Consumers’ & producers’ perceptions of Wonogiri cashews, a-potential geographical indication snack

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Abstract. This study aims to analyze consumers’ and producers’ perceptions of Wonogiri cashew nut, a-potential geographical indication snack. The information used in this study was obtained from surveys carried out on 191 consumers and 61 producers of Wonogiri cashew nut. Descriptive research and cluster analysis were used to analyze consumers’ and producers’ perception and their characteristics. The result suggests that product differentiation was the most determined consumers’ choice, whereas consumer trust was the most determined producers’ choice to produce geographically indicated cashew nut. Two segments were observed for both consumers and producers, each with considerably different perceptions towards Wonogiri cashew nut, a potential geographical indication snack. Consumer education and monthly income enable the two segments of consumers to be differentiated. In comparison, producers’ age, years of work experience, and education level allowed the two segments to be distinguished.

1. Introduction
Cashew nuts are one of the types of nuts most consumed by the world, and their production continues to increase. In 2018 the global cashew nut production volume reached 5.93 million tons, an increase of almost three times compared to the production volume in 2000 of 2.08 million tons [1]. Cashew nuts are distributed globally, with significant cashew nut producers including Vietnam, India, Ivory Coast, the Philippines, and Indonesia. The quality of cashew nuts is often closely related to the area of origin, either due to natural factors, human factors, or a combination of these two factors. Therefore, when it is marketed, the name of the origin area is included as the name of the product. This product designation is known as a "geographical indication."

A geographical indication is a sign indicating the area of origin of certain goods and/or products which due to geographical environmental factors including natural factors, human factors, or a combination of these two factors gives particular reputation, quality, and characteristics to the goods and/or products produced [2]. Darjeeling tea, Kona coffee, Manchego cheese, and Talioune saffron are examples of the geographical origin products.

The number of registered geographical indication products is increasing because it is considered to positively impact for the sustainability of a product through protection from product falsification, strengthening market access, increasing product prices, and increasing production volume [3]. Initially, the geographical indication was used to respond to the consumer needs for 'traditional' and 'authentic' products. Still, recently geographical indication is considered one way to increase producer incomes and promote development in disadvantaged areas [4].
In Indonesia, there are two cashew nut products which have been registered as geographically indicated products, namely Muna cashew nut and Kubu cashew nut. With the wide distribution of cashew cultivation, there are several cashew nut products from other areas where have the potential to be registered as geographically indicated products, one of which is Wonogiri cashew nut [16]. Wonogiri regency is a cashew producing center in Central Java Province, Indonesia. In 2018, cashew nuts were a plantation commodity with the largest land area and production volume in Wonogiri regency [11]. According to [12], in 2017, cashew nut production in Wonogiri regency reached 7,765 tons. This number is equivalent to 89.89% of the total cashew nut production in Central Java Province or around 5.73% of the total national cashew nut production.

Apart from the close relationship between cashew quality and geographic origin, the perceptions of consumers and producers need to be considered in registering geographically indicated products. According to [5], the geographical indication label can encourage consumers to buy a food product. However, purchasing a geographical indication product is influenced by several other factors, such as the level of consumer income, consumer area of origin, consumer knowledge, culture, and product quality [5,6,7,19].

On the other hand, producers often feel less enthusiastic about applying quality certification, such as geographical indications [8], because they are considered costly due to more complex production and quality assurance processes [9]. However, according to [10], the application of geographical indications can be seen positively by producers when producers get better selling price, get broader market access, and gain consumer trust. Research on consumer and producer perception of Wonogiri cashew nut as a geographical indication product has never been done before. This study aims to analyze consumers’ and producers’ perceptions of Wonogiri cashew nut, a potential geographical indication snack, and identify both parties’-characteristics of consumers based on their perception.

2. Methods

2.1 Description of the respondents

Consumer respondents are consumers who have bought or consumed Wonogiri Cashew nuts, consisted of 191 respondents from six regions with the highest search results for the keyword 'Mete Wonogiri' on google trends, namely Central Java, Yogyakarta, Banten, East Java, West Java, and Jakarta Capital Region. The socio-demographic characteristics of the respondents are shown in table 1.

| Variables | Variables definition | Percentage |
|-----------|----------------------|------------|
| Gender    | Female               | 61%        |
|           | Male                 | 39%        |
| Age       | 26-35                | 47%        |
|           | 16-25                | 26%        |
|           | 36-45                | 17%        |
|           | 46-55                | 7%         |
|           | >55                  | 3%         |
| Education | Bachelor             | 52%        |
|           | High School          | 24%        |
|           | Postgraduate         | 15%        |
|           | Diploma              | 9%         |
|           | Junior High School   | 1%         |
| Monthly income (IDR) | >5,000,000       | 29%        |
|           | 3,500,001-5,000,000  | 24%        |
|           | 2,000,001-3,500,000  | 18%        |
|           | 500,001-2,000,000    | 15%        |
|           | <500,000             | 14%        |
Producer respondents are respondents who work as cashew craftsmen consisted of 61 people from three cashew production centers in Wonogiri. The respondents consisted of 69% male and 31% female. Furthermore, they were dominated by those with a high school education level. The socio-demographic characteristics of producer respondents are shown in table 2.

| Variables   | Definition       | Percentage |
|-------------|------------------|------------|
| Gender      | Male             | 69%        |
|             | Female           | 31%        |
| Age         | 36-45            | 38%        |
|             | 46-55            | 25%        |
|             | 26-35            | 16%        |
|             | > 55             | 15%        |
|             | 16-25            | 7%         |
| Experience  | 11-20            | 39%        |
| in cashew   | 1-10             | 31%        |
| production  | 21-30            | 23%        |
| (years)     | 31-40            | 7%         |
| Education   | High school      | 36%        |
|             | Elementary school| 28%        |
|             | Junior high school| 20%    |
|             | Bachelor          | 13%        |
|             | Diploma           | 3%         |

2.2 Survey design
The closed-question questionnaires, for both consumers and producers, contains two parts. The first part consists of questions related to the respondent’s socio-demographic information. The second part consists of questions about their perception of Wonogiri cashew nut as a potential geographical indication snack.

A 5-point Likert scale was used to assess the consumers’ and producers’ perceptions, where 1 = strongly disagree, and 5 = strongly agree. The question items given to the consumer questionnaire are based on previous studies conducted by [5,6,13]. The question items delivered to the producer questionnaire are based on previous studies conducted by [5,6,13,14,3]. The questionnaire’s initial design was then discussed with a panel of experts, such as the Wonogiri cashew nut producer association, Wonogiri Agriculture Agency, and the academicians.

2.3 Statistical analysis
Cluster analysis was carried out to classify consumer and producer respondents based on their perception of Wonogiri cashew nut as a potential geographical indication snack. In this study, cluster analysis was carried out using SPSS 25.0 software.

The steps taken in cluster analysis were as follows [15]: dividing data to form clusters; interpretation of the clusters formed to understand the characteristics of each cluster and compile a name or label that can accurately describe the characteristics of the cluster; validate the results of the clustering and describe the characteristics of each cluster so that it can explain how the clusters differ from one another through relevant dimensions, such as demographic dimensions. A contingency table and a chi-square value test was used to identify the most significant variables in separating the clusters.
3. Results and discussion

3.1 Consumer perception

The results of the Likert scale assessment regarding consumers’ perceptions of Wonogiri cashew nut as a potential geographical indication snack can be seen in Table 3. Before the consumer respondents are clustered, in general consumers agree that the registration of Wonogiri cashew nut as a geographical indication product can help the consumer differentiate products, guarantee product authenticity, increase consumer motivation to buy products, and help consumers get high-quality products. Therefore, consumers consider it is essential to include a geographical indication label on Wonogiri cashew nut and support the registration of Wonogiri cashew nut as a geographical indication product. The finding corroborates the previous studies, showing that consumers tend to buy products with a geographical indication label to guarantee of quality and product authenticity [6]. However, consumers less agreed to pay more for Wonogiri cashew nut labeled as geographical indication products. According to [13], although products with an origin label can increase the Willingness to Pay (WTP) of consumers, the geographical indication label does not.

| Variables                          | Before clustering | After clustering |
|------------------------------------|-------------------|-----------------|
|                                    |                   | Cluster 1 (n=92) | Cluster 2 (n=99) |
| Product differentiation            | 4.32              | 4.82            | 3.87            |
| Product authenticity               | 4.23              | 4.77            | 3.73            |
| Product quality                    | 4.15              | 4.64            | 3.70            |
| Consumer support                   | 4.22              | 4.61            | 3.87            |
| Motivating consumer to buy the product | 4.18            | 4.60            | 3.79            |
| Willingness to Pay                 | 3.57              | 4.04            | 3.13            |
| Importance of GI label             | 4.05              | 4.32            | 3.80            |

After the cluster analysis was carried out, based on consumers’ perceptions of Wonogiri cashew nut as a potential geographical indication snack, consumer respondents were divided into two clusters (see Table 3). Cluster 1 has a higher average Likert score for each question item showing that respondents in Cluster 1 have a positive perception towards Wonogiri cashew nut as geographical indication product. Furthermore, Cluster 1 is called the "Optimistic Consumer" cluster. Cluster 2 has a lower average Likert score on each question item, where the Willingness to Pay question item gets the lowest Likert score. Thus, Cluster 2 is called the “Realistic Consumers” cluster.

3.2 Producer perception

The results of the Likert scale assessment regarding producers’ perceptions of Wonogiri cashew nut as a potential geographical indication snack can be seen in Table 4. Before the producer respondents are clustered, in general producers agree that the registration of Wonogiri cashew nut as a geographical indication product can help to increase consumer trust, broaden market access, and get better selling prices. Therefore, producers provide support for the registration of Wonogiri cashew nut as a geographical indication product. The finding corroborates the previous studies, showing that producers consider geographical indications can increase consumer trust, market access, and product selling prices [10]. However, producers less agreed if the registration of Wonogiri cashew nut as a geographical indication product will be able to protect the product from falsification and consider the geographical indication label on the product is less important. According to [10], higher production costs, and complex processes in producing geographical indicated product is the most consideration by producers, especially small and micro producers.
Table 4. Producer average Likert score

| Variables                | Before clustering | After clustering |
|--------------------------|-------------------|------------------|
|                          |                   | Cluster 1 (n=40) | Cluster 2 (n=21) |
| Increase market access   | 4.02              | 4.45             | 3.19             |
| Importance of GI label   | 3.75              | 4.22             | 2.86             |
| Consumer trust           | 4.13              | 4.55             | 3.33             |
| Increase selling price   | 4.02              | 4.38             | 3.14             |
| Producer support         | 4.07              | 4.38             | 3.48             |
| Product authenticity     | 3.77              | 4.17             | 3.00             |

After the cluster analysis were carried out, based on the producers' perception of Wonogiri cashew nut as a potential geographical indication snack, producer respondents were divided into two clusters (see table 4). Cluster 1 has a higher average Likert score on each question item showing that producer respondents in Cluster 1 have a positive perception towards Wonogiri cashew nut as a geographic indication product. Furthermore, Cluster 1 is called the "Optimistic Producer" cluster. Cluster 2 has a lower average Likert score. Moreover, Cluster 2 is called the "Pessimistic Producer" cluster.

3.3 Segmentation of consumer

The characterization of the two clusters was carried out using the socio-demographic information of respondents. The characteristics of the Wonogiri cashew consumer cluster can be seen in table 5.

Table 5. Consumer clusters characteristics

| Variables             | Cluster 1 (n=92) | Cluster 2 (n=99) |
|-----------------------|------------------|------------------|
| Gender (%)            | Male: 34.78      | Male: 42.42      |
|                       | Female: 65.22    | Female: 57.58    |
| Age (mean)            | 32.35            | 31.81            |
| Education (%)*        | Senior high school: 13.0 | Senior high school: 33.4 |
|                       | Diploma: 7.6     | Diploma: 10.1    |
|                       | Bachelor: 63.1   | Bachelor: 41.4   |
|                       | Postgraduate: 16.3 | Postgraduate: 13.1 |
| Monthly income (mean)*| IDR 3,866,848.45 | IDR 2,643,939.65 |

*p-value < 0.01

Four socio-demographic variables of the respondents, i.e., gender, age, education, and monthly income, were used to analyze the characteristics of the clusters formed. The education variable (p-value<0.01) and the respondents’ monthly income (p-value <0.01), both were able to discriminate the clusters. Furthermore, it can be said that there is a close relationship between the level of education and the respondents’ level of income with the cluster membership that is formed. Cluster 1 or the "Optimistic Consumers" is dominated by respondents with a bachelor's level of education (63.1%) and respondents with a postgraduate level of education (16.3%). Cluster 2 or cluster "Realistic Consumers", although still dominated by respondents with a bachelor's level education, the proportion is lower (41.4%). Based on monthly income, respondents in Cluster 1 have a higher average income than respondents in Cluster 2.

This indicates that the level of education and income levels of consumers affect consumer perception of Wonogiri cashew nut as a potential geographical indication snack. According to [6], the geographical indication label on a product can be a purchase motivation for consumers who already
have adequate knowledge and understanding. Besides, consumer income level also affects Willingness to Pay (WTP) on geographical indication products [13].

3.4 Segmentation of producer

The characterization of the two clusters was carried out using socio-demographic information of producer respondents. The characteristics of the Wonogiri cashew producer cluster can be seen in table 6.

| Variables                      | Cluster 1 (n=40)           | Cluster 2 (n=21)           |
|--------------------------------|---------------------------|---------------------------|
| Gender (%)                     | Male: 70                  | Male: 67.7                |
|                                | Female: 30                | Female: 33.3              |
| Age (mean)*                    | 39.2                      | 50.03                     |
| Years of working experience (mean)* | 13.8                      | 20.3                      |
| Education (%)                  | Elementary school: 17.5   | Elementary school: 47.6   |
|                                | Junior high school: 12.5  | Junior high school: 33.3  |
|                                | Senior high school: 47.5  | Senior high school: 143   |
|                                | Diploma: 2.5              | Diploma: 4.8              |
|                                | Bachelor: 20              | Bachelor: 0               |

*p-value < 0.01

Four socio-demographic variables of the respondents, i.e., gender, producers’ age, years of working experience, and education level were used to analyze the characteristics of the cluster formed. The producers’ age variable (p-value < 0.01), years of working experience (p-value < 0.01), and education level (p-value < 0.01) were able to discriminate the clusters. Furthermore, it can be said that there is a close relationship between the producers’ age, years of working experience, and the education level with the cluster membership. Cluster 1 or the "Optimistic Producers" consists of producers with an average age of 39.2 years. Cluster 2 or the "Pessimistic Producers" consists of producers with an average age of 50.03 years. Based on the working period, Cluster 1 consists of producers who have worked for an average of 13.8 years. Cluster 2 consists of producers who have worked for an average of 20.3 years. Based on the education level, Cluster 1 is dominated by respondents with a high school education level (47.5%). Cluster 2 is dominated by respondents with a primary education level (47.6%).

This indicates that the producers’ age, years of working experience, and education level affect the producers’ perceptions of Wonogiri cashew nut as a potential geographical indication snack. The finding corroborates the previous research conducted by [10]. Producers with adequate understanding and younger age will look more optimistically on the application of geographical indications to a product.

3.5 Recommended action

This study found that consumers with higher education levels and higher monthly income tend to have positive perceptions of Wonogiri cashew nut as a potential geographical indication snack in Indonesia. This result corroborates the previous study which stated that geographical indication product as a premium product [17]. On the other hand, producers with younger age and higher education levels also tend to have optimistic perceptions of Wonogiri cashew nut as a potential geographical indication snack in Indonesia. Therefore, the younger and optimistic producers can adopt the marketing and distribution strategy for geographical indication products developed by [18] as follows:

- Product strategies: producers might focus on product identities by transforming symbolic and service features of the product.
• Communication strategies: producers should consider building campaigns that highlight a particular issue related to their products, i.e., local development, environment, etc.
• Pricing strategies: a willingness to pay a premium for geographical indication products had been found in several studies, but the extent of the premium would vary with the consumers’ experience with the product.
• Distribution strategies: a geographical indication product considered as a premium. Thus, selling through supermarkets, premium retailers, and specialized outlets are recommended.

4. Conclusion
This study analyses consumers’ and producers’ perceptions of Wonogiri cashew nut as a potential geographical indication snack. Furthermore, it identifies consumers’ and producers’ segments based on their perception with a series of socio-demographic variables.

The result suggests that product differentiation was the most determined consumers’ choice, whereas consumer trust was the most determined producers’ choice to produce geographical indicated product. Two segments were observed for both consumers and producers, each with considerably different perceptions of Wonogiri cashew nut, a potential geographical indication snack. Education and income level positively affected the consumers’ perception. In comparison, producers’ age, years of working experience, and education level allowed the two segments of producers to be distinguished. Consequently, the regulatory bodies and producer associations should consider this segment of consumers and producers to analyze their tendencies with the aims of establishing future policies and strategies to encourage greater adoption of the geographical indication for Wonogiri cashew nut product.

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