, consistent, and compelling message about the organization and its products" [9]. The goal of the Integrated Marketing Communication in the short term is to improve financial outcome while in the long term is to build profitable customer relationships [32]. In the concept of IMC, target audience receives communicational messages which are aimed to transform consumer attitude so they would be interested constantly regarding the products or services proposed by a company [33].

3. Methodology

3.1. Data collection method

3.1.1. Survey

The survey is conducted in the form of online questionnaire in order to reach enough respondents who can represent the population. The questionnaire is defined mainly from literature review and also from several adaptations from the pilot study result. There are 55 questions in the form of open-ended questions, closed-ended questions, and likert scale.

3.1.2. Experiment

The experiment was performed to compare the results before and after a person was given sugar-free information on the product packaging. The experiment was executed online together with the questionnaire survey and conducted with a presentation of pictures in order to emphasize the information about sugar-free label on the packaging.

3.2. Sampling design

The population of this research is general Indonesian population with no limitation. Based on live information from the site Worldometers, Indonesian population in March 2018 is 265,972,808 [34]. According to Slovin [35] calculation, the minimum number of sample for this research with the assumption error of 10% is 100 respondents. In the context of data analysis method, there is no generally accepted rule of thumb regarding minimum sample sizes needed since cluster analysis will always render a result with any number of sample size [36].

3.3. Data analysis method

3.3.1. Cluster analysis

The cluster analysis is a suitable method to group objects which has similar characteristics [36]. The goal of cluster analysis is to assign groups of objects that are alike with regard to variables and classify them into clusters.

This research will use the combination of hierarchical methods and partitioning methods. Initially, a hierarchical method must be performed to define the number of clusters. The data will use Agglomerative Ward's method by computing sum of squared distances within clusters and aggregate clusters with the minimum increase in the overall sum of squares. Then, after getting information about the number of the cluster needed, the k-means procedure is executed to actually create the clusters.

3.3.2. Paired T-test

A paired t-test is a statistical test which purpose is to evaluate the means of two populations where sample in the first and second observations are coupled [37]. In this study, a paired t-test is used to compare pre-treatment and post-treatment different mean values. The paired t-test will be valid when the data distribution is approximately

normal [38]. According to the Central Limit Theorem, when sample size is greater than 30, the sampling is likely to be normal distributed [39] and the samples means distribution can be assumed to be normal [40]. Thus, a paired t-test can be executed.

4. Result and Discussion

4.1. Reliability and validity

The reliability test result shows that the Cronbach's Alpha value to 43 likert scale question is 0.841. Since the value is higher than 0.7, the variables are considered reliable and consistent.

The validity test was performed using Spearman's Rank Order Correlation for the 43 questions item since the data distribution is not normal as the result of One Sample Kolmogorov-Smirnov test. The result of Spearman's Correlation test leads to a removal of all invalid variables consist of three loyalty questions, two List of Values questions, and one occasion question. The remaining 37 questionnaire variables are valid and precise for the next data processing.

4.2. Descriptive analysis

The descriptive analysis is performed to examine the respondent profiles of the online survey and experiment. The result of the analysis is explained as follows. The data shows that almost 60 percent of the respondents are female with the age ranged between 17 to 59 years old. The age distribution also indicates that respondents are mostly between 20-22 years old. The education level of 85 respondents is college graduate, 52 respondents is high school graduate, and 12 respondents are varied between elementary school, junior high, and post graduate. Most of the respondents come from Bandung (65.1 percent) and Jakarta (10.1 percent). As much as 43.6 percent earn less than Rp3million per month, 23.5 percent earn between Rp3million to Rp5million per month, 13.5 percent earn Rp5million to Rp10million per month, and 19.5 percent earn more than Rp10million per month. Besides that, almost 70 percent of respondents spend less than Rp50.000 per week on sugar-free beverages and only two percent of respondents spend more than Rp250.000 per week on sugar-free beverages.

4.3. Cluster analysis

The 25 variables were analyzed using Cluster Analysis on SPSS 23. Firstly, the hierarchical ward method was executed. The strongest elbow criterion determines the best number of clusters. It suggested that the cluster number is four. Then, the K-means clustering was performed with four numbers of clusters.

TABLE 1: Number of cases in each cluster. (Author’s own work).

Cluster	1	58.000
	2	7.000
	3	73.000
	4	11.000
Valid		149.000
Missing		0.000

The result shows that Cluster 1 has 58 cases, Cluster 2 has 7 cases, Cluster 3 has 73 cases, and Cluster 4 has 11 cases (see Table 1). Considering only from the number of cases, Cluster 1 and 3 are favorable potential group to target since it has the highest number of cases among the other clusters.

Table 2 shows the result of the cluster analysis. The most left column is the variable components used in the clustering process. The four next columns show the clusters that are formed with different characteristics. The yellow highlight indicates the attribute that has highest score on each row. The following is the explanation of each cluster, ranked from the most potential to the least potential customers of sugar free drinks.

Connecting the information between Table 1 and Table 2, Cluster 4 can be considered as the highest potential customer group since they spend the most money on sugar-free beverages product, despite its few number of cases. This group earns the highest wages, spends the most on sugar-free beverages product most routinely, and the most loyal consumer among the other 3 groups. Another characteristic of this fourth cluster is that they consider the most about the quality, service, and economy of sugar-free beverages product. This cluster consists of older age population (56-57 years old) which seems like they are already aware of maintaining health by reducing sugar consumption. Without any marketing activities, this fourth group will find sugar-free beverages by themselves since they see the product as a need. Personal selling and direct marketing are the suitable suggested marketing channels to approach this cluster. The marketing strategy would be best if it can promote the value of excitement and warm relationship to others such as promoting health community.

TABLE 2: Final cluster centers. (Author's own work).

	Cluster			
	1	2	3	4
Umur	21.71	40.86	23.16	56.64
Gender	1.38	1.57	1.41	1.45
Pendidikan	2.21	3.00	2.32	2.55
Pendapatan	1.67	3.29	2.05	3.73
Belisugarfree	1.29	1.43	1.36	2.45
TotalLOVSoB	8.60	8.86	7.08	7.82
TotalLOVExcitement	4.79	4.71	4.59	4.82
TotalLOVWarmRelations	8.52	7.43	7.62	9.27
TotalLOVSelfFulfillment	9.21	9.57	8.56	9.18
TotalLOVWellRespected	7.24	5.29	5.42	5.82
TotalLOVFunEnjoyLife	9.50	9.57	8.81	9.55
TotalLOVSecurity	9.41	9.71	8.82	9.55
TotalLOVSelfRespect	3.78	4.43	3.15	4.27
TotalLOVAccomplish	8.98	9.71	8.48	8.82
TotalLoyalAlter	3.72	2.43	3.56	4.36
TotalLoyalWoM	4.57	4.71	4.21	4.73
TotalOccReg	5.48	7.14	4.51	8.18
TotalBenefitQuality	7.55	8.14	6.22	9.64
TotalBenefitService	7.48	6.14	5.21	7.82
TotalBenefitEconomy	6.86	4.14	4.51	7.27
TotalMarketingAds	10.00	6.86	8.05	8.36
TotalMarketingPSelling	3.24	2.43	2.30	3.36
TotalMarketingPromo	8.38	6.00	6.40	7.00
TotalMarketingPR	3.66	2.86	2.77	3.18
TotalMarketingDirect	7.00	5.14	4.78	7.00

Cluster 2 with average age of 40-41 years old is the most educated group. The second cluster's population can also be considered a potential consumer of sugar-free beverages because it is the second highest on sugar-free beverages spending. They are also high educated people which tend to have better information about healthy living. In this group, people are more likely to feel the most satisfied with life. This is indicated by the high score of sense of belonging, self-fulfillment, enjoyment of life, security, self-respect, and a sense of accomplishment. However, this cluster doesn't really have preferred marketing channel. They can be approach in whether using advertisement, promotion, personal selling, public relation, or direct marketing. Low preference in many marketing communication channels make this group is quite tricky to be approached. However, although this cluster has the lowest loyalty score,

they can be approached more easily by many marketing channels using strategy that corresponds to their characteristic values.

Cluster 1 with the average age of 21-22 years old has high similarity in many attributes such as age group and frequency of buying sugar-free beverages with Cluster 3. However, being different from the third group, this first cluster is very aware of almost any forms of marketing communication. They can be attracted easily although they have the least income among all other groups. In addition, there is a prominent value of this group which is being well-respected. Like to be appreciated and praised are their significant attribute. Positioning healthy value and good customer service might become an option to approach this type of group. Overall, the people might not yet aware of healthy eating, but, with the right strategy, these cluster members can become potential customers of sugar-free beverages.

Cluster 3 with the average age of 23 years old, has the most members (73 cases). However, the characteristics of this group cannot be differentiated clearly. This is explained by the absence of significant value on any variables. This is might related with the age group where young adults are inclined to feel uncertain about life. At this age, most people are finding their true identity and purpose through life and society. Moreover, it can also be seen from benefit sought variable that they are not really interested with sugar-free drinks. The low score on almost all marketing communication variable makes this cluster hard to be approached because they are likely to ignore any marketing activities. This type of group can be considered the least to be the potential consumer of sugar-free beverages.

4.4. Paired T-test

Paired t-test is executed using Microsoft Excel in order to find out the correlation between before-after variables, which consist of 3 questions each. Variable 1 is the set of data before the treatment was given while variable 2 is the result after the treatment was informed. The treatment is the information of sugar-free on beverages' packaging.

The hypotheses are stated as follows.

Variable 1 = value before treatment = μ_1

Variable 2 = value after treatment = μ_2

$H_0: \mu_1 \geq \mu_2$

$H_1: \mu_1 < \mu_2$

TABLE 3: Paired two sample for means T-Test result. (Author’s own work).

	Variable 1	Variable 2
Mean	9.83892617	10.449664
Variance	6.054961	6.1815708
Observations	149	149
Pearson Correlation	0.70991052	
Hypothesized Mean Difference	0	
df	148	
t Stat	-3.9566228	
P(T<=t) one-tail	5.8785E-05	
t Critical one-tail	1.65521451	
P(T<=t) two-tail	0.00011757	
t Critical two-tail	1.97612246	

The result (see Table 3) shows that t statistics is around -3.957 and t critical is around 1.655. This renders a p-value of approx. 0.0000588. Since tstat (-3.957) is lower than tcritical (-1.655) or p-value (0.0000588) is lower than 0.05, thus the null hypotheses is rejected and alternative hypothesis is retained. This indicates that value after treatment has higher means than value before treatment which infers that sugar-free label on beverages’ packaging increase consumers’ purchase intention.

4.5. Discussions

The clustering result of this research complies with the theory of Foxall and Goldsmith [11] as well as Peter and Olson [7] where segmentation allows better idea of each cluster with different characteristics. The deep understanding of each cluster let firms to apply appropriate marketing strategy to satisfy the target cluster.

However, the descriptive result about the sugar-free spending shows that there is only about 30% who spend more than Rp50.000 per week. This does not comply with Yuniarni [5] which stated that more than 40% of urban Indonesians consider avoiding sugar. This is probably because of the different method of sampling techniques. The number of respondents of this study might not be enough to be able to tell the whole Indonesian population trend and the distribution might not be reliable enough since there are too many younger respondents compared to elderly aged respondents.

Also, the experiment result shows that food claims has clearly great impact to customer purchase intention. This might imply that food label increase product performance and thus encourage people’s willingness to buy. The result does not conform to research done by Garetson and Burton’s [23]. Their study claims that in American

context, food labels have little effect on product performance. One possibility that cause these outcome differences is the diversity of respondents' culture and behavior. Indonesian people may act differently with other respondents with different nationality even when given the same stimulus.

5. Conclusions and Suggestions

5.1. Conclusions

The result of this research shows that only one-third of the respondents indicate the tendency toward sugar-avoiding consumption trend. The segmentation analysis creates 4 separate groups and suggests that there are 3 potential customer groups of sugar-free beverages. Cluster 4, with the age averaged of 56 years old, shows very strong tendency toward sugar-free drinks consumption. The highest score on sugar-free spending, loyalty, consumption regularity makes this group is the highest potential of sugar-free customer. With the average of 40 years old, cluster 2 is the second potential customer group with quite high score on sugar-free consumption. However, this cluster is the least loyal and shows no attractiveness on any marketing communications. The people in Cluster 1 indicate no interest toward consuming sugar-free beverages. However, this group can be easily attracted by almost all kind of marketing tools. Thus, with the appropriate marketing strategy and the help of value character, this cluster can be still prospecting customers of sugar-free beverages.

Cluster 4 would be best approached by personal selling and direct marketing communication. Since excitement and warm relationship to others are the most important values for this group, the marketing strategy should promote these values. Cluster 3 however, has many significant values such as sense of belonging, self-fulfillment, enjoyment of life, security, self-respect, and a sense of accomplishment. This makes any marketing communications adjusted with their preferred values are suitable for them. The first cluster seems to be the easiest group to approach since they have highest score on almost any marketing channels. The adaptation of well-respected value with appropriate marketing strategy will attract the members without difficulty.

Based on the experiment that had been executed, people are more likely to buy a sugar-free drink when there is a clear label of sugar-free information in the packaging. Although it does not certain that people will actually buy the product, it is recommended to put sugar-free label on beverages packaging in order to encourage people's intention to buy.

5.2. Suggestions

This study suggests clustering using only Kotler's segmentation theory. However, theories are always renewed and adjusted better to recent consumer trend. Thus, further research can combine the segmentation analysis using several variables from recent theories and Kotler's, so that it can render more reliable result. Focusing more on the study from Blackwell, Miniard and Engel [8] regarding buying pattern and motivation behavior can be a starting point for the next research.

Beside the segmentation, this study also proposes that sugar-free label have a great effect on purchase intention. However, according to Hasler [24], food claims can give wrong information. This infers that people might understand the information wrongly or the company might give misleading information. For further research, these two ideas can be the topics. Related potential variable such as education level [22] can also be analyzed together.

Acknowledgment

The completion of this paper would not be possible without the sincere support and participation of numerous people which could not be enumerated one by one. The assistance and contribution are deeply valued and greatly appreciated. The author would like to acknowledge specifically to Mrs. Shimaditya Nuraeni, S.PSi., MSM for her time and guidance in completing this research paper. Family and relatives, who show abundant support and understanding. Above all, the One Almighty God, for his countless love, for always be in the light and darkest days.

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