AGRISEP: Journal of Agricultural Socio-Economics and Agribusiness Studies

https://ejournal.unib.ac.id/agrisep

RESEARCH ARTICLE DOI: https://doi.org/10.31186/jagrisep.24.02.871-886

MEASURING CHILLI FARMER SATISFACTION TO IMPROVE THE QUALITY OF JACKO 99 BRAND SEEDS

Ananti Yekti*; Ipah Mardiyana Nur Safitri

Department of Agriculture, Politeknik Pembangunan Pertanian Yogyakarta Magelang, Yogyakarta, Indonesia

* Corresponding author: yektiananti2020@gmail.com

ARTICLE INFO

Keywords:
Chilli farmer
Satisfaction
Jacko 99 brand seeds
Perception

Submitted:
7 January 2025
Revised:
9 July 2025
Accepted:
26 August 2025

ABSTRACT

Understanding and categorizing product attributes can help design products that meet consumer needs and preferences, leading to higher satisfaction and loyalty. This study aims to (1) find out the characteristics of farmers who use Jacko 99 brand chilli seed in Magelang Regency, (2) analyze the perception of farmers on the level of importance and performance of Jacko 99 brand chilli seed attributes in Magelang Regency, and (3) measure the level of satisfaction of Jacko 99 brand chilli farmers in Magelang Regency. Research activities were carried out from April to December 2024. This research is descriptive research with quantitative analysis. The research sample comprised 60 respondents, determined by non-probability sampling from the population of Jacko 99-brand chilli farmers in Magelang Regency. The results of the Importance Performance Analysis show that two attributes must be improved: resistance to pest diseases and the freshness and durability of chilli. The results of the Customer Satisfaction Index showed that consumers of Jacko 99-brand chilli seeds were very satisfied, with a satisfaction index value of 86.14% (0.86). It is recommended to the producer of the Jacko 99 brand chilli seed to improve the resistance to pest diseases, durability of fresh chilli fruit, and also maintain the achievements of attributes that have already given satisfaction to the chilli farmers.

Cite as:
Yekti, A., & Safitri, I. M. N. (2025). Measuring Chilli Farmer Satisfaction to Improve the Quality of Jacko 99 Brand Seeds. *Jurnal AGRISEP: Kajian Masalah Sosial Ekonomi Pertanian dan Agribisnis*, 24(02), 871-886. https://doi.org/10.31186/jagrisep.24.02.871-886

INTRODUCTION

According to Saidah et al. (2024), chilli is one of the commodities preferred to be cultivated by farmers because it has high economic value and often receives the government's attention. Indonesians widely use chilli, both curly and binocular, as an additive in various dishes. Sekretariat Jenderal Pertanian (2023) stated that the demand for chilli continues to increase yearly in line with the increasing population and the development of industries that require chilli raw materials. Badan Pusat Statistik (2023) published that the consumption of chilli in Indonesia reached 636.56

thousand tons in 2022. This consumption increased from 2021 to 596.14 thousand tons. This condition presents an opportunity for chilli seed companies to enhance the marketing of their products, thereby supporting the increase in chilli production.

Seeds are the most essential input for vegetables. Deleuran et al., (2018) reveal that if the seeds used are of poor quality, the usage of other inputs is less successful and sometimes irrelevant. High-quality horticultural seeds are the foundation for successful horticultural cultivation, offering many benefits, including increased yields, improved plant health, economic benefits, and support for sustainable agriculture. This advantage underscores the importance of investing in quality seed production and distribution systems to improve food security and farmers' livelihoods (Afzal et al., 2019; Gangmei, 2024; Kiloes et al., 2023; Kumar et al., 2023).

An increasing number of chilly seed companies encourage seed producers to be more observant in producing products that meet consumers' wishes and needs. On the other hand, consumers have more choices of varieties. According to some studies (Guerrero Valenzuela et al., 2018; Kim et al., 2020), understanding and categorizing product attributes can help design products that meet consumer needs and preferences, leading to higher satisfaction and loyalty. Product attributes are characteristics or features that define a product and affect consumer perception and behaviour. These attributes can be categorized into appearance, functionality, and usability, which are crucial for product development, marketing, and consumer satisfaction (Guerrero et al., 2018; Liang et al., 2022; Saavedra, 2016). According to Kotler & Armstrong (2019) product attributes are divided into three parts, namely: 1) product quality, 2) product features, and 3) product design. These determining attributes function as a benchmark for consumers of chilli seeds.

Consumer satisfaction evaluates a customer's purchase and consumption experience on a product or service, compared to the expectations and benefits felt (Drejeris & Rusteika, 2024; Michaeld, 2015). The quality and value of the product are significant determinants of consumer satisfaction, both the functional quality (process) and technical quality of the product (Drejeris & Rusteika, 2024; Sulistiyono et al., 2023). For seed products, service quality dimensions such as reliability, responsiveness, assurance, and empathy play a role in customer satisfaction (Sulistiyono et al., 2023). Kotler & Keller (2016) stated that satisfaction is not only seen from the consumer's desires being fulfilled but also shows a comparison of other influencing factors, such as the quality of service/service, product quality, competitive prices, consumer situations, and personal needs of the individual.

Identifying the key factors that affect consumer satisfaction, such as visible value, functional quality, and consumer expectations, plays an important role in improving the overall quality of seed products. This strategy ensures that the product meets or exceeds consumer expectations, resulting in higher satisfaction (Drejeris & Rusteika, 2024). Consumer behaviour refers to studying individuals, groups, or organizations and the processes they use to select, secure, and dispose of products, services, experiences, or ideas to satisfy their needs. Evidence provided by Bhushan (2016) and Karemani & Memeti (2023) revealed that this field examines the impact of these processes on both the consumer and society. It encompasses various factors, such as psychological, social, cultural, and economic influences, that affect consumers' purchasing decisions (Bhushan, 2016).

It has been reported by Sekretariat Jenderal Pertanian (2023) that from 2018 to 2022, Central Java Province became Indonesia's third-largest contributor to chilli production. Mageleng Regency was the highest chilli-producing area in Central Java Province in 2023. Based on published data production by Badan Pusat Statistik Jawa Tengah (2024), Magelang Regency chilli production in 2023 reached 1,021,678 quintals, an increase of 4.93% from 2022 production. Magelang Regency is a potential area for many chilli seed companies to market their products, especially chilli seeds. Currently, many brands of chilli are marketed in Magelang Regency, including Jacko 99. Jacko 99 is a hybrid F1 curly chilli seed produced by PT Tunas Agro Persada. These seeds are widely marketed in the central chilli-growing districts of Magelang Regency.

Information about the level of satisfaction can be considered for other farmers when choosing seed brands and for companies to continue developing chilli seeds that suit consumer desires. The ability of a company to position its products through their attributes correctly in the market is one of the determining factors for the success of a product to be accepted in the market. By measuring customer satisfaction, companies can identify which attributes of their seed products need to be maintained, improved, or reduced (Sulistiyono et al., 2023). Studying consumer satisfaction with seed products will help to improve product quality and customer satisfaction, address specific market challenges, enhance market competitiveness, inform strategic marketing decisions, and promote long-term sustainability. Research by (Behe & Huddleston, 2023; Drejeris & Rusteika, 2024; Sulistiyono et al., 2023) revealed that these benefits collectively contribute to the growth and success of seed companies in a competitive market

Based on the description above, the following research objectives can be formulated: 1) finding out the characteristics of consumers of Jacko 99 brand chilli seeds, 2) analyzing farmers' perception of the level of importance and performance of Jacko 99 brand chilli seed product attributes, 3) measuring the level of consumer satisfaction with the attributes of Jacko 99 brand chilli seed. Through insights into consumer behaviour research, businesses can develop more effective marketing strategies and improve their overall performance in their marketing area.

RESEARCH METHOD

In this study, a quantitative approach is used to analyze the problem. The research was carried out from April to December 2024. The selection of the research location was carried out purposively in Magelang Regency. The purposive selection method is based on the regions considered the most relevant or representative to be researched, with considerations centred on specific research objectives. Magelang Regency is the centre of red chilli production in Central Java, making it a big market for chilli seed companies. The research was conducted in the highest chilli production in Magelang Regency, which includes Pakis District and the Grabag District.

Sampling was collected using accidental sampling. According to Sugiyono (2016), the accidental sampling technique is a technique for determining respondents based on anyone who is incidentally considered suitable as a data source, and then a questionnaire will be given. If the person meets the criteria to become a respondent, the person is asked to be willing to be interviewed by answering the questions in the research questionnaire.

The number of populations is not known exactly because there is no official data that can be used as a reference. The information source related to the farmer chilli population comes from the Magelang area's field assistant officer of PT. Tunas Agro Persada, which states Jacko 99 brand seeds, is mostly cultivated by chilli farmers in Grabag, Ngablak and Pakis sub-districts. The sample criteria in this study are chilli farmers who have planted at least twice and are still using Jacko 99 chilli seeds in Grabag, Ngablak and Pakis sub-districts, Magelang Regency, either male or female. The number of samples in this study will be measured using the approach of Malhotra (2009). The amount of the sample taken can be determined by multiplying the number of statements by 5, or 5 x the number of statements. The attributes in this study amounted to 11, so the sample used was 55 respondents, rounded up to 60. To get the sixty respondents, the snowball sampling technique was used.

A five-point Likert scale is used to evaluate improved seeds. A Likert scale from "strongly disagree" to "strongly agree" assesses the level of importance and performance of Jacko 99 brand chilly seeds. Primary data collection involved observation and face-to-face interviews using a structured questionnaire. Secondary data comes from relevant literature, reports, and previous studies, such as the Central Bureau of Statistics Report, the Ministry of Agriculture Report, Scientific Journal Publications, etc.

The Importance Performance Analysis (IPA) analysis method was used to answer the second objective: to measure consumer perception of the level of importance and the performance level of Jacko 99 brand chilli seeds. According to Yulianti & Umbara (2020), the stage of analysing IPA begins by calculating the level of conformity between the level of performance and the level of importance, then mapping each value to the quadrant analysis by Cartesius Diagram. The Customer Satisfaction Index (CSI) is used to answer the third objective: to determine consumer satisfaction with the attributes of Jacko 99 brand chilli seeds. The CSI analysis methods have been applied to several studies (Arsela et al., 2021; Dzuhrinia & Noor, 2017; Indrawibawa et al., 2024; Kalistiani & Ibnusina, 2023; Mubarokah & Priyanto, 2022; Suminartika et al., 2024) on various horticultural commodities.

The criteria for the consumer satisfaction index follow the category from Kalistiani & Ibnusina (2023), as presented in Table 1.

Table 1. Consumer Satisfaction Index Category

Value Range (%)	Category
1 – 20	Not satisfied
21 – 40	Less satisfied
41 – 60	Quite satisfied
61 – 80	Satisfied
81 – 100	Very satisfied

Source: Kalistiani & Ibnusina, 2023

RESULT AND DISCUSSION

Characteristic of Jacko 99 Brand Seed

Using superior and quality seeds is one way to get high-quality cultivation results (Apriyanto & Chofyan, 2019). Jacko 99 brand is a curly chilli hybrid F1 seed. Its brand is actually a variety of Gentala, an F1 hybrid variety produced by PT Tunas Agro Persada. Its variety has undergone improvements in 2011. The Decree of the Minister of Agriculture of Gentala, on curly chilli seeds, is Number 672/Kpts/SR.120/1/2011. Jacko 99 curly chilli seeds have the advantage of having a high yield potential of 21.71-22.65 tons/ha, resistant to storage and transportation, tolerant of yellow viruses, flexible and not easily broken, have a good harvest life, and are suitable for planting in lowlands and highlands. The characteristics of the Jacko 99 curly chilliplant are that it has a plant height of 115-125 cm, the shape of the elongated curly fruit is bright dark red, the number of fruits per plant is 150-200 pieces, the weight of the fruit is 6-7 grams/fruit, the texture of the fruit skin is smooth and shiny, and it has a spicy taste. Jacko 99 brand seed is widely marketed in Magelang Regency, especially in areas with medium to upper elevations.

Characteristics of Chilli Farmers

Chilli farmer characteristics are attributes or characteristics possessed by people participating in the research. Knowing the characteristics of the chilli farmers in the study is very important because it helps researchers understand the social, demographic, and behavioural contexts that affect the study results. By recognizing attributes such as the chilli farmers' age, education, and cultural background, researchers can identify relevant patterns and variables related to the studied topic. Chilli farmer characteristics can be seen in Table 2.

Farmers using Jacko 99 brand chilli seeds are the majority of productive age, averaging 45.03 years. As stated by Hukom et al., (2019), productive age means farmers can perform agricultural activities well (Hukom et al., 2019). Age is an important factor in chilli farming, considering that chilli cultivation activities require intensive labour, from planting to harvesting. Although most chilli farmers are still at a productive age, there is a tendency to shift to older age groups caused by the lack of regeneration of young workers in the agricultural sector.

It has been reported by Alam & Hernawan (2017) that education level is the most important factor influencing a human's mindset in making decisions and developing businesses. Most farmers in the research area have an elementary school graduation rate of 63%. This shows that most chilli farmers have not taken 9 years of compulsory education, which is the government's effort to improve the quality of human resources. The level of education of chilli farmers plays an important role in determining the selection of varieties to be planted. Farmers with higher levels of education tend to have better access to information on superior pepper varieties, modern cultivation techniques, and effective agricultural management. This knowledge allows them to choose varieties that are more resistant to diseases, have high productivity, and are suitable for local climatic conditions. On the other hand, chilli farmers with lower education prefer varieties that are already commonly grown without doing much research on new varieties, which could be more profitable. Research by Gusti et al., (2022) shows that farmers with higher education

generally have a more open mindset in accepting innovations and are faster to understand and apply new technologies to develop and bring agricultural products in a better direction

Table 2. Characteristics of The Chilli Farmers

No	Characteristics	Amount	%
1	Age (Years Old)		
	<20	1	1.67
	21-30	7	11.67
	31-40	14	23.33
	41-50	20	33.33
	51-60	13	21.67
	>61	5	8.33
2	Education		
	Elementary School	38	63.33
	Junior High School	15	25.00
	Senior High School	5	8.34
	University	2	3.33
3	Chilli farm area (m^2)		
	1,000	15	25.00
	1,000-5,000	32	53.33
	5,001-10.000	9	15.00
	10,000	4	6.67
4	Chilli farming experience (years)		
	<5	22	36.67
	6-10	19	31.67
	11-15	16	26.66
	>15	3	5.00
5	Status of agricultural land tenure		
	Owns by himself	47	78.34
	Owns by himself & rents	8	13.33
	Rent	5	8.33

As many as 78% of chilli farmers manage land with an area of fewer than 0.5 hectares, so it can be said that the average chilli farmer is a farmer with narrow land (gurem farmer). According to Sastraatmadja (2010), gurem farmers have land of 0.1-0.5 hectares. The average area of chilli farming land was 0.3920 hectares. Land area often influences farmers' decisions (Hotmarida et al., 2020). The area of land managed by chilli farmers affects the selection of varieties to be planted. Farmers with large land areas tend to choose chilli varieties that are resistant to pests and diseases, have high productivity, and are adaptive to local environmental conditions to increase crop yields and production efficiency. In contrast, farmers with narrower land often focus on varieties with high selling value in the market.

With various brands of chilli seeds circulating in the market, chilli farmers with particular experience will be more inclined to buy previously used seeds and produce as expected. According to (Nurhesti et al., 2022) the experience of farming on certain crops can affect their knowledge and skills in agricultural practices. Chilli

farmers have had relatively long experience cultivating chillies, averaging 13.88 years. A study conducted by Murshid et al., (2019) found that with more extended farming experience, farmers have better knowledge to manage their farming, know the natural conditions on their land, and know the suitable varieties for application

Land ownership status significantly influences the success of chilli farming. Chilli farmers who own their land tend to have better control over cultivation techniques and access to capital to optimise production output. On the other hand, cultivators or tenants often experience obstacles in accessing agricultural technology and financing due to limited ownership guarantees. Most chilli farming is carried out on their land (78%). In line with (Rondhi & Adi, 2018) research, shows that self-owned land uses the most significant labour, followed by leased land and profit-sharing land using the least labour. Thus, it can be interpreted that farmers will be more intensive in chilli farming with their land.

Conformity Level of Jacko 99 Brand ChilliSeed Attributes with Importance Performance Analysis (IPA) Method

The Importance Performance Analysis (IPA) method is applied to determine which attributes have the value of the level of importance and performance of Jacko 99 brand chilli seeds that have been following the expectations of chilli farmers. The level of conformity is used to determine the priority ranking based on the value of the level of importance and the level of performance of the attributes of Jacko 99 chilli seeds. As stated by Yola & Budianto (2013), the conformity level results from comparing the product performance and the importance scores. The degree of conformity in the seeds of Jacko 99 pepper indicates the position of each attribute that the chilli farmer considers. The higher the ranking, the more it shows that the quality of the product is in line with consumer expectations. Similarly, the lower ranking indicates that the quality of the product has not met consumer expectations. The results of the calculation from the analysis of the level of suitability of the attributes of Jacko 99 chilli seeds can be seen in Table 3.

The result of calculating the level of conformity of attribute performance to the level of importance of attributes in Jacko 99 chilli seeds is that the conformity level ranges from 75.50% to 126.56%, with an average of 99,43. Five of the eleven attributes had a match rate of over 100%. This can indicate that chilli seed products have mostly met chilli farmers' expectations.

Based on Table 3, the lowest level of suitability of Jacko 99 chilli seed products is found in the attribute of resistance to pests and diseases, with an achievement of 75.50%. The low score was obtained because of the high expectations of chilli farmers for related attributes, while the performance level of these attributes was low. The chilli farmers' expectations are shown by the average value of related attributes reaching a value of 4.967 out of a maximum value of 5. Most chilli farmers consider resistance to pests and diseases essential because pest and disease attacks occur in every cultivation. Control using chemical pesticides is often not able to entirely prevent the occurrence of pests, diseases, and viruses. The value of the performance level of the creeper pest resistance attribute is only 3,750. The low value of the performance level is based on the experience of farmers, who often experience pests and diseases that affect chilli plantations.

Table 3. Conformity Level And Average Value Of Jacko Brand Chilli Seeds 99 Attributes

Atribut	Level of Importance (Yi)	Level of Performance (Xi)	Level of Conformity (%)	Average Yi	Average Xi
Seed Price	253	273	107.91	4.217	4.550
Chilli Selling Price	291	285	97.94	4.850	4.750
Defective Product Replacement Warranty	233	220	94.42	3.883	3.667
Variety of Promotion	258	257	99.61	4.300	4.283
Alertness of Field Assistance	278	260	93.53	4.633	4.333
Seed Availability	276	283	102.54	4.600	4.717
Packaging Weight	192	243	126.56	3.200	4.050
Pest Disease Resistance	298	225	75.50	4.967	3.750
Brand Seed	280	286	102.14	4.667	4.767
Freshness Durability of Chilli Fruit	288	250	86.81	4.800	4.167
Packaging Design	235	251	106.81	3.917	4.183
Mean			99.43	4.367	4.292

The research area is a centre for cultivating chilliand cayenne pepper. The continuous presence of chilliplants is always present in the plantation, causing no break in the cycle of pests and diseases. It is the main challenge for chillifarmers to overcome pests and diseases, especially the yellow virus. Until now, chillifarmers have been unable to find chilliplantations that can be utterly free from yellow virus attacks. This is what causes the achievement of low-performance levels of resistance to pests and diseases. Some attributes still have a level of conformity below 100%, namely the selling price of crops, product return guarantees, variety of promotions, reliability of the company's field officers in responding to chillifarmers' complaints, and harvest storage time.

The weight attribute of the contents of the package has the highest level of conformity value. It indicates that the performance of this attribute has exceeded consumer expectations. Jacko 99 brand chilliseeds have a content weight of 10 grams per package. This weight per ripeness follows the needs of chillifarmers' landscaping because this packaging suits the minimum needs of farmers' chilliplantations. Overall, the average level of conformity is 99.43%, and it can be concluded that the level of conformity is close to the expectations of consumers of Jacko 99 chilliseeds.

Cartesians Diagram of Importance Performance Analysis (IPA)

The cartesian diagram shows the location of each attribute in each of its quadrants. This diagram can illustrate the circumstances and corrective steps that can be taken related to the position of the attribute. The calculation was carried out to determine the average importance level and performance level value as the coordinate point of each attribute in mapping the science cartesian diagram. The

results of the IPA mapping on the Cartesian diagram for Jacko 99 brand chilli seed are presented in Figure 1.

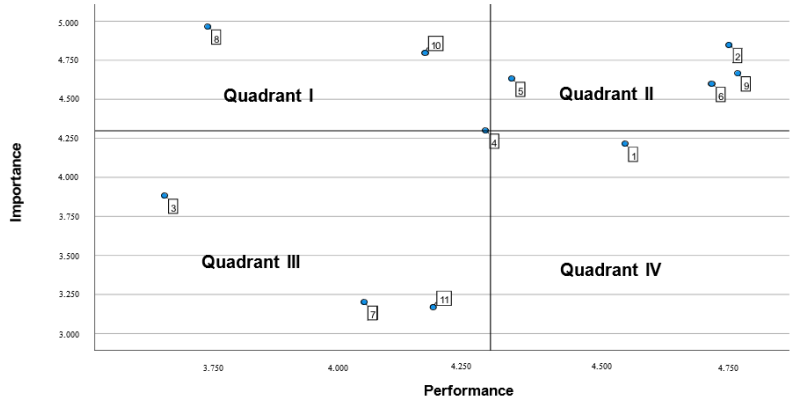

Figure 1.
Cartesian Diagram of Importance Performance Analysis (IPA) of Jacko 99 Brand ChilliSeed Consumer

The Cartesian diagram consists of 4 quadrants with different levels of importance and performance. Based on Figure 1, it is known that the position of all attributes of the Jacko 99 brand chilliseed is spread into four different quadrants, namely, quadrant I, quadrant II, quadrant III, and quadrant IV. The discussion of the results in each quadrant in the Cartesian diagram is as follows:

Quadrant I (Main Priority)

The attributes of Jacko 99 brand chilliseeds in quadrant one are considered important by chillifarmers (consumers), but the level of performance of these attributes has not been in line with expectations or does not meet the wishes of chillifarmers, so farmers feel dissatisfied. The level of attribute performance in quadrant I is still lower than the level of consumer interest. In the Jacko 99 brand chilli seeds, two attributes are included in quadrant I. The attributes of the Jacko 99 brand chilli seeds that need to be improved are resistance to pests and diseases, and chilli freshness and durability. Resistance to pests and diseases is quite good, but chillifarmers have even greater hopes because of the growing types and variants of pests and diseases that attack chilliplants. Currently, many chilli plants are always affected by yellow virus disease. No curly chilliplant has been found that can be utterly free from yellow virus attacks. This is what encourages the hope of chillifarmers for the presence of chillivarieties resistant to the yellow virus, in line with Oktaviani (2019) research that revealed that farmers consider the attributes of resistance to pests and diseases of superior varieties of rice seeds (IR 64; Ciherang and Mekongga) still have low performance in Pasuruan district and need to be improved.

The storage durability of the Jacko 99 brand chilliharvest is relatively good. Chillifruits have a flexible enough physique to reduce the number of damaged fruits due to packaging and transportation. However, because chilli is marketed outside the island of Java, it takes a long enough distribution time to reach the final consumer.

The potential for deterioration in the quality and quantity of chilli during the distribution is very high. Chillifarmers hope for better durability of freshness so chilliproducts can reach the end consumer in a fresh condition.

Quadrant II (Keep Priority)

Quadrant II shows a balance between the level of performance and consumer expectations of the chilliseeds of the Jacko 99 brand. The attributes included in quadrant II show the suitability of consumer interests with the performance produced by the chilliseed attributes, so it is necessary to maintain the suitability of the level of performance and the level of interest in the attributes in this quadrant. Four attributes are included in this quadrant: the selling price of chillifruit, the reliability of the company's field officers, the availability of seeds in the market, and the company's brand. The chillifarmer considers the selling price of the Jacko 99 chilliharvest as appropriate. The Jacko 99 brand chilliharvest is always acceptable to small and large traders. It also has a relatively higher price than other types of chili, because Jacko 99 chillifruit has a reasonably flexible physique that could reduce the number of damaged fruits due to packaging and transportation. The presence of field assistance (FA) from a seed company (PT. Tunas Agro Persada) provides more positive value in front of chillifarmers (consumers). The presence of the company's field officers is considered a place to ask questions and discuss various cultivation problems experienced by chillifarmers. Ease of chillifarmers getting seeds also encourages the achievement of Jacko 99 seed attribute performance, which is very good. Jacko 99 seeds can be obtained through agricultural stalls or ordered through the company's field officers. PT. Tunas Agro Persada is widely known as a seed company that produces F1 hybrid horticultural seeds. In addition to chillies, this company also markets F1 hybrid seeds such as melons, watermelons, cabbage, and tomatoes.

Quadrant III (Low Priority)

The attributes in quadrant III are considered less important by chillifarmers or have a low level of importance. This shows that consumers have low expectations for the chilliseed attribute in quadrant III, and on the other hand, the performance of these attributes is also considered unsatisfactory. The attributes of the Jacko 99 brand chilliseed laid in quadrant III are four: defective product replacement warranty, the weight of the packaging contents, design of the packaging, and various promotions. The attribute of the seed replacement warranty in the event of defects or damage is less of a priority for chillifarmers because this is very rare. PT. Tunas Agro Persada has a quality management system certificate, so the seeds produced are of standardized (certified) quality. The weight of the packaging content is less of a priority for chillifarmers because only one weight of packaging has been marketed through agricultural stalls and company field officers so far. Meanwhile, packaging design is not a problem for chillifarmers as long as the quality of the seeds produced is according to their wishes. The attributes of various promotions are also less paid attention to by chillifarmers because farmers are more confident in the results of the demonstration plot (demplot) than in various types of promotions without any objective evidence that they can see either directly or based on the taste of other farmers' experiences.

Quadrant IV (Possible Overkill)

Quadrant IV is a quadrant with performance considered excessive by chillifarmers. The performance of attributes in this quadrant is excellent, but chillifarmers have a low level of importance, so they do not quite consider the attributes in this quadrant. The attributes in this quadrant do not require improvement or performance improvement because they are less important to chillifarmers. There is one attribute in quadrant VI, namely seed price. The price attribute of Jacko 99 brand chilliseeds is considered very good, but chillifarmers are less concerned about these attributes because they have better quality seeds after planting.

Jacko 99 Brand ChilliSeed Consumer Satisfaction Index

Umam and Hariastuti (2018) stated that satisfaction is the level of feelings a person feels after considering the level of performance and the level of expectations that he will achieve. By ensuring high-quality seeds, aligning practices with market demands, supporting local adaptation, promoting sustainable practices, influencing policy, and providing economic and environmental benefits, research can significantly contribute to a more sustainable agricultural future (Nayak et al., 2023; Zhao et al., 2022). The Customer Satisfaction Index (CSI) of Jacko 99 brand chilliseeds are presented in Table 4.

Table 4. Results of Customer Satisfaction Index Analysis of Jacko 99 Brand Chilli Seeds

Attribute Product	Mean Satisfaction Score	Mean Importance Score	Weighting Factor	Weighted Score
Seed Price	4.550	4.217	8.779	39.943
Chilli Selling Price	4.750	4.850	10.097	47.961
Defective Product Replacement Warranty	3.667	3.883	8.085	29.644
Variety of Promotion	4.283	4.300	8.952	38.345
Alertness of Field Assistance	4.333	4.633	9.646	41.800
Seed Availability	4.717	4.600	9.577	45.170
Packaging Weight	4.050	3.200	6.662	26.981
Pest Disease Resistance	3.750	4.967	10.340	38.775
Brand Seed	4.767	4.667	9.715	46.310
Durability of ChilliFruit	4.167	4.800	9.993	41.638
Packaging Design	4.183	3.917	8.154	34.111
Weight Total	47.217	48.033	100.000	430.678
CSI (%)	86.14			

The consumer satisfaction index results on the attributes of Jacko-99 brand chilli seeds presented in Table 4 show the Customer Satisfaction Index (CSI) value of 86.14 or 0.86. It is included in the category of very satisfied. Chillifarmers stated that Jacko-99 brand chilli seeds are suitable for land conditions in mid-to-high plains and meet most of the farmers' expectations, so they choose to use Jacko-99 brand seeds.

This aligns with Sulistiyono's (2023) research, which reveals that CSI for horticulture seeds is included in the very satisfactory category, 82.15%. A combination of high service quality, product quality, economic benefits, and emotional satisfaction drives the high Customer Satisfaction Index for horticultural. In line with previous studies (Ambrose et al., 2016; Behe & Huddleston, 2023; Buniak & Shpychak, 2023; Sulistiyono et al., 2023) that stated these factors collectively ensure that customers are not only satisfied but also delighted, leading to repeat purchases and loyalty.

CONCLUSION

Conclusion

Based on the study, the attributes of the Jacko 99 brand chilli seeds that need to be improved are resistance to pest diseases and the durability of fresh chilli fruit. Meanwhile, the level of performance attributes that need to be maintained for their achievements includes the selling price of seeds, the reliability of the company's field officers, the availability of seeds, and the company's brand. The result also showed that the level of satisfaction of the Jacko 99 brand chilliseed of chillifarmer in Magelang Regency achieved a value of 86.14%, falling into the very satisfying category.

The author advises PT. Tunas Agro Persada, as the producer of Jacko 99 brand chilli seeds, needs to improve the performance of seed attributes, which are resistance to pest diseases and the durability of fresh chilli fruit. The company should always maintain the achievements of attributes that are considered to follow the wishes of consumers. It is intended to increase the consumer satisfaction index, which will have implications for improving the company's image as a producer of quality horticultural seeds in Indonesia.

AUTHOR CONTRIBUTION STATEMENT

[Author 1]: research design, data collection, supervision of data analysis process, the initial manuscript draft, revision of manuscript, research supervision; [Author 2]: data collection, data analysis, data visualisation, addressing reviewers' comments, polishing English writing. All authors reviewed and approved the final version of the article.

DECLARATION OF COMPETING INTEREST

All the Authors declare that they have no established conflicting financial interest or personal relationship that could have appeared to influence the work reported in this paper.

ACKNOWLEDGMENT

We thank The Agricultural Development Politechnic of Yogyakarta Magelang for the research financial funding.

ETHIC STATEMENT

Ethical review and approval were waived for this study as it did not involve any intervention and posed minimal risk to participants. Nevertheless, informed consent was obtained from all respondents prior to participation, and all data was anonymized and kept confidential.

REFERENCES

Afzal, I., Shabir, R., & Rauf, S. (2019). Seed Production Technologies Of Some Major Field Crops. Agronomic Crops, 1(1), 655–678. doi: 10.1007/978-981-32-9151-5_28

Alam, A. S., & Hermawan, H. (2017). Faktor-Faktor Yang Mempengaruhi Hubungan Kemitraan Antara Petani Budidaya Jamur Tiram Dengan CV. Asa Agro Corporation. AGROSCIENCE (AGSCI), 7(1), 214-235. doi: 10.35194/agsci.v7i1.54

Ambrose, A., Lohumi, S., Lee, W.-H., & Cho, B. K. (2016). Comparative Nondestructive Measurement Of Corn Seed Viability Using Fourier Transform Near-Infrared (FT-NIR) And Raman Spectroscopy. Sensors And Actuators B: Chemical, 224(1), 500–506. doi: 10.1016/j.snb.2015.10.082

Apriyanto, M. T., & Chofyan, I. (2019). Strategi Pengembangan Agribisnis Cabai Merah Di Kawasan Agropolitan Kabupaten Ciamis. Jurnal Perencanaan Wilayah Dan Kota, 16(1), 9–16. Retrieved from https://ejournal.unisba.ac.id/index.php/planologi/article/view/9/PDF

Arsela, Y., Roessali, W., & Setiawan, B. M. (2021). Analisis Kepuasan Petani Sayuran Organik Anggota Gapoktan Bangkit Merbabu Dalam Mengikuti Program Kemitraan Usaha Dengan Pt Bloom Agro. Jurnal Agrisep: Kajian Masalah Sosial Ekonomi Pertanian Dan Agribisnis, 20(1), 103–116. doi: 10.31186/jagrisep.20.01.103-116

Badan Pusat Statistik/BPS. (2023). Produksi Tanaman Sayuran Menurut Provinsi dan Jenis Tanaman. Retrieved from https://www.bps.go.id/id/statistics-table

Badan Pusat Statistik Jawa Tengah. (2024). Produksi Tanaman Sayuran Semusim Menurut Jenis Tanaman dan Kabupaten/Kota di Provinsi Jawa Tengah (kuintal) 2023. Retrieved from https://jateng.bps.go.id/id/statistics-table

Behe, B. K., & Huddleston, P. T. (2023). Factors Influencing Consumer Delight And Likelihood To Purchase Again. Acta Horticulturae, 1368(1), 165–168. doi: 10.17660/ActaHortic.2023.1368.22

Bhushan, A. (2016). A Comparative Analysis Of Consumer Behavior Of Nokia And Samsung Mobile Users. Journal Of Internet Banking And Commerce, 21(2), 1–7. Retrieved from https://www.icommercecentral.com/open-access/a-comparative-analysis-of-consumer-behavior-of-nokia-and-samsung-mobile-users.pdf

Buniak, N., & Shpychak, O. (2023). Establishment Of Competition In The Market Of Seed And Planting Material Certification Services In Ukraine. Ekonomika APK, 30(6), 10–16. doi: 10.32317/2221-1055.202306010

Deleuran, L. C., Olesen, M. H., Shetty, N., Gislum, R., & Boelt, B. (2018). Importance Of Seed Quality For The Fresh Cut Chain. Acta Horticulturae, 1209(1), 35–40. doi: 10.17660/ActaHortic.2018.1209.5

Drejeris, R., & Rusteika, M. (2024). Assessment Of Factors Determining Consumer Satisfaction With Crop Insurance Services. Journal Of Infrastructutre, Policy And Development, 8(6), 1–16. doi: 10.24294/jipd.v8i6.4697

Dzuhrinia, A., & Noor, T. I. (2017). Analisis Preferensi Petani Terhadap Atribut Benih Kedelai (Glycine Max L) Di Kec. Jatiwaras, Kabupaten Tasikmalaya. Jurnal Ilmiah Mahasiswa Agroinfo Galuh, 4(2), 188–197. Retrieved from https://jurnal.unigal.ac.id/index.php/agroinfogaluh/article/view/713

Gangmei, P. (2024). Economic Empowerment OF Tribal Women THROUGH Non-Timber Forest Products. Economic Affairs, 69(1), 769–775. doi: 10.46852/0424-2513.2.2024.37

Guerrero, V. M., Hernandis Ortuño, B., & Agudo Vicente, B. (2018). An Approach To The Representation Of A Product's Form And Appearance: Study On Design Attributes. Innovar, 28(67), 25–39. doi: 10.15446/innovar.v28n67.68611

Gusti, I. M., Gayatri, S., & Prasetyo, A. S. (2022). The Affecting Of Farmer Ages, Level Of Education And Farm Experience Of The Farming Knowledge About Kartu Tani Beneficial And Method Of Use In Parakan District, Temanggung Regency. Jurnal Litbang Provinsi Jawa Tengah, 19(2), 209–221. doi: 10.36762/jurnaljateng.v19i2.926

Hotmarida, S., Ayu, S. F., & Rahmanta. (2020). Factors That Influence The Decision Of Coffee Farmers To Take Credit In North Sumatra. IOP Conference Series: Earth And Environmental Science, 454(1), 012017-012021. doi: 10.1088/1755-1315/454/1/012017

Hukom, J., Kakisina, L. O., & Sari, R. M. (2019). Analisis Produktivitas Petani Sayuran Daun Di Desa Passo Kecamatan Baguala Kota Ambon. Agrilan : Jurnal Agribisnis Kepulauan, 7(3), 227-232. doi: 10.30598/agrilan.v7i3.902

Indrawibawa, D., Noor, T. I., Rachmadi, M., Deliana, Y., Tridakusumah, C., & Renaldi, E. (2024). Analisis Kepuasan Petani Terhadap Atribut Benih Kentang (G2) Industri Di Kabupaten Garut Analysis Of Farmers Satisfaction Towards Industrial Potato Seeds Attributes (G2) In Garut District. Mimbar Agribisnis: Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis, 10(2), 2493–2500. Retrieved from https://jurnal.unigal.ac.id/mimbaragribisnis/article/view/14222

Kalistiani, K., & Ibnusina, F. (2023). Analisis Kepuasan Petani Terhadap Keputusan Dalam Menggunakan Varietas Junjuang Di Kecamatan Harau Kabupaten Lima Puluh Kota. Jurnal Ekonomi Pertanian Dan Agribisnis, 7(1), 405–417. doi: 0000-0003-0477-0371

Karemani, S. M., & Memeti, E. (2023). Market Competition Determinants Of Consumer Behavior. Corporate And Business Strategy Review, 4(2), 208–224. doi: 10.22495/cbsrv4i2siart1

Kiloes, A., Puspitasari., & Sulistyaningrum, A. (2023). The Potential Economic Impact Of Tropical Fruit Seedlings Distribution Program In Indonesia: The Case Of Mango In Pasuruan Regency. AIP Conf. Proc, 2616(1), 1-16. doi: 10.1063/5.0136407

Kim, H., Kim, D. S., & Allenby, G. M. (2020). Benefit Formation And Enhancement. Quantitative Marketing And Economics, 18(4), 419–468. doi: 10.1007/s11129-020-09228-5

Kotler, P., & Armstrong, G. (2019). Prinsip-Prinsip Pemasaran (12th ed.). Jakarta: Erlangga

Kotler, P., & Keller, K. L. (2016). Manajemen Pemasaran (13th ed.). Jakarta: Erlangga

Kumar, S., Sripathy, K. V., Udaya Bhaskar, K., & Vinesh, B. (2023). Principles Of Quality Seed Production. Seed Science And Technology, 1(1), 109–131. Springer Nature Singapore. doi: 10.1007/978-981-19-5888-5_6

Liang, J., Xin, X., & Lv, Y. (2022). Explore The Impact Of Consumer Perception Product Attributes On The Household Appliance User Experience Based On Usability Testing. Springer Science And Business Media Deutschland, 1(1), 688–697. doi: 10.1007/978-981-16-5963-8_93

Malhotra, N. K. (2009). Review Of Marketing Research (5th Ed). Routledge: Library of Congress

Michaeld, D. J. (2015). Customer Satisfaction. Retrieved from https://www.researchgate.net/publication/304193556_Customer_Satisfaction

Mubarokah, M., & Priyanto, E. (2022). Analisis Kepuasan Dan Loyalitas Petani Terhadap Penggunaan Benih Jagung Hibrida Di Desa Bangkok Kecamatan Gurah Kabupaten Kediri. Berkala Ilmiah AGRIDEVINA, 11(2), 1-15. doi: 10.33005/agridevina.v11i2.3530

Murshid, R. A., Ekowati, T., & Santoso, S. I. (2019). Analisis Faktor-Faktor Yang Mempengaruhi Jumlah Pembelian Benih Padi Varietas Ciherang Pada Petani Di Kabupaten Sragen. Jurnal Ekonomi Pertanian Dan Agribisnis, 3(4), 767–776. doi: 10.21776/ub.jepa.2019.003.04.12

Nayak, J., Dash, P. B., & Naik, B. (2023). An Advanced Boosting Approach For Multiclass Dry Bean Classification. Journal Of Engineering Science And Technology Review, 12(2), 107–115. doi: 10.25103/jestr.162.14

Nurhesti, A., Marlina, B., & Erni, F. (2022). Analisis Faktor Sikap Petani Tidak Menggunakan Benih Padi Bersertifikat Di Desa Olang Kecamatan Ponrang Selatan Kabupaten Luwu. Wanatani, 2(1), 27–35. doi: 10.51574/jip.v2i1.68

Oktaviani, D. A. (2019). Analisis Karakteristik Dan Kepuasan Petani Padi Terhadap Atribut Benih Padi Varietas Unggul Di Kabupaten Pasuruan Jawa Timur. Agrotechbiz, 6(1), 12–25. doi: 10.51747/agrotechbiz.v6i1.442

Rondhi, M., & Adi, A. H. (2018). Pengaruh Pola Pemilikan Lahan Terhadap Produksi, Alokasi Tenaga Kerja Dan Efisiensi Usahatani Padi. Journal Of Agribusiness And Rural Development Research, 4(2), 101–110. doi: 10.18196/agr.4265

Saavedra, C. A. (2016). A Conceptual Framework For Understanding Technical Products. In The Marketing Challenge For Industrial Company. Springer International Publishing Switzerland, 1(2) 33–62. doi: 10.1007/978-3-319-30610-0_3

Saidah, Z., Wulandari, E., Hepi, H. (2024). Analisis Sikap Dan Persepsi Petani Untuk Meningkatkan Produksi Cabai Merah Melalui Penggunaan Benih Unggul. Jurnal Agrikultura, 35(2), 200–212. doi: 10.24198/agrikultura.v35i2.53975

Sastraatmadja, E. (2010). Suara Petani. Masyarakat Geografi Indonesia

Sekretariat Jenderal Pertanian, K. R. (2023). Utlook Komoditas Pertanian Subsektor Hortikultura: Cabai. In Pusat Data Dan Sistem Informasi Pertanian Sekretariat Jenderal Kementerian Pertanian. Pusat Data Dan Sistem Informasi Pertanian Sekretariat Jenderal Kementerian Pertanian. Retrieved from https://satudata.pertanian.go.id/assets/docs/publikasi/OUTLOOK_CABAI_2023_berbarcode_.pdf

Sugiyono. (2016). Metode Penelitian Kuantitatif, Kualitatif Dan R&D. Jakarta: Alfa Beta

Sulistiyono, S. (2023). Analysis Of Measurement Of Customer Satisfaction On Quality And Service Of Superior Seed Product In Bintang Asia. Retrieved from https://www.researchgate.net/publication/

Sulistiyono, S., Muksin, & Iskandar, R. (2023). Measuring The Customer Satisfaction To Improve The Product Quality Of Premium Seeds Produced By Bintang Asia Based On The Customer Satisfaction Index (CSI) And Importance Performance Analysis (IPA). E3S Web Of Conferences, 454(1), 03001-03023. doi: 10.1051/e3sconf/202345403001

Suminartika, E., Putra, I. D., Setiawan, I., & Sukayat, Y. (2024). Analisis Kepentingan Dan Kinerja (IPA) Dari Benih Kentang Varietas Baru "X". Mimbar Agribisnis: Jurnal Pemikiran Masyarakat Ilmiah Berwawasan Agribisnis, 10(1), 379–386. Retrieved from https://jurnal.unigal.ac.id/

Umam, R. K., & Hariastuti, N. P. (2018). Analisa Kepuasan Pelanggan Dengan Menggunakan Metode Customer Satisfaction Index (Csi) Dan Importance Performance Analysis (IPA). Seminar Nasional Sains Dan Teknologi Terapan Vi Institut Teknologi Adhi Tama Surabaya, 339–344. Retrieved from https://ejurnal.itats.ac.id/sntekpan/article/view/366

Yola, M., & Budianto, D. (2013). Analisis Kepuasan Konsumen Terhadap Kualitas Pelayanan Dan Harga Produk Pada Supermarket Dengan Menggunakan Metode Importance Performance Analysis (IPA). Optimasi Sistem Industri, 12(12), 301–309. doi: 10.25077/josi.v12.n1.p301-309.2013

Yulianti, E., & Umbara, T. (2020). Analisis Kepuasan Pelanggan Terhadap Kualitas Pelayanan Dengan Metode Importance Performance Analysis. Jurnal Teknoif, 8(2), 78-87. doi: 10.21063/jtif.2020.v8.2.72-82

Zhao, Y., Deng, H., Hu, R., & Xiong, C. (2022). Impact Of Government Policies On Seed Innovation In China. Agronomy, 12(4), 917-929. doi: 10.3390/agronomy12040917