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Product And Service Quality As Predictors Of Consumer Satisfaction At Perum Bulog In Berau Regency

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ABSTRACT

This study examined the associations of product quality and service quality with consumer satisfaction at Perum BULOG in Berau Regency within a food-distribution context. A quantitative survey was conducted among 40 consumers selected purposively, and the data were analyzed using multiple linear regression. The model explained 41.7% of the variance in consumer satisfaction ($R = 0.646$; $R^2 = 0.417$; adjusted $R^2 = 0.385$) and was statistically significant overall ($p < 0.001$). The fitted equation was $Y = 4.361 + 0.009X_1 + 0.144X_2$. Service quality was positively and significantly associated with consumer satisfaction ($B = 0.144$; $p = 0.005$), whereas the product-quality coefficient was 0.009 and its partial significance was not concluded because the corresponding test statistics were not reported. A Monte Carlo residual normality assessment yielded $p = 0.147$. The findings indicate that service quality is an important component of consumers' evaluation of BULOG services, although generalization is limited by the small purposive sample, single-site coverage, self-reported measures, and one-period survey design.

INTRODUCTION

Food availability, product quality, and service quality are important dimensions of the performance of food-distribution institutions. Perum BULOG performs the functions of supplying and distributing various food commodities; therefore, consumer experience is shaped not only by the condition of the products received but also by the service process through which the products are obtained. From a marketing perspective, satisfaction arises from the comparison between perceived performance and consumer expectations [1]. Product quality reflects the ability of a product to fulfill its intended functions and consumer needs, whereas service quality concerns the quality of the interaction process and the fulfillment of customer expectations [2], [3], [6].

In the context of Perum BULOG in Berau Regency, consumer evaluation is relevant to agribusiness and agricultural economics because food distribution links agricultural products, food institutions, and households as end users. The products evaluated in this study included food commodities marketed by BULOG, including rice and other staple commodities, whereas service quality encompassed service speed, courtesy, accuracy, communication, and convenience. Accordingly, this study goes beyond general marketing aspects by providing evidence on service quality at one node of the regional food-distribution system.

Previous studies have shown that product quality and service quality are often associated with satisfaction, purchase decisions, or loyalty, although the settings and measured outcomes differ across studies [7]–[10], [15]–[18]. Some studies have treated satisfaction as the direct outcome [8], [9], [16], whereas others have focused on loyalty or purchase decisions [10], [15], [17], [18]. These differences limit the direct transferability of findings from commercial settings to public food-distribution services. In addition, empirical evidence concerning consumers of Perum BULOG in Berau Regency remains limited. The research gap addressed in this study is the need to examine whether variation in perceived product quality and service quality can explain variation in consumer satisfaction within the context of BULOG food distribution at the regional level.

Based on this gap, the study aimed to: (1) describe the characteristics of consumers of Perum BULOG in Berau Regency; and (2) analyze the associations of product quality and service quality with consumer satisfaction. The analysis focused on statistical associations and was not intended to establish causal relationships.

MATERIALS AND METHODS

Design, Location, and Respondents

This study employed a quantitative approach using a survey of consumers of Perum BULOG in Berau Regency, specifically

in Teluk Bayur District, East Kalimantan, in 2024. The unit of analysis was consumers who purchased BULOG products during the study period. A total of 40 respondents were selected using purposive sampling; therefore, this technique was classified as non-probability sampling rather than simple random sampling. The sample size of 40 respondents was used consistently throughout all analyses.

The respondents were consumers who purchased BULOG products and were selected according to the study's purposive criteria. The survey was conducted during a single observation period; consequently, the analysis was used to assess relationships among variables at the time of measurement rather than to establish causal relationships.

Instrument and Variables

Primary data were obtained using a five-point Likert-scale questionnaire (1 = strongly disagree to 5 = strongly agree), whereas secondary data were obtained from books, scientific articles, reports, and related documents [11]–[13]. The independent variables were product quality (X_1) and service quality (X_2), while the dependent variable was consumer satisfaction (Y). Product quality was measured using five indicators: durability, rice quality, packaging, product cleanliness, and compliance with quality standards. Service quality was measured using five indicators: service speed, staff courtesy, service accuracy, communication ability, and service convenience. The product-quality construct was intended to assess the BULOG food products purchased by respondents, with one indicator specifically referring to rice quality.

Consumer satisfaction (Y) was measured using questionnaire items on the same five-point Likert scale. Composite scores for product quality, service quality, and consumer satisfaction were used as variables in the regression analysis.

Statistical Analysis

The analyses were conducted using IBM SPSS Statistics 26. The analytical procedures included descriptive statistics; item-validity assessment; internal reliability analysis using Cronbach's alpha; evaluation of regression assumptions; multiple linear regression; the overall model test; partial coefficient tests; and the coefficient of determination. The significance level was set at $\alpha = 0.05$. A p-value < 0.05 was interpreted as evidence for rejecting the null hypothesis, whereas $p \geq 0.05$ was not interpreted as evidence that the effect was equal to zero.

The statistical model was specified as $Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \varepsilon_i$, where Y = consumer satisfaction, X_1 = product quality, X_2 = service quality, β_0 = intercept, β_1–β_2 = regression coefficients, and ε = error term. The fitted equation derived from the unstandardized coefficients was $\hat{Y} = 4.361 + 0.009X_1 + 0.144X_2$. The coefficients were interpreted in the units of the composite scores used in the analysis.

RESULTS AND DISCUSSION

Respondent Characteristics

Respondent characteristics are presented as frequencies and percentages based on n = 40. Percentages were recalculated from the respondent counts so that the total for each variable equaled 100%. Four respondents (10.0%) had no reported age category and were therefore classified as "not reported."

Characteristics	n (%)
Sex – Female	29 (72.5%)
Sex – Male	11 (27.5%)
Age – 23–29 years	10 (25.0%)
Age – 30–39 years	22 (55.0%)
Age – 40–49 years	4 (10.0%)
Age – Not reported	4 (10.0%)
Occupation – Homemaker	24 (60.0%)
Occupation – Farmer	8 (20.0%)
Occupation – Entrepreneur	3 (7.5%)
Occupation – Laborer	3 (7.5%)
Occupation – Teacher	1 (2.5%)
Occupation – Student	1 (2.5%)
Partner/companion – Family member	33 (82.5%)
Partner/companion – Neighbor	6 (15.0%)
Partner/companion – Spouse	1 (2.5%)

Note: percentages were calculated based on n = 40; four respondents had no reported age category. The term "partner/companion" follows the questionnaire categories and is interpreted descriptively.

The sample was predominantly female, aged 30–39 years, and composed of homemakers. This distribution describes the composition of the study sample and does not constitute evidence regarding the allocation of household decision-making roles. The category "spouse" may also conceptually overlap with "family member"; therefore, the partner/companion variable was not used for further inference.

Instrument Validity and Reliability

With n = 40, the critical r value used for the validity assessment was 0.312. All items for X_1, X_2, and Y had calculated r values greater than 0.312 and therefore met the validity criterion applied in this study.

Cronbach's alpha was 0.837 for product quality (X_1) and 0.838 for service quality (X_2). Both values indicated adequate internal consistency. The values 0.837 and 0.838 are reliability statistics, not regression coefficients.

Regression Diagnostics

The Monte Carlo-based residual normality test yielded p = 0.147 (> 0.05), indicating insufficient evidence to reject the assumption of residual normality under this test; however, this result does not establish normality conclusively. The tolerance value for each predictor was 0.999, equivalent to a VIF of approximately 1.001 (1/0.999), which is well below the threshold commonly used to indicate multicollinearity. Inspection of the standardized residual scatterplot against standardized predicted values revealed no clear systematic pattern, indicating no strong visual evidence of heteroskedasticity.

Model Fit and Simultaneous Test

The regression model yielded R = 0.646 and $R^2 = 0.417$. With n = 40 and two predictors, the adjusted R^2 calculated from this R^2 was 0.385. Thus, 41.7% of the variation in consumer

satisfaction was explained by product quality and service quality in the model, whereas 58.3% remained unexplained by these two predictors. The remaining variation cannot be attributed specifically to price, trust, availability, or other factors because these variables were not measured in the model.

R	R^2	Adjusted R^2	n
0.646	0.417	0.385	40

Adjusted R^2 was calculated from $R^2 = 0.417$, $n = 40$, and $k = 2$.

The overall test indicated that the model was statistically significant ($p < 0.001$). This result means that, jointly, at least one slope coefficient differed from zero. The overall test does not demonstrate that both predictors are individually significant, nor does it indicate an interaction between product quality and service quality.

Partial Coefficients and Regression Equation

The unstandardized coefficients were 4.361 for the intercept, 0.009 for product quality (X_1), and 0.144 for service quality (X_2). For service quality, $p = 0.005$, indicating that the coefficient was positively and significantly associated with consumer satisfaction at $\alpha = 0.05$. For product quality, the complete partial-test statistics were not reported; therefore, the positive sign of $B = 0.009$ was not used as a basis for claiming statistical significance.

Predictor	B	p	Interpretation
Constant	4.361	—	Model intercept
Product quality (X_1)	0.009	Not reported	Positive direction; partial significance not reported
Service quality (X_2)	0.144	0.005	Positive and significant association

The fitted equation, $\hat{Y} = 4.361 + 0.009X_1 + 0.144X_2$, represents the predicted change in satisfaction associated with a one-unit increase in the composite score of each predictor while holding the other predictor constant. The magnitude of $B = 0.144$ should not be used to claim that service quality is the "most dominant" predictor without comparing standardized coefficients and their uncertainty. The defensible finding is that service quality has a positive and significant association with satisfaction, while the model as a whole is statistically significant.

Discussion and Practical Implications

The finding for service quality is broadly consistent with the literature identifying service quality as an important determinant of consumer evaluation [8], [9], [16]. In the BULOG context, service quality encompasses speed, accuracy, courtesy, communication, and convenience. The positive service-quality coefficient indicates that respondents who rated the service more favorably tended to report higher satisfaction. Because the study used an observational design and was conducted during a single period, this relationship should be interpreted as an association rather than evidence that changes in service quality necessarily cause changes in satisfaction.

The small product-quality coefficient and the absence of complete partial-test statistics require a cautious conclusion regarding its independent association. This differs from several commercial studies reporting associations of product quality with consumer satisfaction or purchase decisions [7]–[9], [15]. Such differences may be related to product characteristics, institutional context, score variability, sample size, or respondent composition; however, these explanations are possibilities rather than findings directly tested in the present study.

From a practical perspective, the results support the use of consumer feedback to evaluate service processes at BULOG distribution points. Improvements in information clarity, process accuracy, and staff responsiveness may be considered as managerial actions; however, their effectiveness should be evaluated using longitudinal data or before-and-after assessments. Trust and loyalty were not measured as study outcomes; therefore, they should be regarded only as topics for future research rather than effects demonstrated by the present study.

Study Limitations

This study has several limitations. First, the sample consisted of only 40 respondents selected purposively, which limits population representativeness and generalization to all BULOG consumers. Second, the study covered a single service location in Berau Regency and relied on self-reported assessments from respondents. Third, the one-period survey design does not permit the establishment of temporal ordering or causal inference. These limitations mean that the findings are more appropriately interpreted as a description of relationships within the study sample rather than as causal estimates applicable to the entire population of BULOG consumers.

CONCLUSION

The model including product quality and service quality explained 41.7% of the variation in consumer satisfaction at Perum BULOG in Berau Regency ($R^2 = 0.417$; adjusted $R^2 = 0.385$) and was statistically significant overall ($p < 0.001$). The regression equation was $\hat{Y} = 4.361 + 0.009X_1 + 0.144X_2$. Service quality showed a positive and significant association with consumer satisfaction ($B = 0.144$; $p = 0.005$). The product-quality coefficient was positive ($B = 0.009$), but its partial significance was not concluded because the corresponding partial-test statistics were not reported. The findings support greater attention to service quality in managing the BULOG consumer experience, while interpretation should continue to account for the limitations associated with sample size, purposive selection, single-site coverage, and the one-period survey design.

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