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Development of Concealer X Packaging Using Kansei Engineering

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A B S T R A C T

Concealer x packaging still has shortcomings in its packaging from the applicator which makes it difficult to use, the packaging design is uncomfortable for consumers, and the visual design is less informative. This is a challenge in developing concealer x packaging by considering consumer preferences. The purpose of this study is to identify the concept and elements of packaging design according to consumer preferences. Kansei Engineering is one of the methods used to optimize the identification of consumer preferences. This method can capture consumer emotions in the form of Kansei words which are translated into concepts and elements of packaging design. Other supporting methods used are Principal Component Analysis (PCA) and Quantification Theory Type 1 (QTT1). The results obtained were 61 selected samples and 35 Kansei words. The samples and Kansei words were then evaluated by creating a semantic differential questionnaire for 30 respondents by purpose judgment sampling. The results of the concept obtained by the PCA method were 4 PCs with PC 2 selected as the practical standard because it had the highest R-square value of 0.911. The results of the packaging design elements obtained are X1.1 Strew X2.9 Concave X3.6 Jug X4.3 Half Tube X5.4 Heptagon X6.2 Brush and Sponge X7.5 Silicon X8.1 Fun X9.1 Small 1 - 5 gr X10.1 Under. The conclusion of the packaging design obtained has described practical packaging following the design concept and meets consumer preferences.

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1. INTRODUCTION

In the beauty world, concealer has become an essential product for many people, especially those who want to camouflage blemishes, acne scars, or dark areas under the eyes. Concealers with skincare ingredients offer a double advantage: not only do they camouflage imperfections, but they also treat the skin with nourishing and moisturizing ingredients. Concealer x is one of the beauty products in Indonesia that was the fourth winner of the Female Daily Best of Beauty Awards 2023, (Rindi Salsabilla, 2023). Concealer x is a popular local brand containing skincare ingredients with added user benefits. The lightweight formulation of Concealer X can

provide optimal coverage without making the face feel putty (Sherly at al., 2024). Packaging serves as a visual identity and promotional medium to attract customers, thus helping them differentiate one brand from another (Lie & Erlyana, 2024). Packaging has a significant influence on customer satisfaction, which shows that the quality and design of a product's packaging can have a direct impact on the consumer experience (Purwoko & Haryana, 2021). The finish of concealer X has a problem. However, there are some issues with concealer x's packaging. The applicator of concealer x is short, making it difficult to reach the side of the product. The applicator is also silicon, so it is not sturdy and can be difficult to use. The side of the product lid is a little sharp, which can leave scratches on the face, the lid is too big, the packaging wastes space, the information on the packaging is not visible, and the inappropriate material makes the packaging easy to crack on the inside, so concealer x packaging needs to be planned and developed packaging design to increase product attractiveness and provide functional packaging for consumers. A total of 3,365 consumer complaints against concealer X showed that 33.6% of the total 10,000 units sold in the marketplace had packaging issues.

The development of concealer x packaging is carried out to determine the packaging design concept according to consumer preferences. Consumer desires must be applied in the packaging development process so that the results match the emotional aspects so that the packaging developed can increase consumer satisfaction and loyalty (Puspasari et al., 2023). The existence of a packaging design concept makes consumers more interested, makes it easier to use and store, and can provide a positive experience. The design concept is needed as a packaging design made on a product by paying attention to shape, material, color, and design elements so that a product becomes more attractive (Lestari Pratiwi et al., 2023). To identify product design elements that can trigger an individual's emotional response to the use of the product by consumers by translating consumer feelings into packaging design elements which is the packaging development process (Hu & Yan, 2023). Design elements require appropriate packaging sizes for the product so that the product is maintained safely (Abdullah et al., 2021). Packaging design elements can also connect structures, materials, shapes, colors, imagery, and typography (Rachmadita Dwi Pramesti & Susilawati, 2021). Products designed based on consumer orientation will be more successful in selling in the market because it leads to product development that matches customer feelings and emotions (Sari, 2019).

Kansei Engineering is used as the main method to realize good and attractive packaging according to consumer preferences. Kansei Engineering is one of the methods shown to determine the relationship between on the one hand the feelings and impressions of humans and on the other hand the properties of products (Sari, 2019). Kansei Engineering acts by understanding the psychological emotions of its consumers (Engelberth, 2023). Kansei Engineering can meet and satisfy the needs of consumers by creating a design concept for product development (Mitsuo. N, 2022). This method was developed by Prof. Nagamachi in the 1970s and has been widely applied to various types of products in the world (Sari, 2019). This Kansei Engineering method has been successful in various research such as bottle packaging design (Ariyanti & Chan, 2020). Chocolate Packaging (Maleki et al., 2020). Images of Blister Packaging Through Tactile Perception (Yu & Chen, 2020). Other studies have successfully used the QTT1 method as a support such as factors that affect consumers' cognition of food photos (Wu & Chen, 2022). Attractiveness Factors of Mobile MOBA Games (B. Y. Zhang et al., 2022). Chocolate tempeh chips (Hidayat & Wijayanti, 2021).

PCA and QTT1 methods are a series of Kansei Engineering methods. Kansei Engineering has currently helped with various product research that is made in line with customers so that they can be more successful in selling in the market. This leads to the development of products that match the feelings and emotions of customers (Sari, 2019). Data collected through various information collection methods can reduce consumer subjective preferences closely related to consumer values (Wu & Chen, 2022). The systematic and careful use of data is a critical first step in the decision-making process. The

data is processed using appropriate statistical methods, resulting in objective and quantitative analysis where it is important to support more effective decision-making. (Sari et al., 2024). This method uses the QTT1 method to connect between the existing features and the element is obtained (Zhang et al., 2020). Principal Component Analysis (PCA) is also used as a supporting method in determining the packaging concept. The data from the distribution of questionnaires and interviews were processed using the Principal Component Analysis (PCA) method. This method can reduce the data by reducing the number of dimensions without having to lose a lot of information and find patterns in the data (Sari, 2019). The PCA method and the current Kansei Engineering method have helped various product research that is oriented to customers to be more successful in selling in the market because it leads to the development of products that are based on the feelings and emotions of customers. This method has been successfully applied in several product developments such as secondary packaging for skincare products (Aprilia et al., 2023), but this research still needs sustainability in the concept it produces.

Data collected through various information collection methods can reduce consumer subjective preferences closely related to consumer values (Wu & Chen, 2022). The systematic and careful use of data is a critical first step in the decision-making process. The data is processed using appropriate statistical methods, resulting in objective and quantitative analysis where it is important to support more effective decision-making. (Sari et al., 2024). This method uses the QTT1 method to connect between existing features, so elements are obtained (Zhang et al., 2020).

This Multisensory Appeal Research of Packaging Cosmetics has successfully designed cosmetics that suit consumer preferences, thereby effectively reducing the return rate on cosmetic boxes. (Wang et al., 2024). For this reason, it is very important to develop better concealer x packaging. This is supported by the findings of a survey conducted on 48 people: 66.66% agree that the development of concealer x packaging should be carried out. This research aims to identify the concept and design element of Concealer x packaging. The results of this research are expected to increase the value of concealer x packaging in accordance with customer desires and expectations. This research is evidenced by the analysis and discussion of previous studies on cosmetic products related to the relationship of design concepts.

2. LITERATURE REVIEW

Nagamachi and Lockman believe that Kansei Engineering is a design method that considers the psychological effects of consumers' emotions, sentiments, and desires toward the product. This is intended to improve or develop a product (Engelberth, 2023). This approach has three phases in its investigation. The first step is to collect the Kansei words or Kansei words chosen by the respondents, and then calculate the relationship between the selected Kansei words and other variables. The final step is to find the opposite of each Kansei word chosen. In the application of Kansei Engineering, there are several important stages such as through Kansei's words, consumer emotions can be explored to translate certain design concepts and components into reality (Engelberth, 2023). This approach uses the Kansei Word as a means of designating the concealer x packaging.

Principal Component Analysis (PCA) is used to determine the relationship between specimens and emotions by reducing emotional factors that are not very important. PCA also helps better to understand the emotional factor (Kansei Word) and better understand the description of the participant's responses. Three types of Principal Components (PCs) are measured through PCA: (1) Principal Component Loading is useful for analyzing the semantic space of emotional factors to show how much the evaluation of emotional factors affects variables. (2) Principal Component Score is useful for determining the relationship between emotional factors and web specimens. (3) Principal Components Vector is useful for creating visualizations of the direction and power of emotional factors as well as how to get new ideas for web design. This supportive approach also helped shape the Concealer x packaging concept. This method can be used to support determining the design of the concealer x packaging concept. Previous research has succeeded in using the PCA

method, as seen in the papers Secondary Packaging Design Concept for Skincare Products (Aprilia et al., 2023) and Fried Meatball Packaging Design (Basreng) (Sari et al., 2023).

3. RESEARCH METHOD

The use of the Kansei Engineering Method is supported by the PCA method in this study. The stages of this research can be seen in the flow chart shown in Figure 1.

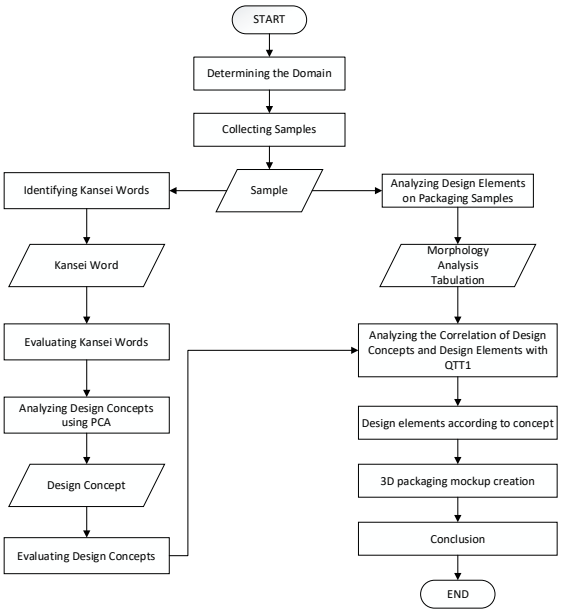

Figure 1. Research flowchart

The research began by conducting a preliminary survey to identify key issues in the development of concealer x products and then became a reference for creating a concealer x packaging design concept. The purposive sampling strategy is a method of selecting samples in research that is non-random. In this strategy, researchers deliberately select specific cases or subjects based on specific criteria to ensure the data collected is relevant and appropriate to the research objectives (Campbell et al., 2020). The respondent criteria in this study were women aged 18–35 years who are regular users of Concealer X, with a frequency of more than one use per week. The results of the selected respondents have adequate experience with the product, so that they can provide relevant data for research purposes.

The research continued by collecting packaging samples to obtain information about the design concept contained in the packaging. (Vilano & Budi, 2020). The collected packaging samples were analyzed based on their design elements in terms of physicality, aesthetics, and function (Sari, Akkili, et al., 2024). Packaging samples that are similar in various aspects such as lid, shape, applicator, design style, size, and lid position will be selected and only one will be chosen. Furthermore, the research continued by collecting Kansei Word related to the packaging design of concealer products for the creation of differential semantic questionnaires. Kansei words are obtained from a collection of words derived from respondents' reviews by distributing questionnaires and interviews by purposive sampling. Purposive sampling is a technique for collecting respondents relevant to the research (Andrade, 2021). The set of words was then evaluated to eliminate duplication. The evaluation results were grouped into two main categories, namely Kansei words and packaging design. Words containing emotional properties were anonymized. This research is evidenced by the analysis and discussion of previous studies on cosmetic products related to the relationship of design concepts. The results of the questionnaire distribution were used as a concept analysis using the Principal Component Analysis (PCA) method with the R Software program instrument to determine the structure of Kansei Word (Delfitriani & Uzwatania, 2022). The analysis carried out produced processed data in the form of Kaiser Data, Plot Scree, and Standard Deviation. After that, a process is carried out to determine the design specifications of the concealer x product packaging. The design concept was evaluated using a Likert questionnaire, featuring a scale from 1 to 5(Awaludin & Hari Mantik, 2022), which was distributed to 30 respondents. The data collected will facilitate an analysis of the relationship between the concepts and design elements, guided by the findings from a morphological analysis utilizing the QTT1 method.

The analysis of packaging design elements begins with a morphological examination. Existing packaging samples are categorized morphologically to identify their design components. These identified design elements

will subsequently be analyzed using the QTT1 method. The process of analyzing the correlation between concepts and design elements was carried out using the Quantification Theory Type 1 (QTT1) method through R Software (Sari, 2019). This process produces elements of design elements that are in accordance with the concept. The design elements obtained are then transformed into 3D models using Blender software.

4. RESULT AND DISCUSSION

4.1. Determining the Domain

Based on the findings of a survey conducted on 48 people: 66.66% agree that the development of concealer x packaging should be done. Therefore, it is necessary to make an analysis of marketing strategies, namely segmenting, targeting, and positioning (STP) (Mujahidin & Khoirianingrum, 2019). This method is used to find the right market for X concealer packaging. The results of the STP method analysis are as follows:

- Segmentation: The main market for Concealer X is various platforms in e-commerce. Concealer x customers are young adults aged 18 – 30 years old with middle-to-upper income.
- Targeting: Concealer x products sold more than 10,000 on Shopee with the majority of buyers being women with acne-prone skin.
- Positioning: Concealer X follows the concept of a "clean look" Where this concealer is makeup that is given skincare content. Concealer x is the highest quality product.

4.2 Collecting Samples

Samples were gathered by sourcing various types of packaging available in the market, either directly or via online platforms (Sari,2019). The design of the x concealer packaging sample in this study. This stage was carried out by searching for adjectives based on opinions, complaints, and suggestions from 30 respondents about the product description (Delfitriani & Uzwatania, 2022). The packaging samples used in this study were 61 packages out of 75 samples. Fourteen samples were discarded as they failed to align with the segmentation, targeting, and positioning of Concealer X. An example of packaging can be seen as shown in Figure 2.

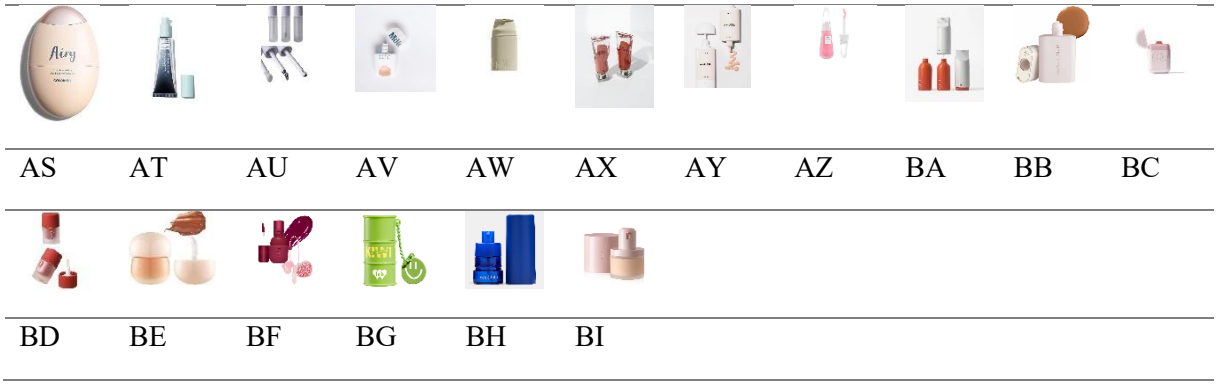

Figure 2. Concealer packaging samples

4.3. Identifying Kansei Word

Kansei Word is a word that describes the properties and actions used to describe subjective qualities such as ergonomics and aesthetics in product design. This Kansei Word represents the feelings and emotions of consumers towards the product. Kansei words were obtained from a collection of words derived from the respondents' reviews with a total of 190 words. The set of words was then evaluated to eliminate duplication. The evaluation results produced 51 words that were grouped into two main categories, namely kansei words and packaging design. Words containing emotional properties were anonymized. A total of 35 words fell into the kansei word category. The following Kansei Word can be seen in Tabel 1.

Table 1. Kansei word

No	Kansei Word	Anonym	No	Kata Kansei	Anonym
1	Unique	Not Unique	19	Convenient	Inconvenient
2	Simple	Not Simple	20	Argonomic	Non-Argonomic
3	Attractive	Not Attractive	21	Identical	Non-Identical
4	Modern	Not Modern	22	Sturdy	Unsturdy
5	Eye Catching	Not Eye Catching	23	Small	Not Small
6	Clean Look	Not Clean Look	24	Playful	Unplayful
7	Iconic	Uniconic	25	Scratch-resistant	Not Scratch-resistant
8	Compact	Non-Compact	26	Basic	Not Basic
9	Funny	Not Funny	27	Innovative	Not Innovative
10	Minimalist	Not Minimalist	28	Exclusive	Non-Exclusive
11	Usable	Unusable	29	Seamless	Non-Seamless
12	Natural	Unatural	30	Easy to Carry	Not Easy to Carry
13	Trendy	Untrendy	31	Applicator Sturdy	Applicator not sturdy
14	Aesthetic	Not Aesthetic	32	Non-Spillable	Easy to Spill
15	Efficient	Inefficient	33	Easy to Apply	Hard to Apply
16	Elegant	Inelegant	34	Informative	Uninformative
17	Practical	Unpractical	35	Transparent	Non-Transparent
18	Good	Not Good			

4.4 Analyzing Design Concepts Using PCA

The analysis process begins with the development of a semantic differential questionnaire. Semantic Differential is a measurement scale used to measure the perception of subjectivity. The Semantic Differential Scale is done after obtaining Kansei Word. Give the opposite pair of words for each Kansei Word of that Kansei Word. In this questionnaire, a 7-scale scale is used. According to (Sari, 2019), a 7-point scale of the Semantic Differential questionnaire allows for more sensitive assessments. The following is a

picture of filling out the Sematic Differential questionnaire in Figure 3.

Figure 3. Semantic differential questionnaire filling image

Once the semantic difference questionnaire has been developed, the next step involves analyzing the design concept through Principal Component Analysis (PCA). PCA has been used as a method to extract Kansei Word (Delfitriani and Uzwatania, 2022). The software used in this study is R Software to process data from the Semantic Differential questionnaire filled out by 30 respondents (Delfitriani and Uzwatania, 2022). To run or run data on the R Software program, this study uses coding to be able to read Kansei Word data results from the Semantic Differential questionnaire. After running, processed data was obtained in the form of Kaiser, Plot Scree graphs, and the Standard Deviation method (Arini et al., 2023). This method yields 4 PCs. The following are the results of PCA data that has been run using R Software in Figure 4.

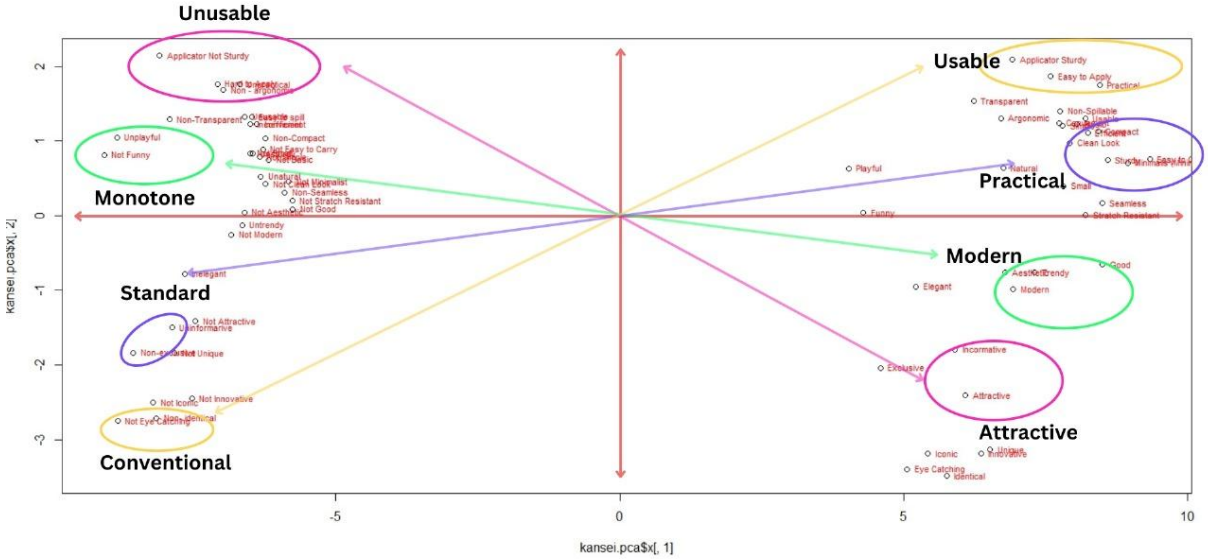

Figure 4. Running software R results

- Kaiser Method

The purpose of this data processing stage is to determine the feasibility of the variables being studied and see whether the data can be processed to the next step or not (Dermawan et al., 2023). In the results of running PCA, the following images were obtained for 4 PCs, namely PC 1, PC 2, PC 3, and PC 4 which are variations above. The following are the results of the Kaiser method PCA data. In Figure 5.

```
> datakanseipca.pca$sdev
 [1] 7.20034379 1.55725904 1.11209876 1.00701387 0.90275777 0.78018582
 [7] 0.67497602 0.62085344 0.53050749 0.51274375 0.44452232 0.39140605
[13] 0.37975221 0.35733062 0.34323297 0.33895501 0.30253511 0.29590864
[19] 0.27380517 0.25531467 0.23043799 0.21478729 0.20575795 0.19770211
[25] 0.18200893 0.17694992 0.16283045 0.15540817 0.14978356 0.14385529
[31] 0.14271422 0.12276468 0.11838509 0.10899511 0.10843016 0.09938646
[37] 0.09467082 0.09069611 0.08405162 0.07788843 0.07523575 0.07149431
[43] 0.06780886 0.06280986 0.05984265 0.05494730 0.05339919 0.05299265
[49] 0.04740142 0.04392689 0.04132675 0.03521026 0.03502911 0.03024738
[55] 0.02665784 0.02372513 0.02054280 0.01732122 0.01524306 0.01112154
[61] 0.00919191
```

Figure 5. Kaiser method PCA data

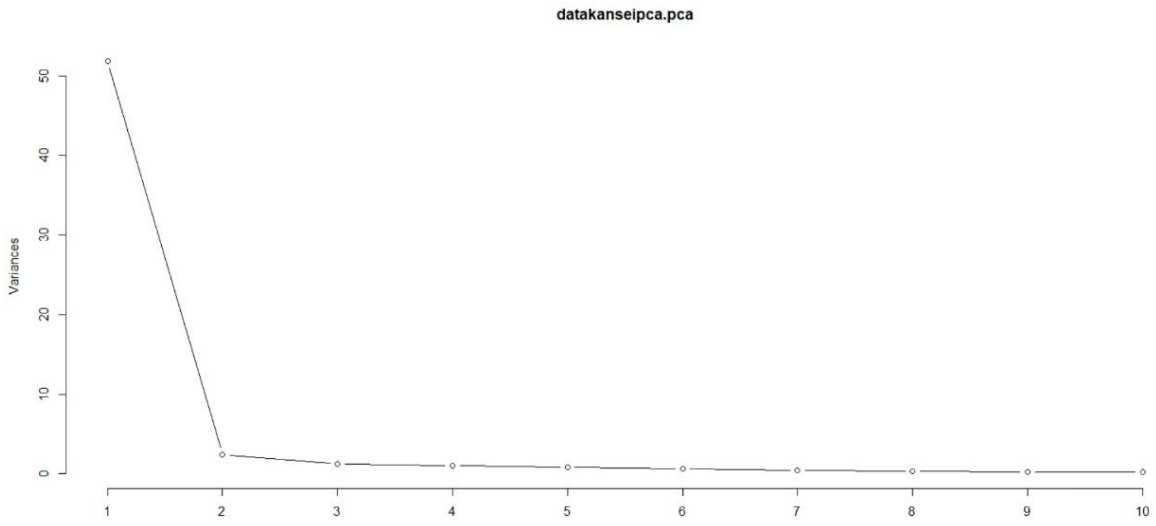

Figure 6. PCA data scree plot method

- Standard Deviation Method

The Standard Deviation method states that the larger the number, the better it will be (Putri, 2020). In the results of running PCA, there are 4 PCs that have the largest numbers, namely PC 1 (7.2003), PC 2 (1.55726), PC 3 (1.11210), and PC 4 (1.00701). The following is the result of the Standard Figure 7 data.

	PC1	PC2	PC3	PC4	PC5	PC6	PC7
Standard deviation	7.2003	1.55726	1.11210	1.00701	0.90276	0.78019	0.67498
Proportion of Variance	0.8499	0.03976	0.02027	0.01662	0.01336	0.00998	0.00747
Cumulative Proportion	0.8499	0.88967	0.90995	0.92657	0.93993	0.94991	0.95738

	PC8	PC9	PC10	PC11	PC12	PC13	PC14
Standard deviation	0.62085	0.53051	0.51274	0.44452	0.39141	0.37975	0.35733
Proportion of Variance	0.00632	0.00461	0.00431	0.00324	0.00251	0.00236	0.00209
Cumulative Proportion	0.96370	0.96831	0.97262	0.97586	0.97837	0.98074	0.98283

Figure 7. Standard deviation

4.5 Evaluating Design Concept

The four established concepts are assessed using a Likert questionnaire that employs a scale of 1 to 5. The responses from 30 participants are analyzed to calculate the mean, minimum, maximum, and standard deviation. which serve as essential inputs for the QTT1 method. The following is a picture of filling out the Likert questionnaire in Figure 8.

Figure 8. Filling out the Likert questionnaire

4.6 Morphology Analysis Tabulation

Morphological analysis was performed by exploring the various design elements and factors present in 61 packaging samples, facilitated through discussions with packaging experts. This investigation yielded ten key design factors: Caps, Top, Neck, Body, Bottom, Applicator, Material, Design Style, Volume, and Cap Position. The following morphological analysis can be seen in Table 2.

Table 2. Analysis morphology

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8	Type 9	Type 10
Caps (X1)	Strew (X1.1)	Press (X1.2)	Flip Top (X1.3)							
Top (X2)	Cube	L-Shape	Obtuse Angle	Braces 	Bubble	Ramps	Cone	Hook-Like Shape	Concave	Curve  (X2.10)

	(X2.1)	(X2.2)	(X2.3)	(X2.4)	(X2.5)	(X2.6)	(X2.7)	(X2.8)	(X2.9)
Neck (X3)	Right Angle (X3.1)	Acute Angle (X3.2)	Spout (X3.3)	Curved Bracket (X3.4)	Trapezoid (X3.5)	Jug (X3.6)	Arch (X3.7)	Curve (X3.8)	
Body (X4)	High Tube (X4.1)	Short Tube (X4.2)	Half Tube (X4.3)	Tube (X4.4)	Beam (X4.5)	Prism (X4.6)	Tear Drop (X4.7)	Oval (X4.8)	
Bottom (X5)	Ellipse (X5.1)	Curve (X5.2)	Flat (X5.3)	Heptagon (X5.4)	Ribbon (X5.5)				
Applicator (X6)	Brush (X6.1)	Brush & Sponge (X6.2)	Sponge (X6.3)	Roll On (X6.4)	Pipet (X6.5)	Pump (X6.6)	Doesn't Have Applicator (X6.7)		
Material (X7)	Glass (X7.1)	Acrylic (X7.2)	Plastic (PET) (X7.3)	Plastic (PP) (X7.4)	Silicon (X7.5)				
Design Style (X8)	Fun (X8.1)	Modern (X8.2)	Exclusive (X8.3)	Simple (X8.4)	Conventional (X8.5)				
Volume (X9)	Small 1 - 5 gr (X9.1)	Medium 6 - 10 gr (X9.2)	Large 11 - 15 gr (X9.3)						
Cap Position (X10)	Bottom (X10.1)	Not Bottom (X10.2)							

4.7 Analysis the Corelation of Design Concepts and Design Elements with QTT1

The interpretation of the bar graph for QTT1 reveals how design elements are prioritized according to the design concept. Each factor's selected design element is identified by the longest bar in its respective category. Figure 9 illustrates the results pertaining to the Conventional - Usable concept, Figure 10 presents the findings for the Standart - Practical concept, Figure 11 present the findings for the Monoton – Modern concept and Figure 12 presents the findings for the Attractive – Unusable concept.

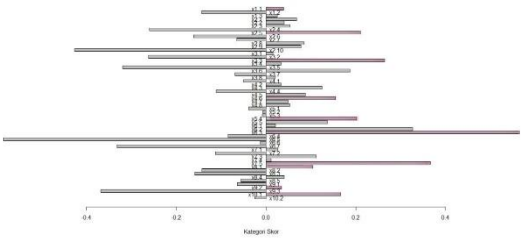

Figure 9. Conventional-usable concept

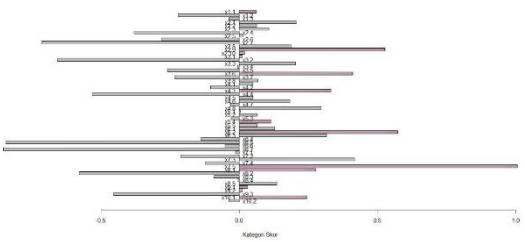

Figure 10. Standart-practical concept

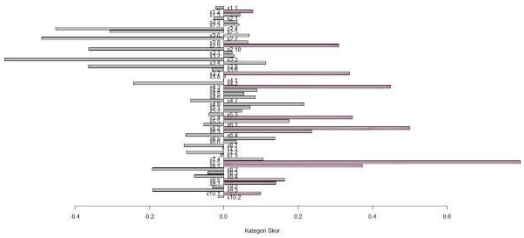

Figure 11. Monoton-modern concept

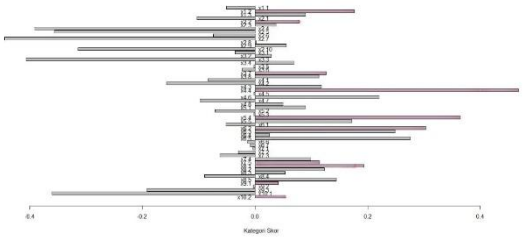

Figure 12. Unusable-attractive concept

The R-square value derived from the QTT1 analysis serves as the foundation for selecting the concept to be applied in the mockup implementation. The preferred conclusion is the concept that exhibits the highest r-squared value (Sari, 2019). The results of the R-square and the prioritized design elements in each factor based on the concept are shown in Table 3. Among these, the Standard - Practical Concept stands out as the most recommended, boasting the highest Multiple R-squared value of 0. 9126.

Table 3. Selected elements

Concept	Elements										Value	
	X1 Caps	X2 Top	X3 Neck	X4 Body	X5 Bottom	X6 Applicator	X7 Material	X8 Design Style	X9 Volume	X10 Cap Postion	R	R-Square
Conventional - Usable	(X1.1) Strew	(X2.5) Bubble	(X3.3) Acute Angle	(X4.6) Prism	(X5.4) Heptagon	(X6.3) Sponge	(X7.5) Silicon	(X8.1) Fun	(X9.1) Small 1 - 5 gr	(X10.1) Bottom	0,382	0,8083
Standart - Practical	(X1.1) Strew	(X2.9) Concave	(X3.6) Jug	(X4.3) Half Tube	(X5.4) Heptagon	(X6.2) Brush & Sponge	(X7.5) Silicon	(X8.1) Fun	(X9.1) Small 1 - 5 gr	(X10.1) Bottom	0,724	0,9126
Monoton - Modern	(X1.2) Press	(X2.9) Concave	(X3.7) Jug	(X4.3) Half Tube	(X5.4) Heptagon	(X6.2) Brush & Sponge	(X7.5) Silicon	(X8.1) Fun	(X9.1) Small 1 - 5 gr	(X10.1) Bottom	0,060	0,7026
Unusable - Attractive	(X1.2) Press	(X2.2) L-Shape	(X3.7) Jug	(X4.4) Tube	(X5.4) Heptagon	(X6.2) Brush & Sponge	(X7.5) Silicon	(X8.1) Fun	(X9.1) Small 1 - 5 gr	(X10.2) Not Bottom	0,180	0,7405

The results of the elements obtained are then poured into a sketch as a rough image and then the design is made using Adobe Illustrator to be entered into Blender as a 3D mockup software for Concealer X. Before initiating the digital design process and creating the 3D mockup, we engaged in brainstorming sessions to pinpoint specific design elements. Using mind mapping techniques, we gathered ideas and compiled mood boards that served as design references, as illustrated in Figure 13.

Figure 13. Mind mapping and moodboard

Running QTT1 produces the fun design style element (X8.1). The fun design style is illustrated by the use of bright colors, decorative fonts, and varied image illustrations. This design style element also considers consumer preferences based on the results of the kansei word questionnaire.The mockup can be seen in image 12 with the Strew cap, the top of the Concave, the neck of the Jug, the size of the Half Tube body, the bottom of the Heptagon, the applicator is Brush and Sponge made of Silicon, with a Fun design style small volume 1 - 5 gr, and at the Under.

Figure 14. 3D mockup concealer X

5. CONCLUSION

This study designed the development of packaging design concepts in Concealer x. The development of concealer x packaging uses the Kansei Engineering method by determining the design concept using Principal Component Analysis (PCA). In this study, 61 samples and 35 Kansei Words were obtained. The selected samples and Kansei Word were then evaluated with a Semantic Differential questionnaire. The results of the questionnaire were processed into PCA input data using R Software. 4 packaging design concepts were obtained based on the results of the analysis, namely sample collection, questionnaire, Kansei Word, and Principal Component Analysis (PCA) using R software. i.e. "Modern & Monotone", and PC 4, i.e. attractive & Unusable. The chosen concept is PC2: Standard - Practical, which boasts a robust R-square value of 0. 9126. This

concept features a variety of design elements: the caps (X1) are of the strew type (X1. 1), while the top of the packaging (X2) has a concave shape (X2. 9). For the neck of the packaging (X3), a jug design (X3. 6) is utilized, and the body (X4) takes on a half-tube form (X4. 3). The bottom of the packaging (X5) is uniquely heptagon-shaped (X5. 4). Additionally, the packaging applicator (X6) incorporates both a brush and sponge (X6. 2). The materials used for the packaging (X7) are made of silicone (X7. 5), and the design style (X8) reflects a fun design style (X8. 1). The volume of the packaging (X9) is small, ranging from 1 to 5 grams (X9. 1), and the caps is designed to sit below the packaging (X10.1).

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