



(RESEARCH ARTICLE)



Correlation analysis of rice attributes and socio demographic in Palembang, South Sumatera, Indonesia

Romadhon Julkhaidar ^{1,*}, Yazid Muhammad ², Mulyana Andy ² and Yunita ²

¹ Doctoral Student Agriculture Science Faculty of Agriculture, Sriwijaya University, Indonesia.

² Departement of Agribusiness Faculty of Agriculture, Sriwijaya University, Indonesia.

Publication history: Received on 03 February 2020; revised on 17 February 2020; accepted on 21 February 2020

Article DOI: <https://doi.org/10.30574/wjarr.2020.5.2.0033>

Abstract

Rice is the primary food needs of the people of Indonesia. Currently the characteristics of rice already are considered by consumers as the basis for consumer preference. This study aimed to analyze the relationship between rice attributes preferences and socio demographic in Palembang. The study was conducted in the vicinity of Palembang, from May to September 2019. A total of 329 respondents were surveyed to represent consumer preference. The data were analyzed using Spearman correlation. The results showed that the age of the respondent is positively related to the variety attribute. Educational background of respondents is negatively related to the attributes of varieties. The monthly income level of respondents is negatively related to the attributes of durability, varieties, rice heads. The other side, the monthly income level of respondents is positively related to the attributes of foreign objects, residues and services.

Keywords: Rice attributes; Socio demographic; Spearman correlation.

1. Introduction

The main staple food of Indonesian society to date is rice. Consumers still consider it important to eat rice. Non-rice food does not seem to be able to replace the role of rice as a staple food [1, 2]. The Indonesian government put rice as a strategic commodity which must always be available at any time. Over time, changes in consumption patterns of the rice has experienced a shift from medium-quality rice to premium rice (high quality).

Consumers do not only consume the product but to consider the characteristics inherent in the product that are linked to consumer preferences or utilities. All the characteristics of the product, including its price and quality, are taken into account during the process of decision-making [3]. Preference as a choice ranking. This type of preferences is a straightforward decision between a specific range of choice options and their attributes, by making a ranking from the least to the most preferable [4].

The preference to buy local food could be linked to attitudes, behaviors, and personality characteristics of the consumer [5, 6]. Attribute of products is one of the determining factors for consumers in making consumption decisions [7, 8]. The attributes of food have become a major criterion in the decision making process of consumers. In addition, the intrinsic and extrinsic attributes also here great influence on consumer perception in assessing the quality of food [9, 10].

Most mainstream economists agree that preferences are formed with time and the more experience consumers gain the more stable are the preferences [11]. The construction of preferences for a new product (new experience for a consumer) is made at the moment of its first meet or/and purchase or/and consumption. The construction of preferences, following [3], is based on the comparison of attributes alternatives with the choice set. The attributes are ranked by their importance and an optimal alternative is chosen.

* Corresponding author

E-mail address: romadhonjulkhaidar@gmail.com

Personal and cultural values, being a stable part of a personality are present in individual's everyday life. Consumption is an essential part of individual's life as well. Support the idea that cultural values and socialization of an individual have an important role in consumers' decisions about consumption of habitual products due to attachment, traditions and loyalty [12, 13]. In turn, some attributes and their levels may become important in the eyes of consumers due to their call to individual's cultural values [14]. Extend literature proves the differences in consumer choices across countries, cultures and nationalities

South Sumatra Province is known as the center and is one contributor to the production of rice in Indonesia. Estimated total rice production in South Sumatera in 2018 was 2.65 million tons which, if converted into rice was 1.5 million tons. Consumption of rice in South Sumatra from January to December 2018 was estimated at about 824.29 thousand tons [15]. Palembang has diverse community structure that includes culture, lifestyle, education and employment, and the economy which is reflected in everyday life. The diversity naturally affects the people in the city in decision making consumption of a product, including the consumption of rice. Sako, Kalidoni and Ilir Timur II are districts that represent the most prevalent population other districts in Palembang. The sub-district has a population with a background in social status varies greatly from lower class, middle, and upper and rice obtained by way of purchase (not produce their own).

The purpose of the article is to analyze the relationship between rice attributes preferences and socio demographic in Palembang.

2. Material and methods

This research was conducted in the city of Palembang. This city was selected for: (1) residence of households consuming rice with quality reference, (2) place of various types of rice retailers from traditional to modern sellers. Data collection was conducted in May-September 2019.

This study uses both primary data and secondary data. Primary data include characteristics of respondents and their rice preference obtained through direct interviews using questionnaire. Secondary data include demographic profiles of study sites related to rice consumption preference. The study sites were divided into 3 sampling areas based on income level of residents. District Kalidoni represents with high income households, District Ilir Timur II represents with middle income households and District Sako represents with lower income households. Distribution of sample households is presented in Table 1.

Table 1 Socio-demographic profile of respondents

Districts	Number of Sample	%
Sako	113	34.4
Ilir Timur II	116	35.3
Kalidoni	100	30.3
Total	329	100

Note: Field survey results (2019)

2.1. Variables

This study uses two variables consisting of independent and dependent variables. Independent variables as predictor of attributes preference consumer include demographic variables, while dependent variables include attributes of rice based on preferences consumer (1= strongly unimportant, 2= unimportant, 3= neutral, 4= important, 5= strongly important). Distribution of independent and dependent variables is presented in Table 2.

Table 2 Independent and dependent variables

Independent variables	Dependent variables
Demographic Variables	Attributes of rice
Age	Soft texture
Gender	Durability
Number of family members	Flavour
Educational background	Aroma
Occupation	Volume Expansion
Monthly income	Shapes
	Rice heads
	Broken grains
	Grain groats
	Chalky grains
	Whiteness
	Foreign object
	Residue
	packaging
	Brands
	Information
	Service
	Diversity
	Suppliers
	Family reference
	Friend reference
	Advertisement
	Availability

Consumer's preference on rice attributes was analyzed using with correlation spearman. The Spearman correlation coefficient is a measure of how well the relative rankings of observations correlate. The resulting value of the calculation is between + 1 and -1. Values of + 1 and -1 signify exact positive and negative linear relationships respectively, while a correlation coefficient of 0 indicates that a linear relationship does not exist between two variables. The further away from 0 the correlation coefficient is, the stronger the correlation between two variables is.

A correlation exists between two measures or variables if there is some semblance of a linear relationship between them, and a correlation coefficient is a measure of the strength of that linear relationship. A positive correlation coefficient indicates that a high value of one variable is associated with a high value of the other. A negative correlation coefficient indicates that a high value of one variable is associated with a low value of the other.

Formula Correlation Rank Spearman:

$$r_s = \frac{6x \sum_{i=1}^n D^2}{nx(n^2 - 1)}$$

Where:

R_s =Rank Spearman; d_i = difference in paired ranks; n = number of cases; 1 and 6 = constant

3. Results and discussion

3.1. Profile of respondents

The distribution of demographic profile of respondents is shown in Table 3. The total sample comprises 65.9% male and 34.1% female. The age of respondents was grouped into three categories; below 35 years or below, 36 to 49 years old, and 50 years or more. Almost one half of respondents are aged 35 years or below. Respondents' range of income was grouped into three, below Rp 2.999.000, Rp 3.000.000-Rp 9.999.999, up to Rp 10.000.000 About 37.1% were from below Rp 2.999.000, 53.5% from Rp 3.000.000-Rp 9.999.999, 9.4% up to Rp 10.000.000. For respondents' employment, the categories of employment were divided into four categories. The categories were; the government sector, private sector, housewife and others 51.0% were working with the government, 25.6% were from private sector, 13.1% were housewife and 10.3% were others. Respondent's education level was categorized into elementary school, junior high school, senior high school, diploma, bachelor and postgraduate. Respondents stated the highest level of education obtained when answering questionnaires. About 2.7% have attended elementary school, 4.6% have attended junior high school, 20.1% have attended senior high school, 6.1% have attended diploma, 55.3% have attended bachelor and 11.2% have attended postgraduate.

Table 3 Socio-demographic profile of respondents

Socio Demographic	Characteristics	Number (N = 329)	%
Age	≤35 years	149	45.3
	36-49	106	32.2
	50 up	74	22.5
Gender	Male	217	66.0
	Female	112	34.0
Number of family members	3	130	39.5
	4-5	151	45.9
	> 5	48	14.6
Educational background	Elementary School	9	2.7
	Junior High School	15	4.6
	Senior High School	66	20.1
	Diploma	20	6.1
	Bachelor	182	55.3
	Postgraduate	37	11.2
Occupation	Government officer	169	51.0
	Private sector worker	84	25.6
	Housewife	43	13.1
	Others	34	10.3
Monthly income	Below Rp 2.999.999	122	37.1
	Rp 3.000.000-9.999.999	176	53.5
	Up Rp > 10.000.000	31	9.4
Job Pairs	Government officer	91	27.6
	Private sector worker	151	45.9
	Housewife	46	14.0
	Others	41	12.5
Marital status	Single	0	0.0
	Married	329	100

Note: Field survey results (2019)

3.2. Correlation Spearman

The Spearman correlations each of the between rice attributes preference and socio demographic were statistically significant ($P < 0.01$). The results are presented in Table 4.

Table 4 Analysis correlation spearman

Attributes Product	Socio-demographic profile of respondents					
	Age	Gender	Number of family members	Educational background	Occupation	Monthly income
Soft texture	-0.008	-0.082	0.036	0.014	0.111*	0.046
Durability	-0.089	-0.008	-0.004	-0.082	0.157**	-0.143**
Flavour	0.045	-0.125*	0.020	-0.088	0.072	-0.045
Aroma	-0.040	-0.076	0.030	0.022	0.036	0.107
Volume Expansion	-0.065	0.006	0.018	-0.022	-0.029	0.044
Shapes	0.149**	-0.090	0.064	-0.142*	0.086	-0.121**
Rice heads	0.037	-0.013	0.044	-0.171**	0.155**	-0.124**
Broken grains	0.037	-0.013	0.001	0.068	-0.075	0.020
Grain groats	0.070	-0.036	0.018	0.047	-0.067	0.045
Chalky grains	0.032	-0.061	0.069	0.032	-0.067	0.010
Whiteness	-0.015	-0.083	0.015	0.035	-0.036	0.025
Foreign object	-0.078	0.004	-0.041	0.100	-0.067	0.173**
Residue	-0.086	0.021	-0.090	0.108	-0.010	0.165**
packaging	0.041	-0.013	-0.001	-0.021	0.019	0.073
Brands	0.070	-0.065	0.045	-0.067	0.080	-0.090
Information	0.066	-0.070	-0.063	0.026	0.006	0.018
Service	-0.062	0.036	-0.077	0.102	-0.085	0.168**
Diversity	0.056	-0.032	0.081	-0.041	-0.043	-0.107
Suppliers	0.057	0.016	-0.035	-0.019	0.020	0.021
Family reference	-0.003	-0.017	-0.042	-0.043	0.008	0.002
Friend reference	0.007	-0.059	-0.028	-0.014	-0.004	0.009
Advertisement	0.044	-0.008	0.040	0.082	0.050	0.055
Availability	-0.037	-0.020	0.011	0.082	0.115*	-0.091

** = correlation is significant at the 0.01 level (2-tailed)

* = correlation is significant at the 0.05 level (2-tailed)

The age of the respondent is positively related to the variety attribute. The older the respondent's age, the higher the level of importance of respondents to the attributes of varieties. This means that the younger the respondent's age means the lower the level of importance to the attributes of shapes. In other words, young respondents did not particularly question the attributes of shapes in rice. This situation can be caused by the higher level of awareness and knowledge of respondents. The level of durability of food quality during storage is strongly influenced by the initial quality of stored raw materials, storage systems, as well as the introduction of preservatives during storage either by spraying insecticides, posfin gas or carbon dioxide [16]. Rice that has more whole grains certainly has a longer shelf life when compared to rice with broken or more groats.

Educational background of respondents is negatively related to the attributes of shapes. This means that the higher the respondent's education level, the lower the level of respondent's importance to the attributes of shapes and head rice. This means that the lower level of education of the respondent means the higher level of importance to the attributes of shapes and head rice.

The monthly income level of respondents is negatively related to the attributes of durability, shapes, rice heads. The higher the respondent's occupational type, the higher the respondent's level of importance to the attributes of soft texture, durability and. rice heads. This means that the lower the type of work the respondent means the lower the level of importance to the attributes of shapes. The other side, the monthly income level of respondents is positively related to the attributes of foreign objects, residues and services. The higher the respondent's monthly income level, the higher the respondent's importance to the attributes of foreign objects, residues and services. This means that the lower the type of work the respondent means the lower the level of importance to the attributes of foreign objects, residues and services.

Indonesia has set the quality requirements for the rice mill based on the Indonesian National Standards (SNI). Rice milling quality standards must be guided by qualitative and quantitative quality standards. Milled rice according to special quality requirements of SNI is whole or broken rice obtained from the milling process of rice grain (*Orizae Sativa L*) where all layers of the husk are peeled or partially institutes and bran have been separated. According to SNI quality standards, milled rice is divided into several quality classes according to the criteria. Quality I is a category of super rice consisting only of head rice or even above (whole rice only). Quality II and III are medium quality rice categories. Whereas Quality IV and V are medium to low quality rice which is marketed in traditional markets including BULOG domestic procurement rice. SNI has formed a perception in the community of the quality of ground rice to be consumed [17].

4. Conclusion

Based on the research that has been done on relationship between rice attributes preferences and socio demographic in Palembang. Then obtained some conclusion, to answer some identification problems in this study. Here, is the conclusion obtained by the authors as follows: The results showed that The age of the respondent is positively related to the shapes attribute. Gender of respondent is negatively related to the flavor attribute. Educational background of respondents is negatively related to the attributes of shapes. Occupation of respondents positively related to the attributes of soft texture, durability, rice heads and durability. The monthly income level of respondents is negatively related to the attributes of durability, shapes, rice heads. The other side, the monthly income level of respondents is positively related to the attributes of foreign objects, residues and services.

Compliance with ethical standards

Acknowledgments

The authors are thankful to the authority of University of Sriwijaya at Palembang Indonesia which was supporting the financial aid for some part of the experiment, especially tools, main material and analysis.

Disclosure of conflict of interest

The authors do not disclose any conflict of interest.

References

- [1] [PERHEPI] Perhimpunan Ekonomi Pertanian Indonesia. (2016). Kajian Perilaku Konsumen Beras di 13 Wilayah Indonesia. Laporan Penelitian Bogor (ID): Perhimpunan Ekonomi Pertanian Indonesia, 8-16.
- [2] BPS [Badan Pusat Statistik]. (2017). Kajian Konsumsi Bahan Pokok. Katalog: 3201034 ISBN: 978-602-438-277-3: Badan Pusat Statistik Republik Indonesia.
- [3] Lancaster and Kevin J. (1966). A new approach to consumer theory. The Journal of Political Economy. The University of Chicago Press, 74(2), 132-157.
- [4] Hausman DM. (2011). Preference, value, choice, and welfare. Cambridge University Press, 73-85.
- [5] Kotler P and Armstrong G. (2009). Principles of Marketing. Pearson Education. Thirteenth Edition. New Jersey, 9-16.
- [6] Mirosa M and Lawson R. (2012). The lifestyles of local food consumers. Br. Food Journal, 114, 816–825.

- [7] Stavkova J, L Stejskal and Z Toufarova. (2008). Factors Influencing Consumer Behaviour. Faculty of Business and Economics, Mendel University of Agriculture and Forestry, Brno, Czech Republic. *Agric. Econ. -Czech*, 54(6), 276–284.
- [8] Powell LM, Han E and Chaloupka FJ. (2010). Economic contextual factors, food consumption, and obesity among U.S. Adolescents. *J. Nutr*, 140, 1175–1180.
- [9] Jang S, Ha J and Silkes CA. (2009). Perceived Attributes of Asian Foods: From the Perspective of the American Customers. *International Journal of Hospitality Management*, 28(1), 63-70.
- [10] Brecic R, Marija C and Zeljka M. (2017). Importance of intrinsic and extrinsic quality food characteristics by different consumer segments. *British Food Journal*.
- [11] Hoeffler S and D Ariely. (1999). Constructing stable preferences: A look into dimensions of experience and their impact on preference stability." *Journal of Consumer Psychology*, 8(2), 113-139.
- [12] Allen MW and SH NG. (1999). The direct and indirect influences of human values on product ownership. *Journal of Economic Psychology*, 20(1), 5-39.
- [13] LAI AW. (1995). Consumer values, product benefits and customer value: a Consumption behavior approach", in *NA - Advances in Consumer Research Volume 22*, eds. Frank R. Kardes and Mita Sujana, Provo, UT : Association for Consumer Research, 381-388.
- [14] Dawar N and P Parker. (1994). Marketing universals: Consumers' use of brand name, price, physical appearance, and retailer reputation as signals of product quality." *The Journal of Marketing*, 81-95.
- [15] BPS [Badan Pusat Statistik]. (2019). Provinsi Sumatera Selatan dalam Angka 2019. Sumsel (ID): Badan Pusat Statistik Sumatera Selatan.
- [16] Sidik M and dan H. Halid. (1983). Sistem Penyimpanan dan Perawatan Kualitas Bahan Pangan di Badan Urusan Logistik. *Risalah seminar nasional pengawetan pangan dengan radiasi*. Jakarta, 6-8, 81-87.
- [17] Badan Standarisasi Nasional. (2015). Standar Nasional Indonesia: Beras. SNI No: 6128-2015.

How to cite this article

Romadhon J, Yazid M, Mulyana A and Yunita. (2020). Correlation analysis of rice attributes and socio demographic in Palembang, South Sumatera, Indonesia. *World Journal of Advanced Research and Reviews*, 5(2), 139-145.
