

ATTRIBUTE ANALYSIS ON CONSUMER PREFERENCE TOWARD SPIRULINA FACE MASK PRODUCT

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ABSTRACT

This study aimed to identify consumers' preferences measured by product form, packaging, aroma and types of spirulina face mask in which it were the basis for developing spirulina face mask product. Further, this study aimed to examine the most dominant attributes preferred by consumers. Population in this study was Gresik people with total sample consisted of 100 respondents chosen by purposive sampling. This study used quantitative method and the data were analyzed using conjoint analysis. This study discovered 16 product attributes combinations based on product form, packaging, aroma and face mask types. Furthermore, the results showed that attribute combination preferred by consumers were spirulina face mask in gel, tube packaging with flower aroma and peel off type.

Keywords: spirulina; cosmetic; consumer preference; conjoint analysis

INTRODUCTION

In last decade, cosmetics became primary needs of people. Cosmetic is a substance for external application on human's body particularly on skin. The functions of cosmetics were to clean, to scent, to change appearance, to improve body odor, to protect and to maintain body in good condition. (BPOM RI, 2015). In recent years, cosmetics products have developed into various types and more usable both for men and women. For instance an innovation of cosmetics by utilizing spirulina as main substance in face mask.

Spirulina was derived from Latin word "spiral". It was a microalgae plankton that has been becoming vegetable food since ancient time until now. It had high nutritive values that had been clinically tested for many years (Hills, 1980). Spirulina, which has biotechnological potential was applied as a potential ingredient for nutricosmetics (Costa, 2017). Further, spirulina was extracted using biotechnological process and it was produced into dermocosmetics which had multi functions. Spirulina formula was excellent for hydration, skin barrier function and oil control with anti-aging function (Delsin et al., 2015) The spirulina's potential functions encouraged many cosmetics brands to develop spirulina as their cosmetics products. The pioneer of spirulina face mask innovator was promoted by TIENS that introduced spirulina as food supplement and also can be used as face mask. Further, many products promoted and developed spirulina as main substance into cosmetic products with various product attributes advanced by companies enabled customers had various options to decide in purchasing product.

Consumers compared all attribute values of each product to get their preferences. Tjiptono (2010:103) explained that product attribute is any factor affecting consumers to decide in purchasing a product. Product may have attributes that close with or belong to the product itself. Product attributes including price, brand, quality, packaging, design, and after-sales service. Consumer might decide whether the product was suitable or not if the product had the attributes expected by consumers. Thus, customers only purchase a product based on product attributes expected.

Companies required advancing product attribute including the benefit and advantage promoted to the consumers. This condition emerged competitions in advancing product attributes that made consumers had many references in purchasing a type of product. Therefore, a study to identify factors determining consumers in deciding to purchase a product was required such as a research conducted Karaduman (2014) entitled "Factors Influencing Consumer Preferences On Natural And Non-Natural Cosmetics In Turkey". This research analyzed consumers' perception toward a product. Further, consumers' perception was important to be studied due to various options of product attributes. Putri and Dadang (2014) studied

customers' perception in determining usage of social messenger because of the a variety of product or service attributes presented by Line, Kakaotalk, Wechat and Whatsapp. Hence, related studies was conducted by Rahardjo (2016); Erinda, *et al.* (2016); Rahardjo (2017); Sumarwan dan Eny (2017) to analyzed consumers' perception in determining the usage of product or services. Those previous studies encouraged companies to improve their quality product and enabled consumers' satisfaction. Yet, there was no theory applied in those previous studies.

Therefore, this study attempted to examine the hierarchy of effect theory that consisted of awareness, knowledge, liking and preference. The previous studies did not employ any theory to strengthen the result of the study.

For that reason, this study was conducted to obtain product attributes combination of Spirulina face mask product preferred by consumers. Further, this study aimed to observe the most important attribute as acclaimed by consumers. Beside, this study was important because with this study, PT.NIM would enable to obtain product attributes combination of spirulina face mask preferred by consumers so that the companies could determine appropriate and excellent production and marketing strategies.

RESEARCH METHODS

This study was a quantitative study and used descriptive quantitative approach. Population of this study was people in Gresik. The researchers chose 100 respondents as sample. The sampling technique used purposive sampling with criteria people in Gresik who have used spirulina face mask product or people who interested to use spirulina face mask product with age criterion between 17-50 years old. This study was conducted in 2 months. It started from September until October 2018. Data collection was conducted by questionnaire. The questionnaire was divided into two types; they are questionnaire for respondents' characteristics and for stimulus choice.

The data analysis used conjoint analysis method to identify how respondents develop their preferences toward products or services (Ghozali, 2011). Conjoint analysis formulation used in this study was:

$$\mu(x) = \sum_{i=1}^m \sum_{j=1}^{k_i} a_{ij}x_{ij}$$

- $\mu(x)$ = total *utility* of an alternative
- a_{ij} = *utility* related to j - level
- i, j = 1,2,..... k_j of attribute i (i,j = 1,2,.....,m)
- amount of i attribute level
- m = amount of attributes
- x_{ij} = 1, if j level of attribute i occur; 0, if not
- k_i = number of attributes categories, number-i

Moreover, to determine Important Value of -i attribute (W_i), was determined by the following equations:

$$(X) = (I_i / \sum_{i=1}^m I_i) \times 100\%$$

I_i = {max (a_{ij}) – min (a_{ij})}, for each i

Table 1. Respondents' demography

Profile	Frequency	Percentage
Sex/Gender		
Female	62	62%
Male	38	38%
Age		
17-25 year	29	29%
26-30 year	20	20%
31-40 year	38	38%
41-50 year	13	13%
Educational Background		
Elementary school	0	0
Junior high school	4	4%
Senior high school	31	31%
University	65	65%

Occupation		
Employees	48	48%
Housewives	23	23%
Entrepreneur	15	15%
Government employees	8	8%
Others	6	6%

Table 2. Description of respondents' purchase behaviour

Purchasing behaviour	Frequency	Percentage
Users' objectives		
Skin treatment for skin's health	62	62%
Beauty treatment	34	34%
Others	4	4%
Face mask functions		
Anti wrinkle / Anti aging	40	40%
Brightening/ Whitening	31	31%
Anti Acne	23	23%
Others	6	6%
Usage frequency		
Once a week	29	29%
Twice a week	12	12%
Once a month	31	31%
Twice a month	28	28%
Face Treatment frequency		
Once a week	10	10%
Twice a week	2	2%
Once a month	52	52%
Twice a month	26	26%
Once a year	10	10%
Face mask Purchasing		
Online shop	39	39%
Aesthetics	38	38%
Cosmetics store	21	21%
Others	2	2%
2% Face mask Information		
Browsing by themselves	42	42%
Friends	42	42%
Advertisements	14	14%
Others	2	2%
Product attributes		
Face mask types		
Peel off	59	59%
Wash off	41	41%
Aroma Flower	51	51%
Fruit	49	49%
Packaging		
Tube	57	57%
Sachet	43	43%
Product form		
Gel/Pasta	70	70%
Powder	30	30%

DISCUSSION AND ANALYSIS

Demographical Descriptive Analysis

The analysis of respondents' demography aimed to explain demographical characteristics of respondents in Indonesia, especially in Gresik regency. Therefore, the following analysis provided an overview about respondents' demography that was illustrated on the tables 1 and 2 above.

The majority respondents in this study was female with 62% consisted of 62 respondents. The dominant age of respondents was between 31-40 years old with 38% consisted of 38 respondents. Further, majority of respondents graduated from university with 65% and consisted of 65 respondents. The majority of respondents was employees with 48% and consisted of 48 respondents.

Most of respondents with 62% percentage used spirulina face mask for skin treatment to keep their skin healthy. 40% respondents used spirulina as anti-aging benefit that could reduce wrinkle and skin flaws. 29% of respondents applied spirulina face mask once a week. Further, 52% respondents had face treatment once in a month. 39% respondents purchased spirulina face mask via online shop. 42% respondents knew information about spirulina face mask by browsing and from friends. Moreover, 59% respondents chose spirulina peel off face mask. 51% respondents preferred flower aroma. 57% respondents preferred tube packaging and 70% respondents preferred gel/pasta spirulina face mask.

RESULTS

Product Attributes and Attributes Level

Table 3. Attributes and Attributes Level of *Spirulina* face mask product

Attribute	Level
Product form (X_1)	Powder
	gel
Packaging (X_2)	<i>Sachet</i>
	<i>Tube</i>
Aroma (X_3)	Flower
	Fruit
Face mask type (X_4)	<i>Wash off</i>
	<i>Peel off</i>

Source: processed data

Combinations of Product Attribute

Table 4. Combinations of product attribute

No	Card ID	Product form	Packaging	Aroma	Face mask types
1	1	Gel	Tube	Flower	Wash Off
2	2	Powder	Tube	Fruit	Wash Off
3	3	Powder	Sachet	Fruit	Wash Off
4	4	Gel	Sachet	Flower	Wash Off
5	5	Powder	Sachet	Flower	Peel Off
6	6	Gel	Tube	Fruit	Wash Off
7	7	Gel	Sachet	Fruit	Peel Off

8	8	Powder	Tube	Fruit	Peel Off
9	9	Powder	Tube	Flower	Wash Off
10	10	Powder	Sachet	Flower	Wash Off
11	11	Gel	Sachet	Fruit	Wash Off
12	12	Gel	Tube	Flower	Peel Off
13	13	Powder	Tube	Flower	Peel Off
14	14	Gel	Tube	Fruit	Peel Off
15	15	Gel	Sachet	Flower	Peel Off
16	16	Powder	Sachet	Fruit	Peel Off

Source : processed data by SPSS 23

Conjoint Analysis Result Of Overall Respondents

Table 5. Conjoint Analysis Result of Overall Respondents (overall statistic)
Utilities

		Utility Estimate	Std. Error
Product form	Powder	-2.016	.224
	Pasta/Gel	2.016	.224
Packaging	Sachet	-.242	.224
	Tube	.242	.224
Aroma	Flower	.150	.224
	Fruit	-.150	.224
Face mask Types	Wash Off	-.373	.224
	Peel Off	.373	.224
(Constant)		8.500	.224

Source : processed data by SPSS 23

Based on the Table 2.1 above, it can be identified that consumer preferred spirulina Face mask in gel form with the utility indicator value as 2,016. Meanwhile product form in powder have -2,016 utility indicator value.

Furthermore, consumers preferred tube packaging of spirulina Face mask with the utility indicator value as 0,242. While spirulina Face mask in sachet packaging have utility indicator as -0,242.

Moreover, consumer preferred spirulina Face mask with flower aroma in which it has 0,150 utility indicator value. In contrast, spirulina Face mask with fruit aroma only has - 0,150 utility indicator values. Based on Face mask type factor, respondents preferred spirulina peel off Face mask that has utility indicator value as 0,373. In contrast, wash off spirulina Face mask only has - 0,373 utility indicator values.

From the conjoint analysis conducted in this study, the overall importance values also can be identified as illustrated in the following table:

Table 6. Importance values of overall respondents
Importance Values

Product form	47.75
	8
Packaging	19.19
	3
Aroma	14.74
	5
Face mask	18.30
Types	4

Source : processed data by SPSS 23

Based on the table above, it can be identified that the most important attribute for respondents was the product form of spirulina Face mask product with the importance value as 47,758%. Moreover, the importance value of packaging that had 19,193% value. Respectively, the less important value was Face mask types with 18,304% of importance value and aroma with 14,745% value.

Beside the respondents' priority level towards attribute, conjoint analysis also can identify combination of those attributes and their level in preferring spirulina Face mask products. Utility total value from each combination was presented in the following table:

Table 7. Total of Utility from all combination

Combination				Utility value				Total
Powder	<i>Sachet</i>	Flower	<i>Wash Off</i>	-2.016	-0,242	0.150	-0.373	-2.481
Powder	<i>Sachet</i>	Flower	<i>Peel Off</i>	-2.016	-0,242	0.150	0.373	-1.735
Powder	<i>Sachet</i>	Fruit	<i>Wash Off</i>	-2.016	-0,242	-0.150	-0.373	-2.781
Powder	<i>Sachet</i>	Fruit	<i>Peel Off</i>	-2.016	-0,242	-0.150	0.373	-2.035
Powder	Tube	Flower	<i>Wash Off</i>	-2.016	0,242	0.150	-0.373	-1.997
Powder	Tube	Flower	<i>Peel Off</i>	-2.016	0,242	0.150	0.373	-1.251
Powder	Tube	Fruit	<i>Wash Off</i>	-2.016	0,242	-0.150	-0.373	-2.297
Powder	Tube	Fruit	<i>Peel Off</i>	-2.016	0,242	-0.150	0.373	-1.551
Pasta /Gel	<i>Sachet</i>	Flower	<i>Wash Off</i>	2.016	-0,242	0.150	-0.373	1.551
Pasta /Gel	<i>Sachet</i>	Flower	<i>Peel Off</i>	2.016	-0,242	0.150	0.373	2.297
Pasta /Gel	<i>Sachet</i>	Fruit	<i>Wash Off</i>	2.016	-0,242	-0.150	-0.373	1.251
Pasta /Gel	<i>Sachet</i>	Fruit	<i>Peel Off</i>	2.016	-0,242	-0.150	0.373	1.997
Pasta /Gel	Tube	Flower	<i>Wash Off</i>	2.016	0,242	0.150	-0.373	2.035
Pasta /Gel	Tube	Flower	<i>Peel Off</i>	2.016	0,242	0.150	0.373	2.781
Pasta /Gel	Tube	Fruit	<i>Wash Off</i>	2.016	0,242	-0.150	-0.373	1.735
Pasta /Gel	Tube	Flower	<i>Peel Off</i>	2.016	0,242	-0.150	0.373	2.481

Sources: Processed Primary Data

Based on the table above, it can be known that the most preferred attributes combination with 2.481 as the highest value was gel spirulina face mask in tube with flower aroma and peel off type.

DISCUSSION

This study combined 4 main factors or product attributes to examined consumers preferences in preferring spirulina face mask. Each main factors has 2 categories that produced 16 combinations of the product attributes. Farther, the respondents depicted their preferences reflected from the data.

As the result, this study showed that majority of respondents preferred spirulina gel face mask than spirulina powder face mask. Further, based on the data, there were no differences about spirulina face mask preference. Both male and female respondents preferred spirulina gel face mask because it was more simple and easy to use. Meanwhile, spirulina powder face mask less efficient because it need to be prepared before the usage. Moreover, most of respondents preferred spirulina face mask in tube because tube packaging was easy to use, had unique packaging design and reusable. Furthermore, most respondents with majority of female respondents chose flower aroma because flower aroma was soft, elegant and suitable for women characters who loved elegance, tenderness and beauty. Meanwhile, the rest male respondents preferred fruit aroma because it was fresh, sexy and suitable for men' characters. Moreover, most respondents in this study preferred peel off spirulina face mask because it was simple, efficient and easy to use. Meanwhile, wash off spirulina face mask was not easy to use because consumers need to do some steps to clean the mask.

Based on the hierarchy of effect theory, the study proved that respondents were aware of spirulina as facemask because 42% respondents knew information about spirulina face mask by browsing and from friends. Both male and female also knew that spirulina could advanced skin's health. Further, respondents chose their preferences of spirulina attributes as explained above. Beside, the respondents who decided their preferences were the potential consumers for spirulina facemask product. Thus, the result of this study produced some managerial implications that can be useful for PT. NIM to advance the product. The managerial implications are illustrated in the following table:

Table 8. Managerial Implication

Pre- Research	Post-Research
Spirulina was made from powder spirulina cultivation with capsule packaging for food supplement or in sachet packaging that can be applied as face mask.	Spirulina that will be advanced into cosmetics product will be differentiated from food supplement product. Therefore, the powder spirulina which is for food supplement must be converted into gel form to be produced as gel face mask.
The packaging of spirulina product was packaged into sachet and capsule that were specifically for food supplement.	The packaging of spirulina product that will be advanced into face mask will be set into tube packaging because it is efficient and reusable.
The aroma of spirulina tended to be fishy stinky and it was less interesting.	The aroma of advanced-face mask spirulina will be made with various aromas, especially fruit and flower aroma.
Spirulina face mask type that has been advanced by company was wash off type.	Spirulina that will be developed will be made into peel off type because based on consumers' perception it is efficient

Sources: processed data

Initially, management team of PT. NIM assumed that consumers preferred natural face mask with natural substances and natural packaging. However, after the researchers conducted this study, it can be known that many consumers preferred advanced-face mask product by technological advances. Moreover, PT. NIM has not have overview about the advanced face mask. Therefore, this study was useful for management team of PT. NIM to determine product's specifications. Further, the suggestions for PT. NIM can be useful and it can be produced and developed in cosmetics industry in Indonesia.

CONCLUSION

In summary, this study discovered 16 combinations of the product attributes. Furthermore, the results of this study showed the resistance parameters of respondents on each attribute toward the results of conjoined analysis. Moreover, this study also provided information about the attributes combination chosen by respondents in preferring the Spirulina Face masker product in the gel product form, tube packaging, with Flower aroma and peels off type. Thus, this study confirmed hierarchy of effect theory started from awareness, knowledge, liking and preferences that can be useful information for PT.NIM in advancing spirulina face mask product.

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