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Development Of Food Packaging Design With Kansei Engineering Approach

Okka Adiyanto, Hapsoro Agung Jatmiko, Erni

Abstract: The packaging is a product wrap with a creative design that aims to convey a description of information. The packaging has the primary purpose as a protector so that the physical product remains intact. One factor that can be used as an attraction for consumer interest is attractive packaging. The packaging is one of the focuses in developing a food product, and this is because the packaging is an aspect that can give a first impression to consumers. The purpose of this study is to improve consumer preferences in fried banana packaging, in addition to redesigning packaging. In this study, the design of fried banana packaging design uses the Kansei Engineering (KE) method. KE is a method that combines emotions and feelings with product design, resulting in product design that is by consumer emotions. Based on the research results obtained three alternative designs based on Kansei Engineering.

Index Terms : Food packaging, Design, Kansei Engineering, Development product.

1 INTRODUCTION

There are currently many snacks produced by Small and Medium Enterprises (SMEs) in Indonesia, especially in Yogyakarta. The increase in population in Yogyakarta is one of the developments of SMEs in Yogyakarta. Besides that, Yogyakarta is one of the provinces that has many universities, so Yogyakarta is known as a student city. The nickname of this student city became Yogyakarta became one of the goals of the people in Indonesia to go to school in Yogyakarta [1]. Many people who attend school in Yogyakarta, making the development of SMEs in Yogyakarta become increasingly rising, especially in food production. This much-loved food production varies from dry foods and wet foods. Wet food is often found around the streets and in shops in Yogyakarta. This wet food is a favorite because it can eliminate hunger. One form of wet food that is again trending in the Yogyakarta region, one of which is bananas with various creations. Affordable and tasty prices become one of the factors of bananas being a favorite food among students [2]. The number of small and medium businesses that open businesses with the main ingredients are bananas which makes business competition in Yogyakarta increase. Not only in Yogyakarta, other regions have also opened the business to make snacks that are much loved by the public. This food is created in many different forms so that it attracts many consumers. One factor that can be used as an attraction for consumer interest is attractive packaging. The packaging is one of the focuses in developing a food product, and this is because the packaging is an aspect that can give a first impression to consumers so that it gives stimulants to consumers to buy the product [3] Attractive packaging appearance is needed by producers to be able to compete with similar products [4]. The packaging is the design and manufacture of packages of a product. Besides the packaging serves to protect the product from microbial contamination and damage to the product.

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The form of packaging on a product also affects the attractiveness of buyers and selling power in the market. Packaging on a product can also be made a brand at the product company. The colour of the packaging also affects the attractiveness on the market. The colors that are often used are yellow, red, blue, and other colours that are bright or brightThe purpose of this study is to improve consumer preferences in fried banana packaging, in addition to redesigning packaging at one of the SMEs that produce fried bananas in Yogyakarta. The form of the packaging used by SMEs - XYZ is still simple using only plain food boxes. Based on the results of the initial interview by the SMEs- XYZ fried banana lovers, it was found that the customers considered that the packaging used was less attractive to the public where the packaging design was plain white with no packaging and cleanliness information on the packaging. The form of packaging is not unique (monotonous), and is less able to attract the attention of consumers, and the previous packaging also cannot be recycled because it is made from plastic. Redesign of packaging, there have been several studies applied, namely the Kansei engineering method. In the study [5] (Ghiffari, 2018) the design of the chocolate bar, on the research [6] (Chen and Wang, 2019) designing household ironing table and also the study of [7] (Hapsari, Sjafrizal and Anugraha, 2017) designed a chair design seat passenger train in Indonesia. In this study, the design of fried banana packaging design using Kansei Engineering (KE) method. KE is a method that combines emotions and feelings with product design, resulting in product design that is in accordance with consumer emotions, KE methods are widely used to design a variety of products ranging from food to machine products[5], [7]-[11].

2 MATERIAL AND METHOD

2.1 Participants

The focus of research studies is the design of packaging design with the attributes of customer desires using the Kansei Engineering method to translate consumer needs into product specifications. The object of this research is the packaging for SMEs - XYZ fried banana products. The research subjects used as respondents were customers from SMEs - XYZ. The population in this study are consumers or customers of UMKM-XYZ fried bananas with the age range of children, adolescents to the elderly. The initial analysis of the sample

with the age range of buyers is dominated by the age of 16-27 years in consumers of fried bananas. Where this young age is productive, dynamic and very sensitive to lifestyle. The age table can be seen in Table 1.

Table 1 *consumer criteria*

No	Category	Percentage
1	Children	30%
2	Teenager	50%
3	Parents	20%

2.2 Kansei word collection

The first step to get data in the form of Kansei word is searched for the word Kansei through observation in the field and conducting interviews directly to consumers of SMEs - XYZ fried bananas. Based on observations and interviews, we have obtained positive Kansei words on the packaging of SMEs - XYZ fried banana products as much as eight words Table 2.

Table 2 *kansei word interview results*

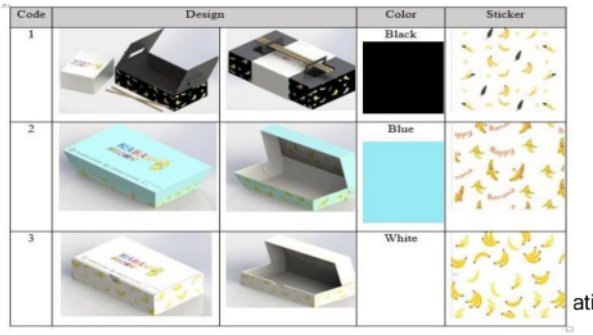
No	Kansei words
1	Colored packaging
2	Unique
3	Patterned
4	Interesting
5	Packaging size
6	Can be recycled
7	Information
8	Cleanliness of the packaging

2.3 Semantic differentiation

KE is used to recognize the semantic meaning of a person's feelings and emotions. Questionnaire from the kansei word pair based on the packaging image. The package image is obtained from a combination of selected design elements based on the results of the design element questionnaire

3 Result and Discussion

The result is recapitulated then be ranked on each element of the design. The two highest rankings in each design element are made as a design combination obtained from three combinations. The three results of the design combination are as follows



ation with the word kansei presented in table 4.15 below:

Table 4.15 *Kansei words positive and negative*

No	Kansei said positive	Kansei said negative
1	Colored packaging	Colorless
2	Unique	General
3	Patterned	Plain
4	Interesting	Boring
5	Size	not sized
6	Can be recycled	cannot be recycled
7	Information	No information
8	Cleanliness	not clean

The next step is distributing the semantic differential questionnaire to the three design models based on the 8 said kansei. The results of the spread of the semantic differential questionnaire were carried out in several stage

3.1 MANOVA test

The MANOVA test was carried out on the semantic differential questionnaire . The results of the MANOVA test will reveal the product design that best suits the feelings of consumer psychology. The MANOVA testing output used is multiple comparisons, which can be seen in Appendix 6. Based on the output of multiple comparisons, the result is that design number 3 (three) is a design that is in accordance with the emotional and psychological feelings of consumers. The results of the recalculation of the distribution of preference ratings can be seen in Table 3.

Table 3 *Manova Test*

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	,983	1263,044[b]	8,000	170,000	,000
	Wilks' Lambda	,017	1263,044[b]	8,000	170,000	,000
	Hotelling's Trace	59,437	1263,044[b]	8,000	170,000	,000
	Roy's Largest Root	59,437	1263,044[b]	8,000	170,000	,000
Desain	Pillai's Trace	,581	8,761	16,000	342,000	,000
	Wilks' Lambda	,501	8,770[b]	16,000	340,000	,000
	Hotelling's Trace	,831	8,779	16,000	338,000	,000
	Roy's Largest Root	,505	10,798[c]	8,000	171,000	,000

a. Design: Intercept + Desain
b. Exact statistic
c. The statistic is an upper bound on F that yields a lower bound on the significance level.
d. Computed using alpha = ,05

3.2 Analysis Factor

At this stage, a factor analysis of the results of the semantic differential questionnaire was carried out. Factor analysis is a method used to reduce data so that the amount becomes small. The type of factor analysis used in this study is exploratory factor analysis, which is a factor analysis technique in which several factors will be formed in the form of new variables that cannot be determined before the analysis is carried out. Factor analysis was performed using SPSS software for Windows 15, with an average value from the semantic differential questionnaire. Kaiser-Meyer-Olkin (KMO) and Barlett Test, KMO value ranges from 0.5 to 1, then a factor analysis is feasible. Conversely, if the KMO value is below 0.5 then factor analysis is not feasible. The Kaiser-Meyer-Olkin (KMO) and Barlett Test values can be seen in Table 4.

Table 4 *Analysis Factor Results*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		*, 864*
Bartlett's Test of Sphericity	*Approx. Chi-Square*	*194,303*
	Df	*28*
	Sig.	*, 000*

The final result of the Kansei Engineering approach was obtained that the design concept number three was the concept of packaging design on the fried banana that was by the emotional and psychological consumers .

Figure 1 *The final result of design*

CONCLUSION

Based on the results of data processing, it can be concluded, and Packaging design number 3 is a design concept that is by psychological feelings /emotions/consumer preferences. Based on the Kansei Engineering approach, the image of consumers' expectations of the fried bananas emotionally and psychological feelings can be known through Kansei's words. The words of Kansei are colourful, unique, attractive, packaging size, patterned, information, cleanliness, recyclable

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REFERENCES

[1] S. Yu and A. Setiyaningrum, ―Studi Mengenai City Branding Kota Yogyakarta Sebagai Kota Pelajar di Indonesia,‖ Matrik J. Manaj., vol. 13, no. 1, pp. 31-46, 2019.

[2] N. R. Manurung and A. Putri, ―Pengaruh Perilaku Konsumen Terhadap Keputusan Pembelian Pisang Goreng Kipas Kuantan - Ii Kota Pekanbarupengaruh Perilaku Konsumen Terhadap Keputusan Pembelian Pisang Goreng Kipas Kuantan – Ii Kota Pekanbaru,‖ J. Agribisnis, vol. 20, no. 1, pp. 113-123, 2018.

[3] D. T. Permadi, N. W. P. Susatyo, and D. Pujotomo, ―Perancangan Desain Kemasan Makanan ringan olahan pada UMKM Center Jawa Tengah Dengan Metode Kansei Egineering,‖ Ind. Eng. J., vol. 6, no. 1, 2017.

[4] Mu'alim and R. Hidayat, ―Re-Desain Kemasan dengan Metode Kansei Engineering,‖ J. Al-azhar Indones. Seri Sains dan Teknol., vol. 2, no. 4, pp. 215-223, 2014.

[5] M. A. Ghiffari, ―Kansei Engineering Modelling for Packaging Design Chocolate Bar,‖ SEAS (Sustainable Environ. Agric. Sci., vol. 2, no. 1, p. 10, 2018.

[6] X. Chen and W. Wang, ―Design of intensive self-suction multi-purpose household ironing table: Based on Kansei engineering,‖ Int. J. Arts Technol., vol. 11, no. 1, pp. 99-116, 2019.

[7] S. N. Hapsari, T. Sjafrizal, and R. A. Anugraha, ―Designing Train Passenger Seat by Kansei Engineering in Indonesia,‖ MATEC Web Conf., vol. 135, 2017.

[8] C. Barnes, T. Childs, B. Henson, and S. Lillford, ―Kansei engineering toolkit for the packaging industry,‖ TQM J., vol. 20, no. 4, pp. 372-388, 2008.

[9] A. M. Lokman, ―DESIGN & EMOTION : THE KANSEI ENGINEERING The Definition of Kansei,‖ Malaysian J. Comput., vol. 1, no. 1, pp. 1-11, 2010.

[10] A. Shergian and T. Immawan, ―Design of Innovative Alarm Clock Made from Bamboo with Kansei Engineering Approach,‖ Agric. Agric. Sci. Procedia, vol. 3, pp. 184-188, 2015.

[11] M. Misaka and H. Aoyama, ―Development of design system for crack patterns on cup surface based on KANSEI,‖ J. Comput. Des. Eng., vol. 5, no. 4, pp.435-441, 2018.

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