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Article

Consumer Perceptions and SWOT Analysis of Seed Products From the Seed Center Teaching Factory

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Abstract: Superior rice seeds can increase production by at least 10%/ha, but this program must be supported by the availability of seeds, and easy access to seeds at affordable prices for farmers. One of the superior seed producers in Jember is the Seed Center Teaching Factory of Politeknik Negeri Jember. Seed Center products are distributed to areas around Jember, Bondowoso, Situbondo, Probolinggo, and several areas outside Java. Sustainable products are affected by product quality and maintaining customer satisfaction. This research aims to analyze consumer perceptions, measure customer satisfaction, and determine recommendations for product improvements and marketing strategies that appropriate consumer needs. Data were collected through interviews and questionnaires while using SWOT analysis. The sample in this study included agricultural shops as regular consumers and farmers as direct users. The results show that all seed products are in great demand by consumers and farmers, namely Inpari 32, Logawa, Ceherang, and Sintanur. The biggest weakness is limited buyer partners, products not always available, and outlets far from the market. Besides that, the biggest opportunity is an abundant market and basic needs products supported by the government. The strength is that the products are complete business legality and certified seeds, affordable prices, solid team, and sufficient business capital.

Keywords: analysis; sustainability; strategy; marketing; quality.

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1. Introduction

Jember Regency is one of the regencies in East Java Province where the majority of the population's livelihood is as farmers; this can be seen as 421,047 residents who work as farmers with a land area of 157,596 hectares of rice, 64,489 hectares of corn, 3,666 hectares of soybeans, 2,116 hectares of peanuts. land, 109 hectares of cassava, 2 107 hectares of cayenne pepper, 139,731 hectares of vegetable crops, 48,055 hectares of coconut crops, 5,279.6 hectares of sugar cane crops, 16,484 hectares of tobacco crops, and 14,586.5 hectares of coffee crops [1].

Rice plants (*Oryza sativa L.)* are annual plants that have the ability to adapt to various environmental conditions. This plant belongs to the Graminae type or grasses [2]. Almost half of the world's population, especially from developing countries, including Indonesia, mostly uses rice as a staple food consumed to meet their daily food needs. [3]. Rice as a staple food can fulfill 56 – 80% of the calorie needs of the population in Indonesia [4].

Rice is the main commodity grown by the people of Jember. Superior and quality rice seeds can increase the productivity of rice plants. The use of superior varieties of rice seeds

can increase production by at least 10%/ha, but this program must be supported by the availability of seeds and easy access to seeds at affordable prices for farmers [5].

Rice seeds are grains that are harvested with the aim of being used as input in farming [6]. Seed certification receives field inspection and laboratory testing from the authorized agency by meeting predetermined standards. Quality seeds are an important factor in rice production because the use of quality seeds used in farming, the higher the level of production that will be obtained. [7]. The use of seeds with superior varieties contributed to increasing national rice production by up to 56%, while the interaction between irrigation water, superior varieties and fertilization on the rate of increase in rice production contributed up to 75% [8]. Seed quality can be affected by environmental conditions under which the crop is grown and the cultural practices used for production. Maintaining seed quality is essential if the variety is to meet the expectation of farmers and consumers [9].

One of the superior seed producers in Jember is the Jember State Polytechnic TeFa Seed Center which has been established since 2019. The TeFa Seed Center has produced around 300 tons of rice seeds per year. Rice seed varieties produced by Tefa Seed Center include: Sunggal, Inpari 32 HBD, IR 64, Way Opo Buru, Ciherang, Cibogo, Inpari 33, Memberamo, Mekongga, Situbagendit, Inpari 33, Cakrabuana, and Mantap. The various varieties produced are adjusted to the requests of distributors and farmers directly according to the location of their agricultural land.

One aspect that can be pursued when competition becomes sharper is developing the right marketing strategy. Marketing strategies for product development must pay attention to the 7Ps, namely product, price, place, promotion, people, process and physical evidence [10]. Product marketing analysis can also be classified into opportunity analysis, target determination, strategic planning, program design and marketing effort measurement [11].

TeFa Seed Center has produced around 300 tons of rice seeds per year. Rice seed varieties produced by Tefa Seed Center include: Sunggal, Inpari 32 HBD, IR 64, Way Opo Buru, Ciherang, Cibogo, Memberamo, Mekongga, Situbagendit, Inpari 33, Cakrabuana, and Mantap. The various varieties produced are adjusted to the requests of distributors and farmers directly according to the location of their agricultural land. Seed Center product marketing is distributed to various areas around Jember, Bondowoso, Situbondo, Probolinggo, and several areas outside Java. To maintain product sustainability in the market, Tefa Seed Center needs to maintain product quality and maintain customer satisfaction so that they do not switch to other producers. One way to measure customer satisfaction is to find out the position of the product according to customer perception. This aims to measure the advantages of TeFa Seed Center products compared to other producers, as well as product deficiencies that consumers think need improvement.

This research aims to determine the position of TeFa Seed Center rice seed products in the market, measure consumer satisfaction, and develop an effective marketing program. This is to determine recommendations for improving production management, developing product marketing strategies at the TeFa Seed Center. The results of this research aim to determine recommendations for improving product quality, service and comprehensive marketing strategies.

2. Materials and Methods

2.1 Materials

The data source used in this research is primary data collected by distributing questionnaires and direct interviews. The samples in this study were 6 agricultural shops as regular consumers, and 3 farmers as direct users. In-depth interviews were conducted

with all selected samples to obtain information regarding consumer perceptions and indicators of strengths, weaknesses, opportunities and threats for Tefa Seed Center products.

2.2 Methods

The sampling method used is purposive sampling, which is the selection of samples based on certain characteristics that are considered to be related to previously known population characteristics [12]. The consumers sampled in this research are agricultural shops and farmers who use the products directly.

To determine the right marketing strategy, it is analyzed using SWOT analysis. The strategic decision is always related to the development of the company's mission, goals, strategies and policies. Thus, strategic planning must analyze the company's strategic factors (strengths, weaknesses, opportunities and threats) in current conditions [13]. The software used for data analysis in this research was Minitab 17 and IBM SPSS 22.

After an approach was carried out through in-depth interviews and literature study, modelling was carried out on the factors that influence consumer perceptions. Multiple linear regression is a regression equation that describes the relationship between more than one independent variable (X) and one dependent variable (Y) [11]. The hypothesis that must be tested in multiple linear regression analysis is

$H_0 : \beta_1 = \beta_2 = \ldots = \beta_{p-1}=0$

H_1 : Not all β_k (k=1,2,…,p−1) equal to zero

If x1, x2, . . ., xp is predictor variables as p that have a relationship with a response variable Y, then in general a linear regression model with one response variable is

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_p x_p + \varepsilon$$

Meanwhile, to determine consumer perceptions, multiple linear regression analysis was used with the independent variables X1 = product, X2 = price, X3 = place, X4 = promotion, X5 = people, X6 = process, and X7 = physical evidence. Meanwhile, the dependent variable is the consumer's perception of the decision to buy the product.

Table 1. Variable indicator

Variable	Indicator
Product	Product quality
	Choice of product varieties
	Conformity to orders
	Product packaging
	Product brand
	Product certification
Price	The product price is commensurate with the quality
	There are discounts for large-scale purchases
Place	Availability of sales location
	Parking facilities
	Ease of reaching locations
Promotion	Inclusion of product name and logo
	Selection of advertising media used
	Ads are accessible and informative
People	Friendliness, politeness and attention
	Complaint handling
	Ability to communicate with consumers
	Immediacy
	Appearance
Process	Ease of payment
	Purchase speed
	Timely service schedule

Physical Evidence	Service facilities
	Comfort
	Security
	Cleanliness and tidiness
Consumer Perception	Products always sell out before they expire
	Always maintain product availability
	Possible reorder

3. Results and Discussion

3.1 Consumer Perception Analysis

To find out the factors that influence consumer perceptions in choosing Tefa Seeds Center products, they were analyzed using a linear regression approach. The results of the regression analysis show the following regression equation.

$$Y = -12{,}392 + 3{,}104X_1 - 2{,}961X_2 + 1{,}26X_3 - 0{,}232X_4 + 6{,}294X_5 - 2{,}321X_6 + 2{,}045X_7$$

Based on the coefficient of determination resulting from the regression analysis, it was found to be 0,986. This shows that the contribution of independent factors influencing consumer perceptions is 98.6% and the remaining 1.4% is explained by other factors.

3.1.1 Simultaneous Test

The hypotheses for simultaneously testing the significance of the regression parameters are:

H0: $\beta 1 = \beta 2 = \ldots = \beta 7 = 0$

H1: There is at least one $\beta j \neq 0$; j = 1, 2, …, 7

Rejected H0 if p-value < α, for $\alpha = 0.05$

Table 2. Analysis of variance

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.195	7	0.028	9.947	**0.240**
	Residual	0.003	1	0.003		
	Total	0.198	8			

The significant value of the simultaneous test in Table 2, it shows that 0.240 is more than 0.05 (α: 5%), so it means that all independent variables simultaneously have no significant effect on consumer perceptions.

3.1.2 Partial Test

To determine the effect of each independent variable partially on consumer perception used partial test. Table 3 is the results of the partial test analysis.

Table 3. Partial test result

Model		Unstandardized Coefficients		t	Sig.	Collinearity Statistics
		B	Std. Error			VIF
1	(Constant)	-12.392	4.147	-2.988	**0.206**	
	X1	3.104	1.003	3.093	**0.199**	74.018
	X2	-2.961	1.473	-2.010	**0.294**	159.986
	X3	1.260	0.397	3.172	**0.194**	21.711
	X4	-0.232	0.641	-0.363	**0.778**	38.316
	X5	6.294	1.049	6.000	**0.105**	25.613
	X6	-2.321	1.229	-1.889	**0.310**	37.998

X7	2.045	1.585	1.290	**0.420**	24.860

Table 2 shows all significant value of each variable greater than 0.05. It means that not a single variable is partially significant. It can be concluded that none of the independent variables have a partially significant effect on consumer perceptions.

3.1.3 Classic Regression Assumptions

Although the regression equation has been formed, it must meet the classical assumptions in regression. The assumptions that must be met in multiple regression analysis are: no multicollinearity each variable (no significant correlation between independent variables), no heteroscedasticity of residual (constant error variance of residual), there is normally distributed error, no autocorrelation of residual. [15].

The following are the results of the examination and testing of assumptions on the formed regression model

Table 4. Classic regression assumptions

Test assumptions	Method	Statistic. Value	Decision
Normality	Kolmogorov-Smirnov	Sig. = 0,2	Fulfilled
Multicollinearity	VIF value	>10	Not Fulfilled
Autocorrelation	Plot ACF	No Lag	Fulfilled
Heteroscedasticity	Glejser test	Sig. > 0,05	Fulfilled

Based on the results of the classical assumption test that must be met in linear regression contained in Table 4 shows that the residuals from the regression meet the normal distribution assumption. This is shown by the results of the normality test, the significance value is more than 0.5, so that the residual meets the normal distribution assumption.

The second assumption test is the multicollinearity test using Variance Inflation Factor (VIF) value detection, where the test results show that it does not meet the multicollinearity test. This is because the VIF is more than 10, so this situation indicates the existence of multicollinearity between variables.

The third assumption that there is no autocorrelation between residuals, or there is no relationship or influence from the first residual data to the next data residual. To detect autocorrelation it can be seen from ACF plotting.

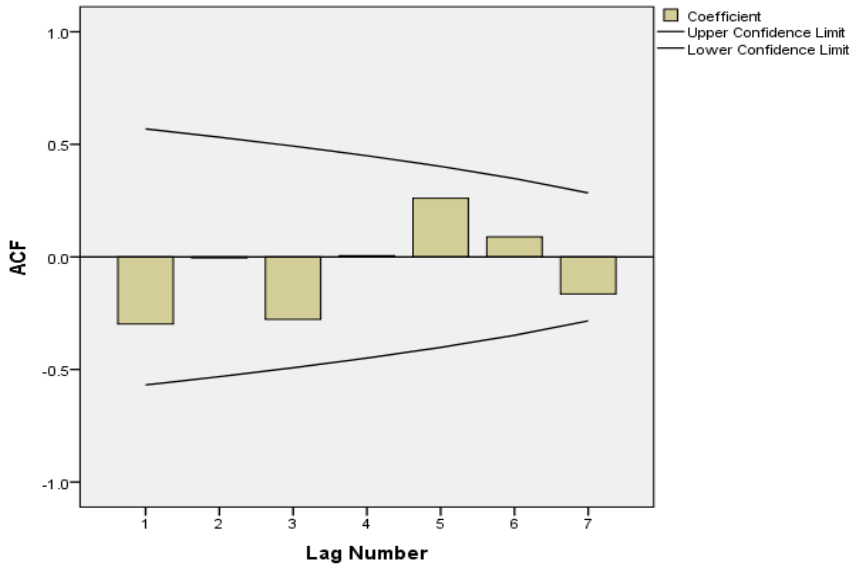

Figure 1. ACF residual

Based on figure 1, it can be seen that no lag that exceeds the red line, where the red line is the upper limit and the lower limit of the autocorrelation line. So it can be concluded that there is no autocorrelation between residues from the t data to the next t-1 data [16].

One way to detect the presence or absence of heteroscedasticity is to perform the Glejser test [17]. Based on the results of the Glejser test, it is known that the significance value of all independent variables after being restored with absolute residual value is above 0.05 so that it can be concluded that the residual variance is the same or there is no heteroscedasticity.

However, because the residuals do not meet the multicollinearity assumption, the approach using linear regression is not recommended. Handling data where multicollinearity occurs is by using Ridge Regression [18]. So for further research, analysis of variables that influence consumer perceptions can be carried out using a ridge regression approach to overcome the multicollinearity that occurs between the independent variables[19].

3.2 SWOT Analysis

Table 5. Matrix SWOT analysist

Internal **External**	**Strengths** 1. Complete business legality 2. Affordable prices 3. Solid team 4. Sufficient business capital 5. Government certified seeds (food self-sufficiency)	**Weakness** 1. Consumers are not yet familiar with Tefa Seed Center products 2. Limited buyer partners 3. Products are not always available 4. The outlet is far from the market 5. Slow response service 6. There are no trained marketing personnel 7. Organizational culture is less competitive
Opportunities 1. Markets are abundant 2. Products are basic needs 3. Supported by government policy (food self-sufficiency)	**Strengths-Opportunities** 1. Improve product availability every month 2. Create more product variants 3. Create a trial garden to convince partners	**Weakness-Opportunities** 1. Provide trained marketing and seed production personnel 2. Increase partners by approaching rice seed trader associations 3. Improved product distribution management 4. Adding workers for customer service 5. Building a healthy and competitive organizational culture
Threats 1. Competitor competition is quite tight 2. Buyers tend to use old products	**Strengths-Threats** 1. Form a competitive work culture 2. Improve sales skills 3. Building collaborative partners with the government, seed trader associations, and agricultural shops	**Weakness-Threats** 1. Increased intensity of product promotion 2. Create brochures, catalogs, online media content for marketing 3. Creation of online sales media 4. Human Resources Training for product sales

Based on the results of a survey of users of Jember State Polytechnic's Tefa Seed Center rice seed products, it is known that the product is in great demand by farmers around Jember City. It is proven that 100% of products are sold before their expiration date. Rice seed products distributed in stores sell within 1 week to 3 months. This shows that the product is very popular and product continuity needs to be maintained so that product sales increase. The most popular products are Inpari 21, Ceherang, Logawa and Sintanur.

4. Conclusions

The company faces enormous opportunities, but on the other hand, the Seed Center faces several internal obstacles/weaknesses. The recommendations that can be given are as follows:

- Improve product availability every month
- Building collaborative partners with the government, seed trader associations, and agricultural shops create a trial garden to convince partners
- provide trained marketing and seed production personnel
- Improved product distribution management
- Adding workers for customer service
- Building a healthy and competitive organizational culture

Based on the analysis of consumer perceptions, it is known that the approach using linear regression on this data is not appropriate because multicollinearity was detected between the independent variables. The future research approach used is better using Ridge Regression.

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