

The Influence of Marketing Mix Strategy on Increasing Sales of Organic Fertilizer PT. Rojo Koyo Manunggal Group

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ABSTRACT

Organic fertilizer producers operate in a competitive agricultural-input market in which product quality, price, distribution, and promotion may jointly shape sales performance. This study examined the effects of the four marketing-mix dimensions on the perceived increase in sales of organic fertilizer at PT Rojo Koyo Manunggal Group, Gresik Regency, Indonesia. A quantitative cross-sectional survey was conducted in June and July 2023. Using simple random sampling, 115 consumers were selected and completed a Likert-scale questionnaire. The data were evaluated through descriptive statistics, instrument checks, multiple linear regression, the Kolmogorov-Smirnov normality test, collinearity diagnostics, the Glejser test, partial t tests, an overall F test, and the coefficient of determination. Product ($B = 0.267$; $p < 0.001$), price ($B = 0.113$; $p = 0.017$), place ($B = 0.210$; $p < 0.001$), and promotion ($B = 0.211$; $p < 0.001$) each had a positive and significant association with sales performance. The model was significant ($F = 266.984$; $p < 0.001$), with $R^2 = 0.738$ and adjusted $R^2 = 0.728$. Product had the largest standardized coefficient, followed by promotion, place, and price. The results support an integrated marketing strategy that prioritizes product quality and availability while strengthening promotion, distribution access, and price-value communication. Because one Glejser coefficient was significant, the inferential results should be interpreted cautiously and verified with robust standard errors in future work.

INTRODUCTION

Agriculture occupies a central position in Indonesia because it supports food production, rural livelihoods, and demand for essential farm inputs. Fertilizer is especially important because adequate nutrient supply can sustain plant growth and crop productivity. At the same time, rising fertilizer prices and recurring supply constraints can make farm management more difficult, particularly for small producers [1]. Organic fertilizer offers an alternative source of nutrients and organic matter that may improve soil physical, chemical, and biological properties. Its commercial success, however, depends not only on agronomic benefits but also on how effectively producers communicate value and make the product available to buyers.

The marketing mix provides a practical framework for coordinating those decisions. It combines product, price, place, and promotion as controllable instruments used to generate a desired response in a target market [2,9]. For an organic fertilizer producer, product decisions include quality, formulation, packaging, labeling, and availability. Price decisions concern affordability and the perceived fairness of the exchange. Place concerns distribution reach and ease of access, whereas promotion translates technical benefits into understandable and persuasive information. The four elements should reinforce one another: attractive packaging or reliable quality will have limited commercial value when distribution is weak, while extensive promotion may be ineffective when the product does not meet expectations.

Sales performance is therefore not simply the result of moving goods from a producer to a consumer; it reflects the market's response to a coordinated offer. Previous studies have generally reported relationships between the marketing mix and sales volume,

repeat-purchase intention, online purchasing, or customer loyalty [3-6,8]. More recent work also shows that the relative importance of the mix can vary across commodities, retail formats, and consumer groups [12-16]. These differences are relevant to agricultural inputs because buyers evaluate both functional performance and economic sacrifice. Consumer decisions are also shaped by prior experience, perceived risk, information quality, and the accessibility of the seller [10]. Consequently, evidence from general retail or food-service settings cannot automatically be applied to an organic fertilizer producer. In agricultural input markets, purchase timing is closely linked to planting schedules, expected field performance, and the buyer's confidence in product information. A producer must therefore coordinate the physical offer with dependable stock, practical application guidance, and responsive communication. This coordination is particularly important for organic fertilizer because consumers may compare it with subsidized, conventional, or compound alternatives whose prices, nutrient profiles, and availability differ. Evaluating the four dimensions in one model can show whether the marketing mix retains explanatory value after the dimensions are considered together.

PT Rojo Koyo Manunggal Group is an agricultural enterprise located in Gresik Regency, East Java. The company produces and markets organic and compound fertilizer products, including RKM Hitam, RKM Merah, and NPK Biru, and serves markets within East Java. Management uses appropriate production technology to maintain output, but the firm operates in a market with competing fertilizer products and price-sensitive consumers. The company must therefore determine whether improvements in product, price, distribution, and promotion are associated with stronger sales performance. Prior evidence does not provide a firm-specific estimate for this enterprise, and the relative contribution of each element has not been documented in the study setting.

This study addressed that gap by testing the partial and simultaneous effects of product, price, place, and promotion on the perceived increase in organic fertilizer sales at PT Rojo Koyo Manunggal Group. The hypotheses were that each marketing-mix dimension would have a positive association with sales performance and that the four dimensions would be jointly significant. In addition to hypothesis testing, the study compared standardized coefficients to identify practical priorities. The contribution is an empirical diagnosis for a local agricultural input producer and a basis for allocating marketing attention among quality, affordability, accessibility, and communication.

MATERIALS AND METHODS

Research Site and Time

The study was conducted at PT Rojo Koyo Manunggal Group in Panceng District, Gresik Regency, East Java, Indonesia, from June to July 2023. A quantitative, explanatory, cross-sectional survey design was used to estimate the relationship between the four marketing-mix dimensions and sales performance at one point in time. The population comprised consumers who purchased the company's organic fertilizer. A total of 115 respondents were selected through simple random sampling and included in the analysis. The sample size and sampling approach followed the source research protocol and were intended to give eligible consumers an equal opportunity to participate.

Materials, Instruments, and Research Design

Primary data were collected with a structured questionnaire using Likert-type response categories. The instrument measured product (X1), price (X2), place (X3), promotion (X4), and perceived sales increase (Y). Product items represented the characteristics and availability of the fertilizer; price items represented affordability and value; place items represented distribution and access; and promotion items represented marketing communication. Supporting information was obtained through documentation, interviews, and direct observation, which are commonly combined in quantitative field research [17]. Questionnaire items were screened through validity and reliability procedures before composite scores were

entered into the regression analysis. Data coding and statistical processing were performed in IBM SPSS Statistics version 26.

Research Procedures

The study proceeded in four stages. First, the researchers defined the variables and prepared questionnaire items based on the four-component marketing-mix framework. Second, eligible consumers were sampled and the questionnaire was administered during the study period. Respondents were informed of the study purpose and their responses were compiled without altering the original response categories. Third, the completed forms were checked, coded, and entered into the statistical software. Frequency distributions were used to identify the respondent profile, after which scale scores were calculated for X1, X2, X3, X4, and Y. Fourth, the data were subjected to assumption checks and multiple linear regression. Tables were generated from the verified analysis output and then reviewed for agreement between coefficients, test statistics, and narrative conclusions.

Observed Parameters and Data Analysis

Respondent characteristics were summarized as frequencies and percentages. The regression model was specified as $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$, where Y was perceived sales increase; a was the constant; b1-b4 were unstandardized coefficients; and e was the error term. Residual normality was assessed with the one-sample Kolmogorov-Smirnov test. Multicollinearity was considered unlikely when tolerance exceeded 0.10 and the variance inflation factor was below 10. The Glejser procedure was used to examine heteroscedasticity, with $p > 0.05$ indicating no statistically detectable relationship between a predictor and the absolute residual. These checks are standard components of multiple linear regression diagnostics [11]. Partial effects were evaluated with two-sided t tests at $\alpha = 0.05$ (df = 110; critical t = 1.983). The simultaneous effect was evaluated with an F test (df1 = 4; df2 = 110; critical F approximately 2.45). Model explanatory power was reported using R2 and adjusted R2. All probabilities were interpreted against the prespecified 5% significance level, and reported coefficients were cross-checked against the corresponding SPSS tables before manuscript preparation.

RESULTS

Respondent Characteristics

Table 1 summarizes the 115 respondents. Men accounted for 70.4% of the sample and women for 29.6%. The largest age group was 30-39 years (39.1%), followed by 40-49 years (29.6%). Respondents with tertiary education represented 55.7% of the sample. Farmers were the largest occupational group (32.2%), followed by other occupations (20.9%) and civil servants (18.3%). The age percentages were recalculated from the reported frequencies so that the table totals are internally consistent.

Table 1. Characteristics of respondents (n = 115)

Characteristic		Category	n	%
Sex	Male		81	70.4
	Female		34	29.6
Age (years)	18-25		16	13.9
	30-39		45	39.1
	40-49		34	29.6
	50-59		13	11.3
	60-70		7	6.1
Education	Elementary school		13	11.3
	Junior high school		7	6.0
	Senior high/vocational school		31	27.0
	Tertiary education		64	55.7
Occupation	Civil servant		21	18.3
	Entrepreneur		17	14.8
	Private-sector employee		16	13.9

Characteristic	Category	n	%
Occupation	Farmer	37	32.2
Occupation	Other	24	20.9

Source: Primary data processed by the authors (2023). Percentages may differ slightly because of rounding.

Model Diagnostics

The one-sample Kolmogorov-Smirnov test produced an asymptotic two-sided significance value of 0.154 (Table 2). Because this value exceeded 0.05, the residual distribution did not significantly depart from normality at the 5% level. The mean residual was approximately zero and the test statistic was 0.075.

Table 2. One-sample Kolmogorov-Smirnov test of unstandardized residuals

Statistic	Value
Number of observations	115
Mean	0.0000000
Standard deviation	1.86348699
Most extreme difference: absolute	0.075
Most extreme difference: positive	0.044
Most extreme difference: negative	-0.075
Test statistic	0.075
Asymptotic significance (two-sided)	0.154

Collinearity diagnostics were within the prespecified limits (Table 3). Tolerance values ranged from 0.574 to 0.735, all above 0.10, while VIF values ranged from 1.361 to 1.741, all below 10. These results indicate that the four predictors did not exhibit problematic multicollinearity in the fitted model.

Table 3. Multiple regression coefficients and collinearity diagnostics

Term	B	SE	Beta	t	p	Tolerance	VIF
Constant	3.739	0.781	-	4.788	<0.001	-	-
Product (X1)	0.267	0.046	0.329	5.775	<0.001	0.735	1.361
Price (X2)	0.113	0.046	0.154	2.429	0.017	0.593	1.687
Place (X3)	0.210	0.045	0.300	4.651	<0.001	0.574	1.741
Promotion (X4)	0.211	0.043	0.310	4.858	<0.001	0.587	1.704

Dependent variable: perceived increase in sales. B = unstandardized coefficient; SE = standard error; Beta = standardized coefficient; VIF = variance inflation factor.

The Glejser test gave p values of 0.136 for product, 0.083 for price, 0.025 for place, and 0.083 for promotion (Table 4). Thus, product, price, and promotion showed no statistically detectable association with the absolute residual at $\alpha = 0.05$. In contrast, place had $p = 0.025$, indicating evidence of heteroscedasticity related to that predictor. This result corrects the earlier narrative interpretation and is considered in the Discussion.

Table 4. Glejser test for heteroscedasticity

Term	B	SE	Beta	t	p
Constant	2.409	0.436	-	5.522	<0.001
Product (X1)	0.039	0.026	0.147	1.503	0.136
Price (X2)	-0.045	0.026	-0.190	-1.747	0.083
Place (X3)	-0.057	0.025	-0.251	-2.269	0.025
Promotion (X4)	-0.042	0.024	-0.192	-1.749	0.083

Dependent variable: absolute residual. A p value below 0.05 indicates evidence of heteroscedasticity.

Partial and Simultaneous Effects

All four marketing-mix coefficients were positive and statistically significant in the main regression model (Table 3). Product had $B = 0.267$, $t = 5.775$, and $p < 0.001$. Price had $B = 0.113$, $t = 2.429$, and $p = 0.017$. Place had $B = 0.210$, $t = 4.651$, and $p < 0.001$, while promotion had $B = 0.211$, $t = 4.858$, and $p < 0.001$. The standardized coefficients ranked product first ($\beta = 0.329$), promotion second ($\beta = 0.310$), place third ($\beta = 0.300$), and price fourth ($\beta = 0.154$). Accordingly, each partial null hypothesis was rejected using the reported conventional OLS standard errors.

The overall regression was statistically significant (Table 5). The model sum of squares was 239.299, the residual sum of squares was 24.648, and $F(4,110) = 266.984$ with $p < 0.001$. The four predictors therefore had a significant simultaneous association with the perceived increase in sales.

Table 5. Analysis of variance for the multiple regression model

Source	Sum of squares	df	Mean square	F	p
Regression	239.299	4	59.825	266.984	<0.001
Residual	24.648	110	0.224	-	-
Total	263.948	114	-	-	-

The multiple correlation coefficient was 0.859, with $R^2 = 0.738$ and adjusted $R^2 = 0.728$ (Table 6). Thus, the model explained 73.8% of the observed variation in the dependent variable, while approximately 26.2% remained outside the fitted model. The standard error of the estimate was 0.864 and the Durbin-Watson statistic was 1.997.

Table 6. Model summary

R	R ²	Adjusted R ²	SE of estimate	Durbin-Watson
0.859	0.738	0.728	0.864	1.997

Predictors: product, price, place, and promotion. Dependent variable: perceived increase in sales.

DISCUSSION

The findings show that the marketing mix was strongly associated with perceived sales performance at PT Rojo Koyo Manunggal Group. The four predictors jointly explained 73.8% of the variation in the outcome, and the adjusted value remained high at 72.8%. This pattern supports earlier evidence that coordinated marketing decisions can influence sales volume and purchasing behavior [3,8,12,13]. It also agrees with studies showing that multiple marketing dimensions can operate simultaneously in shaping loyalty or repeat behavior [5,15]. The result should not be interpreted as proof that marketing activities caused audited sales growth, because both predictors and the outcome were measured in a cross-sectional consumer survey. Nevertheless, the model provides a useful comparative picture of the attributes that respondents associated with stronger sales.

Product had the largest standardized coefficient ($\beta = 0.329$). This suggests that consumers placed the greatest weight on the fertilizer offer itself, including quality, labeling, packaging, variety, benefits, and availability. A product that is clearly identified and consistently available reduces uncertainty and gives buyers concrete reasons to repurchase. The finding is consistent with research that positions product attributes as a major basis for purchase decisions and sales improvement [3,9,10]. For the company, the practical implication is to maintain quality control, provide readable instructions and benefit information on the label, protect packaging integrity, and avoid stock interruptions across the RKM product range.

Promotion ranked second by standardized effect ($\beta = 0.310$). The company uses its website, Instagram, YouTube, and sales agents to introduce products and persuade potential buyers. Such channels can reduce information gaps when messages explain application, product differences, package sizes, and expected agronomic functions in a responsible manner. Earlier studies likewise found that promotion and digital information can support repurchase, platform-based transactions, and everyday online purchasing [4,6,16]. Promotion should therefore be consistent across digital and agent-based channels, use verifiable claims, and connect each message to product availability and a clear point of purchase.

Place also showed a positive coefficient ($\beta = 0.300$). For fertilizer, place includes the accessibility of sales points, the reliability of distribution, and the ease with which customers can obtain the required product when it is needed. Convenient access lowers search and transport costs and helps convert interest into an actual purchase. This interpretation is compatible with evidence that location and the broader service mix contribute to consumer decisions and loyalty [14,15]. However, the significant Glejser result for place ($p = 0.025$) indicates non-constant residual variance associated with this predictor. The direction of the OLS coefficient remains positive, but its conventional standard error should be treated with caution until a robust reanalysis is available.

Price had the smallest standardized coefficient ($\beta = 0.154$) but remained statistically significant. This means that affordability and perceived value still mattered, although respondents differentiated

the products more strongly by product, promotion, and access. Price management should therefore emphasize transparent package prices, consistency between price and quality, and comparisons based on use value rather than relying only on discounts. Research on purchasing decisions similarly links price fairness with product quality, location, and brand perceptions [14]. A price strategy that is disconnected from product performance could weaken trust, while a well-explained value proposition can help consumers understand why organic fertilizer is worth purchasing.

The respondent profile offers additional context. Most respondents were men, the largest age group was 30-39 years, more than half reported tertiary education, and farmers formed the largest occupational group. Education can influence knowledge, participation, and the ability to evaluate technical information [7]. The company should therefore combine technically accurate content for experienced users with simple application guidance for less experienced consumers. The priority order suggested by the standardized coefficients is product, promotion, place, and price, but the four elements should still be managed as an integrated system.

This study is limited by its single-company setting, cross-sectional design, self-reported outcome, and the absence of transaction-level sales records. The data also indicate heteroscedasticity for one predictor, while robust standard errors could not be calculated from the summarized dataset available for this final manuscript. Future research should use a broader sampling frame, verify findings against monthly sales and distribution records, report item-level validity and reliability statistics, and estimate heteroscedasticity-consistent or bootstrap standard errors. Longitudinal or experimental designs would also help distinguish association from causal impact.

CONCLUSION

Product, price, place, and promotion were each positively and significantly associated with the perceived increase in organic fertilizer sales at PT Rojo Koyo Manunggal Group. The model was significant and explained 73.8% of the observed variation, with an adjusted R^2 of 72.8%. Product showed the largest standardized coefficient, followed by promotion, place, and price. The company should therefore prioritize consistent product quality, informative labeling, reliable availability, coordinated digital and agent-based promotion, accessible distribution, and transparent price-value communication. These actions should be implemented as one integrated strategy rather than as isolated interventions. Because the study used a cross-sectional consumer survey and the Glejser test detected heteroscedasticity for the place variable, the coefficients should be interpreted as associations. A future reanalysis using robust standard errors and verified transaction data is recommended before making high-stakes resource-allocation decisions.

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