

Correspondence Analysis in Forming a Consumer Image Map of Durian Fruit in Wonosalam, Jombang Regency

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Abstract

This research aims to determine the consumer image map of superior products (local Durian, namely Bido Durian) in Wonosalam, Jombang Regency. This research was conducted in Wonosalam Village, Jombang Regency. The Samples were taken using the Accidental Sampling method. The number of samples in this research was 100 respondents. The Data were analyzed using the Correspondence Analysis Method. The results showed that Bido Durian as a superior and local commodity has the same 6 attributes that are used as references, includes the taste, price, flesh thickness, aroma, texture and flesh color with Musang King Durian. Meanwhile, the other 2 attributes like the aroma, price and flesh color, are similar to Montong Durian. The results also showed that this local superior durian, namely Bido Durian, is not inferior to durian from abroad or imported. So that, farmers and the government must provide support to increase the productivity of Bido Durian.

Keywords: Correspondence; Bido Durian; Map Image.

Introduction

Durian is a tropical plant (*Durio.zibethinus.Murray*) originating from humid tropical climates in Southeast Asia, such as Indonesia, Thailand and Malaysia (Arum et al. 2013). The term "The King of Fruit" comes from the fruit's hard skin and sharp curves that resemble thorns, as well as the name of an edible fruit (Ide, 2011). The morphology of durian fruit varies depending on the variety, durian fruit has its own distinctive taste and texture, specifically the sweet, bitter, higher alcohol content, yellow and whitish yellow flesh color, thick flesh, small seeds or large seeds, the color of the skin when it is young is green, when it is old then it is turned into yellow until brownish yellow and has thorns (Tirtawinata, 2016). For durian lovers, durian has an addictive taste and the aroma.

Durian production in Indonesia in 2022 reach 1.71 million tons. This number increased by 26.64% compared to 2021 of 1.35 million tons. East Java is the largest contributor to durian production, reaching 419,849 tons in 2022 (BPS, 2022). Jombang Regency is one of the areas with a fairly large level of durian production. Wonosalam is one of the sub-districts in Jombang Regency which is famous for its Durian fruit.

Based on the table above, it can be seen that in 2015 Durian fruit production was 129,247 kw with a productivity of 48.64 kg/ha, in 2016 Durian fruit production was 118,976 kw with a productivity of 80 kg/ha, in 2017 Durian fruit production was 158,751 kw with a productivity of 82 kg/ha. ha, in 2018 Durian fruit production was 213,992 kw with a productivity of 82 kg/ha. Durian fruit production and productivity always increases in 2015-2018. Durian Bido is a Durian with a superior variety (germplasm) which is recognized by the government based on the Decree of the Minister of Agriculture No. 340/Kpts/SR.120/5/2006. Apart from that, Bido durian is an endemic plant and is a local fruit plant that is also experiencing scarcity, lately.

Even now in Wonosalam, it is difficult to find Bido Durian, but you will find the varieties that are not originally to Wonosalam such as Musang King, Montong which come from Malaysia and Singapore. This problem will have an impact on the loss of local product varieties and will lose the identity of local superior varieties. Therefore,

it is important to conduct a Perceptual Mapping study which can support the Green Economy program to improve environmental sustainability as well as improve local superior products. This research aims to determine the consumer image map of superior products (Local Durian, namely Bido Durian) in Wonosalam, Jombang Regency.

Table 1. Harvest Area, Production and Productivity of Durian in Wonosalam, Jombang District.

Number	Year	Harvest Area (ha)	Production (kw)	Productivity (kg/ha)
1	2015	265.716	129.247	48.64
2	2016	148.721	118.976	80
3	2017	193.599	158.751	82
4	2018	260.975	213.992	82

Source: Jombang Regency Agricultural Service, 2019

METHODS

This research was purposively carried out in Wonosalam Village with the consideration that it is one of the largest Durian producing villages in Jombang District and the four varieties of durian that will be analyzed are found at the research location, so the information obtained is expected to represent the consumer's image of Bido Durian. The Samples were taken using the Accidental Sampling Method. The number of samples in the research was 100 respondents. Consumer image mapping of Bido Durian fruit was obtained using the correspondence methods.

Results And Discussion

Correspondence Analysis

Correspondence analysis is an analysis technique that can produce a map of an object or individual based on its attributes (Chang, et. al 2013). In accordance with the aim of the research, which is to find out the consumer image map of the Bido Durian fruit, correspondence analysis was carried out. The results of this analysis will show the consumer's image of the other 4 Durians. The consumer's image can be used as a recommendation for producers to innovate their products in the future.

Principal Inertia Values (Eigen)

According to Zare (2012) Inertia or inersia is a coefficient that states the proportion of variance that has been explained by a dimension. In multiple correspondence analysis the main inertia value is divided into 2, namely the main inertia value for the indicator matrix and the main inertia value for the Burt matrix.

Table 2 above, shows that the Cronbach's Alpha column in Dimension 1 is 0.683 and in Dimension 2 it is 0.502. The Inertia column seen in Dimension 1 shows the number 0.387, it means that the main inertia value for the first dimension is 0.387. This value explains the proportion of matrix variance contained in the correspondence graph plot. In the "% of Variance" column the number 38,692 or 38% is written. The meaning of this value is that the proportion of the main inertia of the indicator matrix to the total inertia (in (J)) for one-dimensional mapping is able to explain the diversity of data and the level of clarity in the correspondence graph is 38%. Referring to Pangastuti et.al. (2013), shows that the inertia value for Dimension 1 in the column (Eigenvalue) is 0.2417, meaning that the main inertia value or eigenvalue in the first dimension is 0.2417. Meanwhile, in the "percentage of variance" column, the number 8.9040 or 8.90% is written.

Table 2. Main Inertia Values (Eigen)

Dimension	Cronbach's Alpha	Variance Accounted For		
		Total (Eigenvalue)	Inertia	% of Variance

1	.683	2.321	.387	38.692
2	.502	1.719	.286	28.648
Total		4.040	.673	
Mean	.606	2.020	.337	33.670

Source: Processed Data, 2023

Table 3. Indicator Matrix Column Profile Coordinates

	Dimension		Mean
	1	2	
Price	.263	.129	.196
Taste	.484	.451	.468
Texture	.336	.100	.218
Flesh Color	.511	.345	.428
Flesh Thickness	.552	.345	.448
Aroma	.176	.348	.262
Active Total	2.321	1.719	2.020
% of variance	38.692	28.648	33.670

Source: Processed Data, 2023

Indicator Matrix Column Profile Coordinates

The column profile coordinates of the indicator matrix are the main coordinates of each category in determining the position of each category in the subspace of each dimension in the indicator matrix (Konig 2010). The column profile coordinates of the indicator matrix can be seen in Table 3. From Table 3 above, it can be seen that the "Taste" attribute in the "dim1" column has a number of 0.484 and in "dim2" it is 0.451 with a mean value of 0.468. This means that the flavor coordinates in the second dimensional subspace for the indicator matrix are (0.484, 0.451). This value can be used to read the correspondence analysis plot. The distance between plots can be seen from the values of dimension 1 and dimension 2 as well as other attributes, such as taste, texture, meat color, meat thickness and aroma. According to Umar, (2019), showing the "Brand" attribute column in the "dim1" column, there is a number of 0.733 and in "dim2" it is 0.459 with a mean value of 0.596.

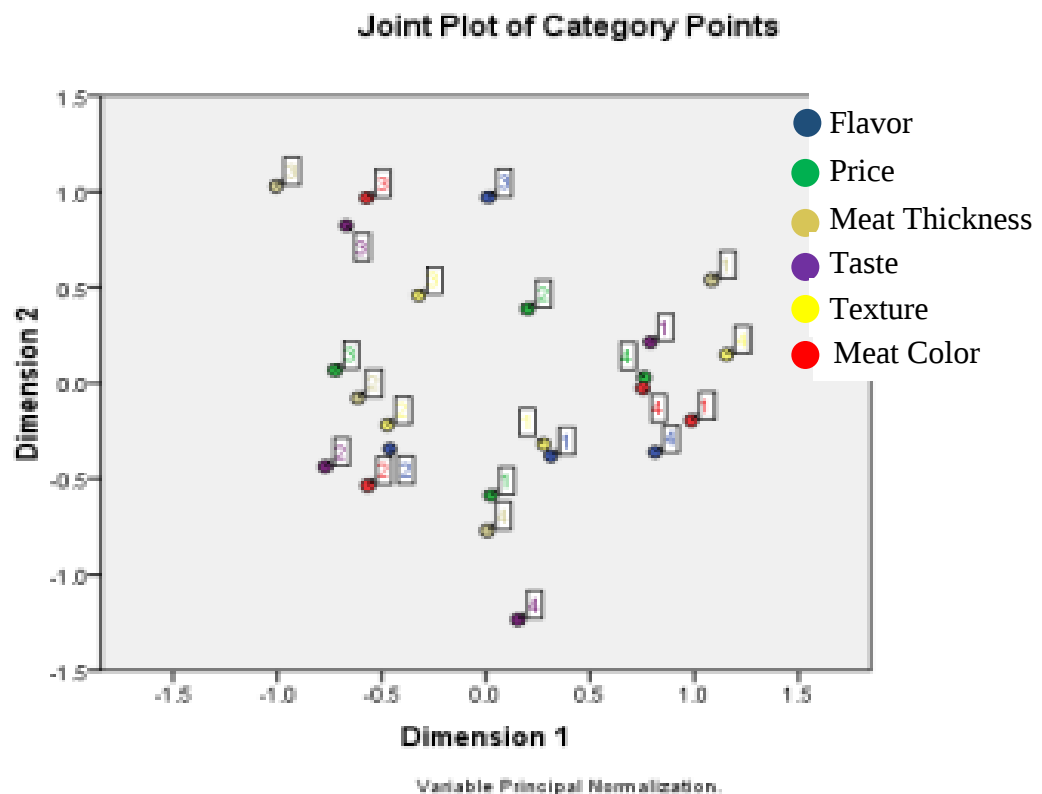


Figure 1. Consumer Image Map of Bido Durian Fruit

Description: 1 = Bido Durian, 2 = Montong Durian, 3 = Wonosalam Local Durian, 4 = Musang King Durian

Chart Interpretation

Plot coordinates are obtained based on Table 3, for Dimension 1, Dimension 2. Interpretation of the results of two-dimensional mapping graphs from multiple correspondence analysis is based on the distance between coordinate points (Zare 2012). A graph of the consumer image map of Wonosalam's superior product (Local Durian, namely Bido) it can be seen in figure 1. The consumer image map graph is used to read the similarity to superior products (Local Durian, namely Bido Durian) Wonosalam from predetermined attributes. These attributes include texture, flesh color, flesh thickness, and aroma.

Based on Figure 1, it shows that in terms of taste, Durian fruit number 1 (Durian Bido) is similar to number 4 (Durian Musang King) to differentiate it from other Durians. There are also similarities in the taste of Montong Durian fruit with the Wonosalam local Durian fruit. This research is comparable to Salaki (2017), the results obtained that Sampoerna A Mild was chosen because it provides pleasure and freedom compared to other cigarettes and makes your appearance more attractive and if you find a suitable brand you will not look for another brand.

The next attribute in terms of aroma of durian fruit number 1 (Durian Bido) is similar to durian number 4 (Musang King Durian). The aroma attribute of durian fruit is that the aroma is very strong and pungent and the aroma does not leave a strong odor on the hands when consumed. This research is comparable to Vita (2020) which states that a slightly pungent aroma has a positive utility value of 0.024, meaning that consumers prefer Durian which has a slightly pungent aroma. The sweet taste attribute also has a positive utility value, namely 0.421, meaning that consumers prefer Local Durian with a sweet taste so that overall consumers prefer Local Durian which is characterized by its large size, slightly pungent aroma and sweet taste. This is because consumers want a large amount of *Pongge*, an aroma that will not leave a strong odor in the hands when consumed and a sweet taste, not bitter sweet, because in general, some Durians that have a bitter sweet taste are Durians that are too ripe, so they

release alcohol which triggers a bitter taste on Durian. The next attribute in terms of the thickness of the flesh of durian number 1 (Durian Bido) is similar to durian number 4 Durian (Musang King), durian bido has a fairly thick flesh thickness because the durian fruit seeds are very small, it has similarities with the Musang King Durian. This research is comparable to Putri et.al (2012) states that consumers can make a decision rationally, they choose the best to maximize the satisfaction they can achieve with the limited budget they have for the process of purchasing the goods and services they want.

The next attribute is that the texture of Durian number 1 (Bido Durian) is similar to durian number 4 (Musang King Durian), while durian number 3 (Wonosalam Local Durian) is similar to number 2 (Montong Durian), Bido Durian has an almost similar texture, with other durians, soft and the texture is one of the considerations for consumers when buying Durian fruit. Consumers think that the soft texture of Durian fruit will affect the aroma and taste of the Durian fruit. This research is comparable to Umar (2019) who stated that a rough texture will leave residue or dregs. In the previous discussion, TOP White Coffee, ABC White Coffee, KOPIKO White Coffee have residue or dregs. The smooth texture found in white coffee number 1 (Luwak White Coffee) and soft in white coffee number 3 (Kapala Api White) will taste delicious when brewed with hot water so there is no dregs or residue. Texture is a consideration for consumers when buying white coffee. Consumers are of the opinion that the smooth texture of white coffee will have an impact on its thickness and enjoyment in the mouth.

The next attribute is the flesh color of Durian number 1 (Bido Durian) which is similar to Durian number 4 (Musang King Durian). Durian fruit has various flesh colors such as light yellow, dark yellow, and slightly orange yellow, consumers tend to choose durian with flesh color yellow because they think that Durian which has flesh color, has a sweet and slightly bitter taste.

Conclusion

From the image map, the local Wonosalam Durian (Bido Durians) are have similarity in terms of taste, aroma, the flesh thickness, texture and flesh color with the Montong Durian. This indicates that the local superior Durian is not inferior to durian from abroad or imported. So farmers and the government must provide support to increase the productivity of Bido Durian.

References

- [1] Buana, Arum, 2013. *Pengaruh Pemberian Kombinasi ZPT UBA dan BAP terhadap Pertumbuhan Kalus Akasia (Acacia Mangium) pada Media MS. Skripsi.* Jurusan Biologi Fakultas Sains dan Teknologi Universitas Islam Negeri Maulana Malik Ibrahim Malang.
- [2] BPS. 2022. Statistik Indonesia. Badan Pusat Statistik. Jakarta. www.bps.go.id. Diunduh pada 17 Oktober 2023.
- [3] Chang, M.J, Taly, F.J, Erb I, Sung, Y.T, Hsu, L.W, Tang, Y.C, Notredame C, Chia, Y.S. Efficient and interpretable prediction of protein functional classes by correspondence analysis and compact set relations. PLOS ONE, Vol. 8, No. 10, pp:1- 11
- [4] Ide, P. (2011). Health Secret of Durian-Pangkalan Ide. PT Elex Media Komputindo.
- [5] Khasan, Umar dan Elys Fauziyah. 2019. Pemetaan *Image* Konsumen Terhadap Produk *White Coffee* Di Hypermart Bangkalan (Vol. 13 No 2). Jurnal Manajemen Pemasaran.
- [6] Pangastuti A. Mukid Abdul M dan Sudarno. 2013. Pemetaan persepsi merk laptop di kalangan mahasiswa menggunakan analisis korespondensi berganda. (Studi Kasus: Mahasiswa Universitas Diponegoro Semarang). Jurnal Gaussian. Vol. 2 , No.3, pp: 167-176.
- [7] Salaki Tineke D. 2007. Kecenderungan konsumen memilih merek rokok dengan analisis korespondensi. Jurnal Ilmiah Sains. Vol. 7, No. 1, pp: 87- 92.
- [8] Tirtawinata, S, A. (2016). Durian: Pengetahuan dasar untuk pencinta durian. In Journal Ekonomi dan Bisnis Indonesia(Vol. 23, p. 146). agrFlo (Penebar Swadaya Group)
- [9] Vita, Kusuma et.al. 2020. Analisis Preferensi Konsumen Terhadap Pembelian Duiian Lokal Di Kota Semarang (Vol. 4 No 1 : 87-96). JEPa.
- [10] Zare N, Shahsavari S, Mehrabani D, Firozi, S.M. Migraine Risk Factors in Qashqai Migrating Nomads: An Adjusted Multiple Correspondence Analysis Approach. Pak J Med Sci. Vol. 28, No. 3, pp: 560-563.