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Conjoint Analysis for Consumer Preferences Towards Buying Plaster Sheets

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Abstract

In buying a product, consumers usually decide to purchase through certain stages and consumers understand their needs. Consumers also get stimuli from other people's opinions including for problem identification, information seeking, evaluation, and decision-making activities. This study aimed to analyze the attributes that affect consumer preferences in buying plaster sheet products of CV Anugrah Jaya Sentosa. The questions studied in this research were: What are the attributes that affect consumer preferences in buying plaster sheet products? What are the most critical attributes for consumers of CV Anugrah Jaya Sentosa plaster sheet products? The most important attribute was a product thickness of 12 mm with a special quality, then a layer of purchase of goods only and a layer of paint + stain that simplifies the work for finishing and produces maximum results.

Keywords: Ceiling Products, Quality, Coating, Thickness, Purchase

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1. Introduction

CV Anugrah Jaya Sentosa (AYS) is an interior decoration company (Construction) engaged in the production of gypsum, with its superior products plaster sheets. With the need to develop ceiling products to be able to know clearly, the researchers decided to conduct a Conjoin Analysis Analysis for Consumer Preferences Towards Interest in Buying Plaster Sheets. In buying a product, consumers usually decide to purchase through certain stages and consumers understand their needs. Consumers also get stimuli from other people's opinions to deliver consumers in a wise decision-making process, including problem identification, information seeking, evaluation, and decision-making activities. There are two stimulus categories, namely, marketing stimulus and other stimuli. Marketing stimulus includes four elements, namely product, price, distribution, and promotion. Meanwhile, other stimuli include economic, technological, political, and cultural conditions [1].

According to Damelina (2009), consumers decide to buy longer because the more expensive the product is, the better the product so that consumers have more consideration. Because the product is expensive, consumers will see the value of the product so that the accuracy of choosing and deciding is essential for consumers. And consumers will evacuate themselves from one brand to another.

Seeing these factors, the company's desire to continue developing ceiling products and research on the attributes of buying a ceiling. With this, it is necessary to conduct further research on consumer preferences related to plaster sheet ceilings, especially in Surabaya.

2. Methods

2.1. Research Approach

This research used descriptive quantitative research methods.

2.2. Time and Place of Research

The place in this study is the city of Surabaya. Researchers chose respondents domiciled in Surabaya to make it easier to get respondents who match the criteria. This research was conducted from 28 February 2020 to 15 May 2020.

2.3. Sampling Method

2.3.1. Population

In this study, the population chosen was is the people of Surabaya who have used or understood ceilings such as contractor, gypsum shop, and the owner (homeowner) with the age criteria of 22 - 55 years, because this population group is a potential consumer for ceiling products. According to Statistics Indonesia data for 2019, the total population recorded in the City of Surabaya with this age criterion is 1,673,601 of the total population in Surabaya City of 2,896,195 people.

2.3.2. Samples

Sampling was chosen using two techniques. Respondents who know, or have competence, will be used as samples in this study with the following criteria. The first criterion

for respondent is a man/woman aged 22 - 55 years. Second, at least the Respondents minimum have bought and used ceilings. And the last one. The Respondents has bought a ceiling product at least once at CV. Anugrah Jaya Sentosa.

From the calculation of the Slovin formula, it can be seen that the number of samples in this study was 100 respondents.

2.4. Data Collection Methods

2.4.1. Types and Sources of Data

The types of data used in this study are primary data and secondary data. Primary data is a source of research data obtained directly from the original source. Meanwhile, secondary data used in this study were obtained from various written sources such as journals, scientific papers, and publications from the internet related to research.

2.5. Data Analysis Methods

Conjoint analysis is an analytical technique that can be used to determine the relative importance based on customer perceptions brought by a particular product and the utility value that arises from the related product attributes. Consumers can express their preferences through the assessment of objects that have been formed by a combination of attributes.

Conjoint analysis has a model:

$$Y_1 \underset{\text{Metric/non-metric}}{} = X_1 + X_2 + \cdots + X_n \underset{\text{Non-Metric}}{}$$

With translation, the Independent Variable (X1 and so on) is a factor in the form of non-metric data, including part of the factor, namely level. The dependent variable (Y1) is the respondents' overall opinion regarding the various factors and levels embedded in a product. This dependent variable includes a respondent's level of factor importance to the product attributes. Conjoint analysis is generally used to find out how a person's assessment of a good or service is, therefore, the steps used in this study to perform conjoint analysis are as follows.

2.5.1. Problem Formulation

The following is the number of attributes and levels used in this study (Sarwono, 2016).

TABLE 1: Formulation of Attributes, Levels, and Description

Attributes	Level	Description
Quality (X1)	1	General Quality
	2	Special Quality
Coating (X2)	1	Paint+ Stain
	2	Full Stain + Paint
Thickness (X3)	1	9 mm
	2	12 mm
Purchase (X4)	1	Without installation
	2	Installed

Source: Processed Data (2020)

2.5.2. Formation of Stimuli

Combination Products used in this study using the full profile procedure method using SPSS in this study used 1 attribute with 2 levels, each with 9 levels of information.

2.5.3. Preference Assessment

Preference assessment on the combination of attributes used in the study is carried out by providing a score or rating based on the number of stimuli formed in this study, namely 2 x 2 x 2 x 2 = 16, so there are 16 stimuli or product combinations which are then sorted based on assessment 1 up to 16, Ranking with number 1 is defined as the combination the respondent likes most. In contrast, rank 16 means the combination the respondent least likes.

2.5.4. Performing Conjoint Analysis

The Conjoint analysis basic model used in this study is mathematically formulated as follows:

$$U(X) = \sum_{i=1}^{m_i} \sum_{j=1}^{k_i} \alpha_{ij} X_{ij}$$

Information,

U (X) = Total Utility

α_{ij} = The utility value of the attributes - i (i = 1, 2, 3,..., m) and level j (j = 1, 2, 3,...,k)

k_i = Number of level attributes to j

m_i = Number of attributes to i

Xij = Attributes of dummy variables to I tara to j (1 = level appearing; 0 = not appearing)

2.5.5. Interpretation of Analysis Results

Interpretation of the results used in the conjoint analysis consists of 3 parts with details as follows:

Utility

Important Value

Pearson's and Kendall's Tau

The hypothesis used to test Pearson's and Kendall's Tau formulated as follows:

H0: there is a strong correlation between the estimated and actual conditions

H1: there is a strong relationship between the estimated and actual conditions Testing:

When probability results (Significant) > 0.05, then H0 is accepted

If the probability results (Significant) <0.05, then H0 is rejected

3. Results

3.1. Description of respondents' characteristics

The respondents' characteristics obtained from the study results indicate that of respondents have male gender, namely 91% female 9%. The respondents' age category shows that the age of 31 to 40 years is the ideal age for someone to occupy or take the highest decision they have in accordance with the experiences that have been passed. The job category shows that the respondents who work as entrepreneurs are superior to others in this study.

Based on research data, the address of the respondent's residence is a means of knowing each respondent's residence. West Surabaya shows the most compared to other regions, namely 38%. Of the 100 respondents in the category who have bought or used a ceiling, 95% more than those who have never purchased or used a ceiling with a 5% value. And those who have bought ceiling products at Anugrah Jaya Sentosa amounted to 49%, and those who have never purchased 51%.

Based on research data, special quality is more in demand by respondents with a value of 92% while general quality is 8%. The layer that respondents are interested in is paint + stain with an 87% value. This is because the respondent is more cost-effective and works faster than full stain, which requires more stain material. The thickness that

the respondents are interested in is 9 mm thick, which is 90%. The purchase of goods ceiling products is bigger, with a 67% value. This is because respondents only choose goods because they can be custom according to their wishes.

3.2. Overall Conjoint Analysis Results

The following is the utility value crossed for all respondents.

TABLE 2: Overall Respondents' Utility Value

Attribute	Level	Utility Value
Quality	General Qualitiy	-0.745
	Special Quality	0.745
Coating	Paint + Stain	0.655
	Full Stain + Paint	-0.655
Thickness	9mm	-0.095
	12mm	0.095
Purchase	Goods only	0.707
	Goods + Installation	-0.707
Constant		9.055

In the quality attribute, it can be seen that the respondents prefer special quality compared to general quality; this is indicated by a utility value of 0.745, which is positive. In the layer attribute, it is known that the most desirable attribute level is paint + stain, which has a positive value. The thickness attribute shows that the level most preferred by respondents is 12mm thickness, which has a positive value, namely 0.095.

The last attribute level that the respondent likes the most or is interested in choosing a purchase where the utility value is bigger and has a positive value of 0 707, namely the purchase of goods only.

The following are the importance values of all respondents.

TABLE 3: Importance Value of Overall Respondents

Attribute	Importance Value
Quality	27.135
Coating	17.538
Thickness	29.795
Purchase	25.532

The Importance value of all respondents who are most interested or preferred is the thickness of the product, which has a higher value compared to other attributes.

The accuracy of the predictions of all respondents based on research data shows that the value for percent is 0.743, and the value for Kendal is 0.643, the results of Pearson's R and Kendall's Tau values indicate a more significant number than 0.5. This means that there is a strong correlation between the estimation and the actual conditions besides being able to see the correlation value of the Pearson's R and Kendall's Tau values, it is also necessary to test the significance level for Pearson's R, and Kendall's Tau Table 5.7 shows the significance value for each pencil and residence. Amounting to 0.07 and 0.03, these values are smaller than the required significance level of 0.05. This means that there is a significant correlation between the estimate and the actual conditions.

4. Discussion

4.1. Quality Preference Category

Based on the survey results, the respondents preferred special quality with a value of 92% while general quality was 8%. This indicates that the respondents are more concerned about the product specifications for the building materials to be used. In response to this, researchers used special quality, which was product innovations from CV. Anugrah Jaya Sentosa to meet the needs of customers and potential consumers to make customers not choose products from other companies.

The product quality in this study leads to green materials on the basis of realizing the Green Building concept. According to Agung et al., 2018,. building materials that do not have the potential to damage the environment and interfere with health are called environmentally friendly materials, while the greater understanding is the product side of the material only but also observes the sustainability of the material source, production process, distribution process, to the installation process [2]. Consumers dream of homes that are comfortable and have durable material resistance, as well as building designs that match consumer criteria. The price of the house affects the materials used and ultimately affects the decision to buy a house, as quoted from the results of previous studies in choosing the quality of building materials and building design. by Siregar (2014) [3].

The conjoint analysis result shows that the utility value in the quality attribute shows that the respondents prefer special quality compared to general quality. This is indicated by the utility value of 0.745, which is positive, and the value is bigger than the general quality of - 0.745, which is negative. These results indicate that respondents tend to prefer special quality over general quality. This is due to using special quality ceiling

products that have raw materials that are protected from termite attacks and maintain family health through the selection of ceiling type materials.

4.2. Coating Preference Category

Based on the results of the survey conducted, the layer that was of interest to the respondents was paint + stain with a value of 87% bigger than that of full stain + paint with a value of 13%. This is because respondents are more cost-effective and work faster than full stain, which requires more stain material.

Schiffman and Kanuk (2007) said that consumer behavior or individuals make decisions to spend available resources and get the goods or services they will have [4]. It can be concluded that consumers are required to better understand how individuals, groups, and organizations go through selecting, securing, using, and discarding products or services, experiences, or ideas to satisfy their needs and their impact on consumers and society.

The results of the conjoint analysis results show that the value of coating utility that makes work easier and makes it easier to complete the job is known that the most desirable attribute level is paint + stain, which has a positive value and is bigger, namely 0.655 compared to full stain + paint which has a value negative which is equal to - 0.655.

4.3. Thickness Preference Category

Based on the survey results, the thickness that the respondents are interested in is 9 mm thick, which is 90%, while the thickness of 12 mm is 10%. This is because ceiling products with a thickness of 12 mm are rarely known on the market. Therefore, researchers feel the need to provide a thickness of 12 mm, which can later meet consumer expectations.

According to Siregar, 2014, the quality of building materials is also a consideration for consumers because suitable quality building materials will provide durability and good in the house; building designs that match consumer criteria will also affect the house's price, ultimately affect the purchase decision of the house. Kotler and Armstrong (2009) state that all things that can be offered to consumers for goods or services to attract attention, acquisition, use, or consumption that can satisfy consumers, namely a desire or need [5]. Product quality is the totality of features and characteristics of a product or service that also depends on its ability to satisfy stated or implied consumer needs (Kotler and Amstrong, 2006).

4.4. Purchase Preference Category

Based on the survey results, the purchase of ceiling products alone is more significant, with a value of 67% of the purchase of goods + installation with a value of 33%. Because the majority of the respondents are self-employed in purchasing preferences, the researcher wants to know how enthusiastic the consumers are, there are also respondents whose jobs as civil servants, the construction of their houses have all been bought up by the contractor, but for the purchase of materials, the homeowners buy because they can be custom according to their wishes.

There are two types of product purchases used by consumers or respondents. The purchase of goods alone is what respondents often do instead of buying goods + installation. This is in line with Assael's research (in Tatik Suryani; 2008) [6]. Consumers often involve more than one party to make decisions. There are two dimensions to the decision-making process, *first, the* level of decision making for goods or services. *Second, the* degree of decision involvement when buying a product.

There are consumers who are inclined towards a product brand to be purchased because of the link between the product and the consumer continuously. The consumer is suitable to use or consume that product for a long time so that the trust in using the product is high. Consumers involve emotional considerations in decisions to buy the product. High involvement is classified as high involvement purchase decision, while low involvement is classified as a low involvement purchase decision

The results of the conjoint analysis results show that the utility value at the last attribute level is the most preferred or preferred by respondents in choosing purchases where the utility value is bigger and a positive value of 0 707, namely the purchase of goods only. In contrast, the purchase of goods + installation has a negative value of -0.707.

4.5. Priority of Respondents

The main factor that will be considered by customers or respondents when using ceiling products is thickness. The combination of stimuli most favored by customers or respondents is located on the 11th line, where the special quality is with a layer of paint + stain, the thickness of the product is 12 mm, and the purchase of goods only. Based on Table 5.6, where the total utility value for the combination of stimuli in row 11 is 2.202, where this value is bigger and more positive than the total utility value of the combination of stimuli with other attributes.

Based on the combination of stimulant data obtained, the researcher can draw the conclusion that the respondent chooses a thickness of 12 mm because 49% of customers who have bought have been categorized as owners (homeowners) who want their house to get maximum results neat. The thicknessof 9 mm is 90%, while the thickness of 12 mm is 10%. This is because ceiling products with a thickness of 12 mm are rarely known on the market. Therefore, researchers feel the need to provide a thickness of 12 mm, which can later meet consumer expectations. In the quality attribute, special quality is more in demand by respondents with a value of 92% while general quality is 8%. This indicates that the respondents are more concerned about the building materials' product specifications. In the layer attribute that the respondents are interested in, paint + stain with a value of 87% bigger than that of full stain + paint with a value of 13%. This is because respondents are more cost-effective and work faster than full stain, which requires more stain material.

In the item purchase attribute, the ceiling product alone is more significant with a value of 67% than the purchase of goods + installaton with a value of 33%. Because the majority of respondents are self- employed, then the majority of Cv. Anugrah Jaya Sentosa is also the owner (homeowner) who plays an important role in purchasing goods. Therefore, the researcher wants to apply Questerr and Smart's (2013) statement, which states that customer engagement will affect customers.

5. Conclusion

Based on the results of the research, the following conclusions drawing. First conclusion The combination of products that are most liked and considered necessary by consumers or respondents is a thickness of 12 mm with a special quality, then only the purchase layer and the paint + stain layer that makes finishing work easier and produces maximum results. And the final conclusionOf the four attributes used in the study, namely Product Quality, Product Layer, Product Thickness, and Purchase. The most important attribute is the attribute of Thickness of 12 mm, second, the Product Quality with a special quality, third, the Purchase with the purchase of goods only, and the last Layer with a layer of paint + stain.

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Conflict of Interest

The authors have no conflict of interest to declare.

References

[1] Tambunan, D. B. (2009). Atribut Yang Menjadi Pertimbangan Konsumen Dalam Membeli Produk Perumahan. *Integritas Jurnal manajemen Bisnis*, vol. 2, issue 2, pp. 141-153.

[2] Agung, P., *et al*. (2018). *Penerapan Green Material Dalam Mewujudkan Konsep Green Building Pada Bangunan Kafe*. Bandung: Institut Teknologi Nasional Bandung.

[3] Siregar, J. (2014). *Model Perumahan Keluarga Muda Perkotaan, Alur Perumahan dan Permukiman*. Bandung: Arsitektur-ITB.

[4] Schiffman., L., G. and Kanuk., L., L. (2007). *Consumer Behavior* (9th ed.). London: Pearson.

[5] Kotler, P. and Keller, K. L. (2009). *Manajemen Pemasaran. Edisi Ketiga Belas Jilid I*. Jakarta: Penerbit Erlangga.

[6] Tatik, S. (2008). *Perilaku Konsumen Implikasi Pada Strategi Pemasaran*. Yogyakarta: Graha Ilmu.