






Conjoin Analysis to Measure Consumer Preferences for Traditional Jamu Attributes

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Abstract. Lifestyles have shifted to healthy consumption patterns since the pandemic to strengthen immunity to avoid COVID-19, making the traditional herbal medicine business a promising opportunity. The problem accompanies business opportunities for traditional herbal drinks that are not to people's preferences. This study aimed to analyze the attributes of traditional herbal drinks which became the preferences of traditional herbal medicine consumers in the Gondang District. The method of analysis uses conjoint analysis. The results showed that traditional herbal drinks, according to consumer preferences, were traditional herbal drinks that had a sweet taste and a price of Rp. 5000–Rp. 10000 almond box packaging, the efficacy of traditional herbal drinks to maintain health, ease of obtaining COD services, always in stock, hygienic traditional herbal drinks using herbal composition labels, original sugar guarantees, brands, and expiration labels. Based on the importance value, the attributes of most traditional herbal drinks are taste, price, packaging, efficacy, availability, a guarantee of original sugar, composition, brand, safety, expiration, and convenience.

Keywords: Consumer Preference · Traditional Herbal · Conjoin

1 Introduction

The Covid pandemic has made people switch to a healthy lifestyle, one of which is by consuming traditional herbal medicine, thus making traditional herbal medicine business opportunities a promising business [1]. Indonesia also supports traditional herbal medicine business opportunities as the second largest producer of medicinal plants, and the habit of the Indonesian people consuming herbal medicine is a hereditary tradition [2].

Traditional herbal medicine is a drink made from family medicinal plants that are beneficial for health, increasing the body's immunity [3]. The consumption of traditional herbal medicine has increased, but when compared to the consumption of other immune-boosting products, the consumption of traditional herbal medicine is still low;

this is shown by research [4] that only 15.4 percent of people have high knowledge and awareness to consume herbal medicine consumers assess that traditional herbal medicine does not yet have attributes that match consumer preferences even though the attributes of a product are important things that are used as the basis for consumers in making purchasing decisions [5]. Therefore, practitioners of traditional herbal medicine need to know the attributes of consumer preferences in the choice of a person's likes or dislikes for a product so that consumers are interested in buying these traditional herbal medicine products rather than other products [6].

Nganjuk Regency has a traditional herbal medicine festival program, making Nganjuk Regency a strategic area for traditional herbal medicine marketing. Gondang District, located in Nganjuk Regency, has the largest number of herbal medicine sellers, making it suitable for developing traditional herbal medicine businesses according to consumer preferences.

The research was conducted to analyze the attributes of traditional herbal medicine, which are the preferences of traditional herbal medicine consumers in the Gondang District.

2 Research Methodology

The research was conducted in Gondang District in January 2022 using a purposive sampling method. The number of respondents was 100 respondents. Source of data from interviews, questionnaires, and related literature. Methods of data analysis using conjoint analysis.

Conjoint analysis is a method used to analyze consumer preferences for product or service attributes (specifications or features). The use of Conjoint Analysis is to help obtain a combination of the attributes of a product or service that consumers like the most. The conjoint analysis model uses the basic dummy variable regression model in the conjoint analysis modeled in the equation.

$$U = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10} + b_{11}X_{11} + b_{12}X_{12} + b_{13}X_{13} + b_{14}X_{14}$$

Information.

U = Overall preference.

b_0 = constant.

b_1, b_2 = Efficacy variable coefficients.

b_3, b_4 = Coefficient of price variable.

b_5 = Expired variable coefficient.

b_6 = Brand variable coefficient.

b_7 = Coefficient of collateral variable.

b_8, b_9 = Packing variable coefficients.

b_{10} = Availability variable coefficient.

b_{11} = Ease of obtaining variable coefficient.

b_{12} = Coefficient of variable safety.

b_{13} = Coefficient of taste variable.

b_{14} = Composite variable coefficient.

$X_1 = 1$ if the efficacy of herbal medicine to treat disease, 0 others.

$X_2 = 1$ if the efficacy of herbal medicine maintains health, 0 others.

$X_3 = 1$ if price < 5000, 0 else.

$X_4 = 1$ if price is 5000–10000, 0 else.

$X_5 = 1$ if there is an expired label, 0 else.

$X_6 = 1$ if there is a brand label, 0 else.

$X_7 = 1$ if there is a guarantee label, 0 Others.

$X_8 = 1$ if it is a plastic bottle, 0 Others.

$X_9 = 1$ if the packaging is glass bottles, 0 others.

$X_{10} = 1$ if always present, 0 else.

$X_{11} = 1$ if location is near, 0 else.

$X_{12} = 1$ if free of additives, 0 otherwise.

$X_{13} = 1$ if it's sweet, 0 else.

$X_{14} = 1$ if there is a composition label, 0 otherwise.

Table 1 shows the attributes of traditional herbal medicine used in this study which will be used in designing combinations using SPSS, which form 27 combinations or stimuli.

3 Result and Discussion

3.1 Consumer Preferences for Traditional Herbal Medicine

The utility value obtained from the conjoint analysis shows consumer preferences for each attribute of traditional herbal medicine. The utility value is positive, meaning that if a change in an attribute level is offered to consumers, it can increase utility by the positive value obtained. Conversely, if the sign value is negative, it means that if there is a change in an attribute level offered to consumers, it can reduce utility by the negative value obtained. The highest utility value indicates the attribute level consumers most like, and the smallest utility value indicates the attribute level consumers least like. Table 2 shows the useful value of each level as follows:

The conjoint analysis carried out in this study produces utility values. This utility value indicates the level of consumer preference regarding each attribute and the desired attribute level. So from the attribute values and attribute levels, it can be seen which form of stimulus is most in demand by consumers. Based on the results of the analysis, it can be seen that the conjoint analysis model is as follows:

$$U = 3,255 - 0,064X_1 + 0,043X_2 + 0,029X_3 + 0,254X_4 + 0,021X_5 + 0,130X_6 + 0,133X_7 + 0,037X_8 - 0,252X_9 + 0,173X_{10} - 0,044X_{11} - 0,001X_{12} + 0,363X_{13} + 0,132X_{14}.$$

Based on the results of research on the attributes of traditional herbal medicine which are consumer preferences, namely.

Efficacy

In the efficacy attribute, consumers prefer the efficacy of maintaining health with a utility value of 0.043 compared to the efficacy of disease treatment with a utility value of -0.064, and the efficacy of body care with a utility value of 0.021. Regarding these efficacy attributes, it can be interpreted that for consumers who buy traditional herbal medicine with the efficacy of disease treatment, satisfaction will decrease by 0.064.

Table 1. Traditional Herbal Medicine Attributes and Levels

Attribute	Attribute Level	Information
Efficacy	1	Disease Treatment
	2	maintain health
	3	body care
Price	1	< 5,000
	2	5,000 - 10,000
	3	> 10,000
Expired labels	1	There is an expired label
	2	No expired label
Brand labels	1	There is a brand label
	2	No Brand Label
Guaranteed original sugar	1	There are labels
	2	There isn't any
Packaging	1	Plastic bottles
	2	Glass bottles
	3	Box of almonds
Product availability	1	Stock is always there
	2	Pre order
Ease of obtaining	1	Proximity of the purchase location
	2	COD service
product safety	1	Free of Additives
	2	Hygienic
Flavor	1	Sweet
	2	Bitter
Herbal composition	1	There are labels
	2	No Labels

Source: Primary data processed (2022).

For consumers who buy traditional herbal medicine with the properties of maintaining health, their satisfaction will decrease by 0.043, and consumers who buy traditional herbal medicine with the efficacy of body care will increase satisfaction by 0.021.

Consumers prefer traditional herbal medicine, which has health-preserving properties, because traditional herbal medicine is more appropriate for maintaining health than treating disease [7].

Price

At the price attribute, consumers prefer the price of Rp.5,000-Rp.10,000 with a utility value of 0.254 compared to prices < Rp.5,000 with a utility value of -0.029 and prices > Rp.10,000 with a utility value of -0.283. Regarding the price attribute, it can be interpreted that consumers who buy traditional herbal medicine at a price < Rp. 5,000, satisfaction will increase by 0.029, and consumers who buy traditional herbal medicine

Table 2. Attribute Utility Value of Traditional Herbal Drinks

		Utility
Efficacy	Disease Treatment	– ,064
	maintain health	,043
	body care	,021
Price	< 5,000	,029
	5,000 - 10,000	,254
	> 10,000	– ,283
Expired labels	There is an expired label	,021
	No expired label	– ,021
Brand labels	There is a brand label	,130
	No Brand Label	– ,130
Guaranteed original sugar	There are labels	,133
	There isn't any	– ,133
Packaging	Plastic bottles	,037
	Glass bottles	– ,252
	Box of almonds	,216
Product availability	Stock is always there	,173
	Pre order	– ,173
Ease of obtaining	Proximity of the purchase location	– ,044
	COD service	,044
product safety	Free of Additives	– ,001
	Hygienic	,001
Flavor	Sweet	,363
	Bitter	– ,363
Herbal composition	There are labels	,132
	No Labels	– ,132

Source: Primary data processed (2022).

at a price of Rp. 5,000-Rp. 10,000, then satisfaction will decrease by 0.254, and for consumers who buy traditional herbal medicine for > Rp.10,000, satisfaction will decrease by 0.283.

Consumers prefer traditional herbal medicine priced at IDR 5,000-IDR 10,000 because most consumers buy traditional herbal medicine for family consumption. This study's results align with research [8], which states that herbs are priced at Rp. 5,000 - Rp. 10,000 are preferred by consumers.

Expired

Expired attribute, consumers prefer an expired label with a utility value of 0.021 compared to no expired label with a utility value of –0.021. Regarding the expiration attribute, it can be interpreted that consumers who buy traditional herbal medicine that uses expired labels will increase satisfaction by 0.021. Consumers who buy traditional herbal medicine that does not use expired labels will decrease satisfaction by 0.021.

Consumers prefer traditional herbal medicine with an expired label because it can provide information on consumption limits and increase consumer confidence that it is still suitable for consumption. This research has similarities with the research [9] that the traditional herbal medicine consumers consider in making decisions is a traditional herbal medicine with expired labels.

Brand

For brand attributes, consumers prefer a brand label with a utility value of 0.130 compared to no brand label with a utility value of -0.132 . Regarding brand attributes, it can be interpreted that for consumers who buy traditional herbal medicine that use brand labels, satisfaction will increase by 0.132. For consumers who buy traditional herbal medicine that does not use brand labels, satisfaction will decrease by 0.130.

Consumers prefer traditional herbal medicine with a brand label because branded traditional herbal medicine is considered of higher quality and differentiates it from other products. This is in line with research [10], which shows that consumer purchasing decisions for a product are influenced by brands, so consumers prefer products that have brand labels.

Guaranteed Real Sugar

As a guaranteed attribute for real sugar, consumers prefer to have a guarantee label for real sugar with a utility value of 0.133 compared to no guarantee label for real sugar with a utility value of -0.133 . Regarding the original sugar guarantee attribute, it can be interpreted that for consumers who buy traditional herbal medicine that use the original sugar guarantee label, satisfaction will increase by 0.133. For consumers who buy traditional herbal medicine that does not use the original sugar guarantee label, satisfaction will decrease by 0.133.

Consumers prefer traditional herbal medicine that has a guaranteed original sugar label because it can increase confidence that traditional herbal medicine is safe to consume using real sugar.

Packaging

At the packaging attribute, consumers prefer boxed almond bottles with a utility value of 0.216 compared to plastic bottles with a utility value of 0.037 and glass bottles with a utility value of -0.252 . Regarding the attributes of the packaging, it can be interpreted that consumers who buy traditional herbal medicine packaged in almond box bottles will increase satisfaction by 0.216, and consumers who buy traditional herbal medicine packaged in plastic bottles will increase satisfaction by 0.037. If consumers buy packaged glass bottles, it will decrease satisfaction. of 0.252.

Consumers prefer traditional herbal medicine packaged in boxed almond bottles because boxed almond packaging is more attractive. This is supported by research [11] showing that square-shaped box packaging can attract consumers to purchase because of its different appearance from another product packaging.

Availability

In the composition attribute, consumers prefer that supplies are always available with a utility value of 0.173 compared to preorders with a utility value of -0.173 . Regarding the

availability attribute, it can be interpreted that for consumers who buy traditional herbal medicine, which is always available, satisfaction will increase by 0.173. Consumers who buy preorders will decrease satisfaction by 0.173.

Traditional herbal medicine, which is always available, is preferred by consumers because it makes it easier to fulfill their needs for traditional herbal medicine. This research is supported by the theory [12], which states that supplies that are always available are considered by consumers in choosing a product.

Convenience

For the convenience attribute, consumers prefer COD services with a utility value of 0.044 compared to location proximity with a utility value of -0.044 . Regarding the convenience attribute, it can be interpreted that consumers who buy traditional herbal medicine with COD services will increase satisfaction by 0.044, and consumers who buy traditional herbal medicine located close to it will decrease by 0.044.

Consumers prefer COD services because they find getting traditional herbal medicine easier. This research aligns with findings [13], which state that consumers favor COD services, so they are a factor to be considered when purchasing a product. This research is consistent with the findings [13], which state that consumers favor COD services, so they are a factor to be considered when purchasing a product.

Security

On the composition attribute, consumers prefer hygienic traditional herbal medicine with a utility value of 0.001 compared to free of additives with a utility value of 0.001. Regarding the safety attribute, it can be interpreted that for consumers who buy hygienic traditional herbal medicine, satisfaction will increase by 0.001. For consumers who buy traditional herbal medicine free of additives, satisfaction will increase by 0.001.

Consumers prefer hygienic traditional herbal medicine because it can increase consumer confidence that traditional herbal medicine is free from disease germs or poisons that can endanger health so that its safety is guaranteed. This research is supported by research [14] which shows that hygiene is one of the most important factors affecting customer satisfaction. Products with hygienic labels are guaranteed to be clean.

Taste

For the taste attribute, consumers prefer a sweet taste with a utility value of 0.363 to a bitter taste with a utility value of 0.363. Regarding the taste attribute, it can be interpreted that for consumers who buy traditional herbal medicine with a sweet taste, satisfaction will increase by 0.363. For consumers who buy traditional herbal medicine with a bitter taste, satisfaction will decrease by 0.363.

Consumers prefer traditional herbal medicine with a sweet taste because, with a sweet taste in traditional herbal medicine, consumers can consume a delicious and healthy drink rather than a bitter taste that consumers consider unpalatable. This is supported by research from [15] that consumers consider the bitter taste of traditional herbal medicine unpleasant.

Composition

In the composition attribute, consumers prefer a composition label with a utility value

Table 3. Significant Value of Consumer Preferences

	Value	Sig.
Pearson's R	,971	,000
Kendall's tau	,799	,000

Source: Primary data processed (2022).

of 0.132 compared to no composition label with a utility value of -0.132 . Regarding the compositional attributes, it can be interpreted that for consumers who buy traditional herbal medicine that use the composition label, satisfaction will increase by 0.132. For consumers who buy traditional herbal medicine that does not use the composition label, satisfaction will decrease by 0.132.

Consumers prefer traditional herbal medicine with a composition label because it can inform them that the ingredients used in the manufacture of herbal medicine are safe for consumption and have benefits for maintaining health. This research is supported by research [8] which shows that the traditional herbal medicine that consumers prefer provides information on the composition of the ingredients for making herbal medicine which is guaranteed to be safe.

3.2 Predictive Accuracy Level of Conjoint Analysis Model

The level of predictive accuracy of the results of the conjoint analysis is shown by Pearson's and Kendall's Tau correlation values in Table 3.

Table 3 shows the level of accuracy of the prediction results of the conjoint analysis as shown by the Pearson's R-value of 0.000 and Kendall's tau of 0.000, meaning that the Pearson's R and Kendall's tau values are smaller than the error level of 0.05 so that this research is declared valid, then the Pearson's R-value of 0.971 means that the attributes used in this study influenced consumer preferences for traditional herbal medicine by 97.1%, while 2.9% were influenced by other attributes not used in this study.

4 Conclusion

Based on the study's results, it was shown that traditional herbal medicine that suits consumer preferences, namely traditional herbal medicine, which has a sweet taste, prices Rp. 5,000–Rp 10,000. Hygienic use herbal composition labels, original sugar guarantees, brand labels, and expired labels.

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