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DEVELOPMENT OF JAMU KUNYIT PRODUCTS USING VALUE ENGINEERING METHOD (Case Study : Madura Sari Sampang)

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ABSTRACT

Turmeric herb is a typical Indonesian herbal drink which is usually made from turmeric rhizome. Compounds contained in turmeric (curcumin and essential oils) have important roles as antioxidants, antitumors, anti-cancer, antisenile, lowering fat and cholesterol levels in the blood and liver, antimicrobial, antiseptic and anti-inflammatory (Mattiro et al. 2020). Value engineering is one method that can be used in the development of this product. According to (Ulya et al. 2020) the purpose of this study is to find out the attributes and the best alternatives in the development of herbal turmeric products using the value engineering method according to consumer desires. This research will be useful to focus or direct the policies that have been carried out in the value engineering development strategy based on the structure that has been built for product development of herbal turmeric. The results obtained for the 3 selected attributes are materials, ingredients and packaging. The selected dip turmeric herbal product is the 1st alternative with a value of 1.106. The alternative is turmeric + palm sugar, a 2:1 ratio with box packaging. The ratio of added value of herbal dip using the value engineering method is 87.570% with a profit percentage of 46.687% from the previous product and an added value of Rp. 7,003.

INTRODUCTION

Indonesia has many medicinal plants that have been used since ancient times. These medicinal plants are usually consumed by the people of Indonesia from ancient times until now as herbal medicine (traditional medicine). Traditional medicine or better known as jamu is a traditional herb used as one of the treatment efforts that has been widely known and used by the community which aims to treat and prevent disease (Paryono. 2014).

Sampang district is part of the island of Madura where some farmers still grow medicinal plants to be used as herbal medicine. There are several herbal medicine companies in Sampang, one of which is herbal medicine Madura Sari. Madura Sari Company is a company that produces traditional Madurese herbal medicine. One of the types of herbal medicine produced by Madura Sari SMEs is herbal turmeric.

Madura Sari was founded in 1997 and there has been research in the area so that it is already well known and its marketing of soybeans has been widely to overseas. So that I am interested in doing research in Madura Sari and to develop products so that Madura Sari is more advanced in the future.

Turmeric is one of the most widely grown plants in South and Southeast Asia. This plant is widely used as a spice and traditional medicine. Jamu turmeric is a typical Indonesian herbal drink which is usually made from turmeric rhizome. Compounds contained in turmeric (curcumin and essential oils) which have an important role as an antioxidant, antitumor, anti-cancer, anti-senile, lowering fat and cholesterol levels in the blood and liver, anti-microbial, anti-septic and anti-inflammatory (Mattiro et al. 2020). (According to Gupta et al. 2013) Researchers have demonstrated a safe dose of turmeric or curcumin at high doses of 12 grams/day for 3 months.

Product development is a process of change made by the company existing products and the process of seeking innovation to add value to old goods. Product development is made in order to maintain and improve the competitiveness of a company. The advantages of turmeric herbal powder are that it is safe for consumption for all people because it does not contain chemicals or preservatives, while the weakness is that it tastes bitter or sour because there is no mixture of sweeteners and the way of presentation is complicated because this turmeric herb is still in powder form. This research uses the main ingredient of turmeric powder which will be made like tea bags and added as a sweetener in the form of palm sugar. With the development of this product, it is expected to be able to provide and answer the needs or desires of consumers for the desired herbal products.

Value engineering is an innovative and planned approach with the aim of being efficient and identifying unnecessary costs with functional limitations. According to (Ulya et al. 2020) in product development using the value engineering method, namely the information stage, creativity stage, analysis stage, development stage and recommendation stage

This study aims to determine the most important attributes in the development of herbal turmeric products using the value engineering method and to determine the best alternative selected for the development of turmeric herbal products according to consumer desires.

METHOD

This research was conducted from November to December 2021, located on Madura Sari on Jalan Pahlawan Gang 4 Sampang

Method of Collecting Data

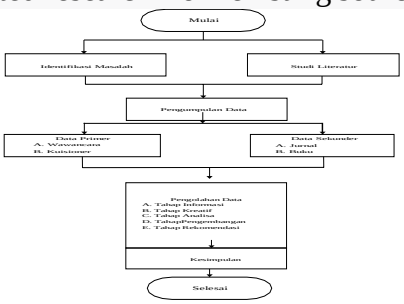
1. Primary Data

Primary data is data obtained directly through the distribution of questionnaires and interviews with consumers and producers. primary data is done through

observation and interview techniques (Djuyandi. 2014).

2. Secondary Data

Secondary data is data obtained from literature such as journals or books related to this research. According to (Hutagalung. 2016) secondary data is data obtained from people who have conducted research from existing sources.



Picture 1. Research Stages

Problem identification stage

The first stage is identifying the problem, where this stage begins with identifying the problem to determine the desired goals of the researcher.

1. information stage

The stages of collecting information to obtain information about herbal turmeric products by collecting data related to herbal turmeric. In order to obtain information about herbal medicine, interviews and questionnaires were distributed to producers.

2. Creative stage

The creative stage aims to develop ideas with problem constraints that have been obtained from the information stage. Alternatives have values that match consumer expectations. The creative stage has the goal of being able to eliminate or combine low values from each component or product function.

3. Stages of Analysis

The analysis stage aims to analyze the most important alternatives produced in the creative stage. The concept at the creative stage is analyzed based on consumer assessments of the turmeric herbal medicine, then performance calculations and cost analysis are carried out.

4. Development Stage

The development stage of the turmeric herbal product is done by choosing the best alternative from several existing alternatives by comparing the performance calculations and the results of the cost calculations in the previous stage.

5. Recommendation Stage

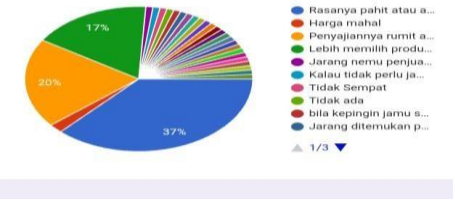
The recommendation stage is the stage for the final results related to the product. This stage is the last stage, the results of the herbal turmeric products that have been developed will be presented and recommended as selected results to business actors.

Conclusion Stage

The conclusion stage is the last stage where the researcher concludes the data and results that have been obtained in the research that has been carried out.

RESULTS AND DISCUSSION

information stage



Picture 2. Questionnaire Distribution Results

This information stage is done by collecting all information related to turmeric herbal powder products. Determination of information related to turmeric herbal powder products is carried out by interviewing and distributing questionnaires to 100 consumers via the link *https://forms.gle/zGi1RCeHx82wNX6T* The result of distributing the questionnaire is that it tastes bitter or sour because there is no mixture of sweeteners and the way of presentation is complicated because this turmeric herb is still in powder form.

Table 1. Pembobotan Jamu Celup

Faktor	Nilai Kuisioner	Bobot
Komposisi Bahan	14	0,359
Takaran Bahan	11	0,282
Kemasan	14	0,359
Total	**39**	**1,000**

The distribution of the questionnaire for the composition of the material obtained a questionnaire value of 14 with a weight of 0.359; the material dose of the questionnaire was 11 with a weight of 0.282 and the packaging obtained a questionnaire value of 14 with a weight of 0.359.

Creative stage

The creative stage aims to develop alternatives by conducting interviews with producers of turmeric herbal powder. based on the information obtained, each variable will appear several creative items, each design containing a value. This herbal turmeric research has an alternative of the 3 attribute factors to be developed. Composition attribute factor The ingredients have 2 alternatives, namely turmeric and turmeric + palm sugar. The ingredient measure attribute factor has 3 alternatives, namely 1:1, 1:2 and 2:1. The packaging attribute factor has 2 alternatives, namely box and thinwall. This creative stage produces alternatives in accordance with consumer desires, then an analysis of the most important factors will be carried out, namely the composition of ingredients and the dosage of ingredients according to the journal (ulyaet al. 2020) and packaging (Johnrenciuus 2017) which has several alternatives.

Analysis Stage

The most important alternatives obtained at the creative stage will be analyzed based on consumer assessments to obtain a design with the best value. This analysis uses a zero one metric which serves to determine the value of the performance of each variable.

Weighting Analysis

Weighting analysis to determine the weight of each alternative according to Table 4.3. According to (Yonathan et al. 2015) can use the following formula:

$$\text{Bobot Atribut} = \frac{Tingkat\ kepentingan}{Tingkat\ kepentingan\ total}$$

Performance Analysis

Perform calculations to determine the performance weight of each alternative to be developed. The performance formula is as follows:

Performansi = Nilai Total x Bobot Atribut

Table. 1 Komposisi Bahan

Faktor		Analisis			
	Alternatif	Kode	Skor	Bobot	Performansi
Komposisi Bahan	Kunyit	KB 1	10	0,417	4,167
	Kunyit + Gula Aren	KB 2	14	0,583	8,167
	Total		**24**	**1,000**	**12,333**

Table. 2 Takaran Bahan

Faktor	Analisis				
	Alternatif	Kode	Skor	Bobot	Performansi
Takaran Bahan	1:1	TB 1	9	0,310	2,793
	1:2	TB 2	7	0,241	1,690
	1:3	TB 3	13	0,448	5,828
Total			**29**	**1,000**	**10,310**

Table. 3 Kemasan

Faktor	Analisis				
	Alternatif	Kode	Skor	Bobot	Performansi
Kemasan	Box	KS 1	13	0,542	7,042
	Thinwall	KS 2	11	0,458	5,042
Total			**24**	**1,000**	**12,083**

Table 4. Perhitungan Pemilihan Alternatif.

A1B1C1	A1B2C1	A1B3C1	A1B1C2	A1B2C2	A1B3C2	A1B1C3	A1B2C3	A1B3C3
14,001	12,898	17,036	12,001	10,898	15,036	6,960	5,856	9,994
A1B1C1	**A2B2C1**	**A2B3C1**	**A2B1C2**	**A2B2C2**	**A2B3C2**	**A2B1C3**	**A2B2C3**	**A2B3C3**
18,001	16,898	21,036	16,001	14,898	19,036	10,960	9,856	13,994
A1B1C1	**A3B2C1**	**A3B3C1**	**A3B1C2**	**A3B2C2**	**A3B3C2**	**A3B1C3**	**A2B2C3**	**A3B3C3**
9,835	8,731	12,869	7,835	6,731	10,869	2,793	1,690	5,828

Table 5. Rincian Biaya KeseluruhanAlternatif

Faktor	**Alternatif**	**Alternatif2**	**Alternatif 3**
Komposisi Bahan	Kunyit + Gula Aren	Kunyit + Gula Aren	Kunyit + Gula Aren
Takaran Bahan	2:1	2:1	1:1
Kemasan	Box	*Thinwall*	Box
Tenaga Kerja	-	-	-
Total Biaya	**7.997**	**8.334**	**8.078**

Table 4. It is an alternative cost calculation that will be developed. There are 27 alternatives, then 3 alternatives with the highest score are selected. After that analyze the total cost of production for the three alternatives, which can be seen in table 5. The total cost of the 1-3 alternatives is Rp. 7,997; Rp. 8,334; Rp. 8078.

Development Stage

This development stage is carried out by analyzing costs by choosing the best alternative to be developed in herbal turmeric by comparing the performance value with the cost in the previous stage. According to Kumalaningsih et.al (2005) The formula for calculating Value is:

$$\text{Value} = \frac{Performansi\ Total}{Biaya\ Produksi}$$

In calculating the value, conventions must be applied to units for performance. The conversion can be done by determining with a magnitude of n which determines the rupiah value for each performance so as to get the following equation formula (Ulya et al. 2020):

$$Pn' = \frac{Pn\ x\ Co}{Po}$$

Information :

Pn' = Converting performance to rupiah

Po = Alternative average performance

Pn = product performance ke-n

Co = Alternative average cost

If the value value uses the assumption of calculating the average alternative value with a value of 1, then the value equation can be searched as follows If Vo = 1, then

$$\text{Vo} = \frac{Po'}{Co} = \frac{nxPo}{Co} = 1$$

Information :

Vo = Value average

Po' = Converting alternative average performance into rupiah

n = Rupiah value (Rp) for each performance

Po = Alternative average performance

Co = Alternative average cost

The average value for performance and cost can be determined using the formula:

$$\text{Alternative mean performance} = \frac{\text{Total Performansi}}{\text{Jumlah Alternatif}}$$

$$\text{Alternative average cost} = \frac{Total\ Biaya}{Jumlah\ Alternatif}$$

Tabel 6. Performansi dan Biaya dari Setiap Alternatif.

No	Alternatif	Performansi	Biaya (Rp)
1	Vo	19,359	8.140
2	1	21,037	7.997
3	2	19,037	8.344
4	3	18,002	8.078

Tabel 7. Konversi Nilai (*Value*) Alternatif.

Alternatif	Performansi	Cost/Biaya (Rp)	Konversi Performansi dalam Rupiah (Rp)	Nilai (*Value*)	*Ranking*
Vo	19,359	8.140	8.140	-	-
1	21,037	7.997	8.845	1,106	1
2	19,037	8.344	8.004	0,959	2
3	18,002	8.078	7.569	0,959	3

The results of the calculation in Table 7. are obtained the results of the chosen alternative, namely the 1st alternative because it has the highest value, namely 1.106 and the alternative that has the lowest value, namely the 3rd alternative with a value of 0.937.

Recommendation Stage

The recommendation stage is the stage of delivering the final results related to the product. This stage will recommendone chosen alternative, namely with the highest value of alternatif lainnya. Berdasarkan the data that has been processed and calculated, consumers want alternative 1with the highest value of 1.106 where this herbal dip product uses a composition of turmeric + palm sugar as a natural sweetener, using a ratio of 2:1 and in the form of box packaging.

The design of the herbal turmeric dip can be seen at **Picture 3.** below

Picture 3. Herbal Turmeric Dip Packaging Design

Value Added Analysis

Added value is the growth in the value of a commodity because it undergoes processing, storage, transportation in a production process. Value added is also called the added value of a commodity in question. The functional inputs are in the form of changing shape, moving places and storing processes. Value added describes the rewards for labor, capital and management (Hamidah *et al.* 2015).

The following is the calculation of the added value of the turmeric dip below.

$$Rasio\ Nilai\ Tambah = Rp\ 15.000 - Rp\ 7.997$$
$$= Rp\ 7.003$$

As for the ratio obtained by the calculation below.

$$Rasio\ Nilai\ Tambah = \frac{Nilai\ Tambah}{Biaya\ Produksi} \text{ x } 100\%$$
$$= \frac{Rp\ 7.003}{Rp\ 7.997} \text{ x } 100\%$$
$$= 87{,}570\ \%$$

The ratio value obtained is 87,570 %. This is classified as a high value-added ratio because more than 40% (Hubeis. 1999).

The profit level for the dipped turmeric herbal product is 46,687%

$$\text{Presentasi Keuntungan} = \frac{\text{Nilai Tambah}}{\text{Harga Jual}} \text{ x } 100\%$$
$$= \frac{Rp\ 7.003}{Rp\ 15.000} \text{ x } 100\%$$
$$= 46{,}687\ \%$$

Picture 4. finished product

CONCLUSION

Based on the results of the study, it can be concluded that the development of turmeric herbal powder products using value engineering has 3 most important attributes, namely material composition, ingredient dosage and packaging. For the mixed attribute factor, it has 2 alternatives, namely turmeric and turmeric + palm sugar, for the ingredient measure attribute it has 3 alternatives, namely 1:1, 1:2 and 2:1 and for the packaging attribute it has 2 alternatives, namely box and thinwall. The selected dip turmeric herbal product is the 1st alternative with a value of 1.106. The alternative is turmeric + palm sugar, a 2:1 ratio with box packaging.

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