

How to Cite

Haryadi, R., Widiyanti, M., Shihab, M. S., & Maulana, A. (2024). The effect of product quality on coal purchase interest through sales-based non-KAI logistics at PT Bukit Asam, TBK. *International Journal of Business, Economics and Management*, 7(4), 168-175. <https://doi.org/10.21744/ijbem.v7n4.2326>

The Effect of Product Quality on Coal Purchase Interest Through Sales-Based Non-KAI Logistics at PT Bukit Asam, TBK

Rendra Haryadi

Student of Master Management, Sriwijaya University, Palembang, Indonesia
Email: rharyadi.al@gmail.com

Marlina Widiyanti

Lecturer of Master of Management, Economic Faculty, Sriwijaya University, Palembang, Indonesia
Corresponding author email: marlinawidiyanti@fe.unsri.ac.id

Muchsin Saggaf Shihab

Lecturer of Master of Management, Economic Faculty, Sriwijaya University, Palembang, Indonesia
Email: muchsin.shihab@bakrie.ac.id

Ahmad Maulana

Lecturer of Master of Management, Economic Faculty, Sriwijaya University, Palembang, Indonesia
Email: maulana25@fe.unsri.ac.id

Abstract---*This study aims to analyze the effect of product quality on coal purchase interest through a non-KAI logistics-based sales system at PT Bukit Asam, Tbk. As one of the largest coal producers in Indonesia, PT Bukit Asam, Tbk faces the challenge of meeting growing demand while maintaining competitiveness and customer satisfaction. This study uses a quantitative method with a survey of 150 potential customers. The sampling technique used was purposive random sampling. The data were analyzed using multiple linear regression to test the effect of product quality on purchase intention. The results showed that product quality positively and significantly influences coal purchase intention through non-KAI logistics-based sales. The findings support PT Bukit Asam, Tbk's efforts in improving service quality and expanding distribution with a more flexible logistics system to increase consumer appeal.*

Keywords---*product quality, purchase intention, sales-based, service quality.*

Introduction

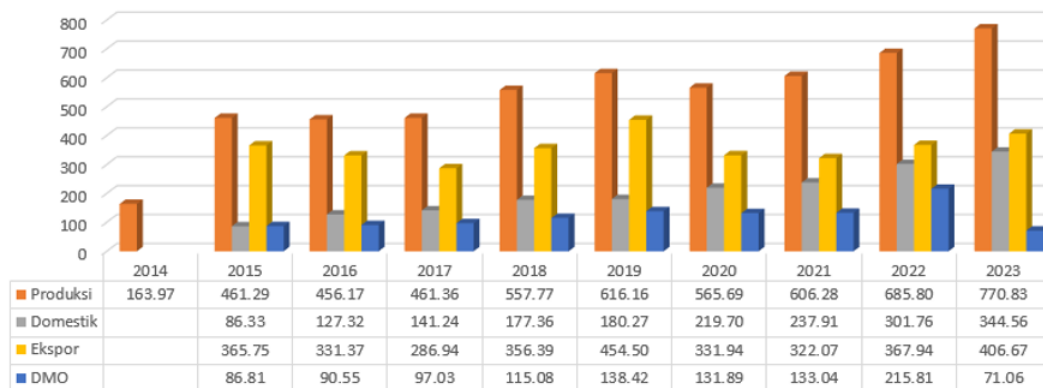
In the coming decade, global demand for coal is projected to undergo a major shift. According to a report by the International Energy Agency (IEA), this demand is expected to peak this decade, triggered by a structural decline in coal use in developed countries and a weakening Chinese economy. However, in Asia, particularly China and India, coal demand is expected to remain stable or even increase, with these two countries expected to account for around 65% of total global demand (IEA Blob Core; IEA).

The coal industry in Indonesia plays an important role in both the national and global economy. As one of the world's largest coal producers, Indonesia has abundant reserves and various types of coal, including thermal coal for power generation and metallurgical coal for the steel industry, which are the main export products to various countries (BPS, 2022).

The development of the coal sector in Indonesia is also influenced by fluctuating global demand and commodity changes in the international market. In addition, government policies and environmental issues impact the operations

of domestic coal companies (Rangkuti, 2020). To remain competitive, coal companies in Indonesia need to consider several factors, including product quality, and the right distribution strategy to increase consumer appeal.

Realization of Coal Production and Sales in Indonesia From 2014 - 2023



<https://moldi.ellltdm.go.id/proldullksi-batullbaradi.esdm.go.id/produksi-batubara>

Figure 1. Realization of coal production and sales in Indonesia from 2014 - 2023

From the data HR from 2014 - 2023 there is a significant increase where in 2014 only 163 770.83 in 2023. There are that are a scale in including PT Tbk, PT Tbk, PT Bayan, PT Kaltim Prima and PT Bukit Asam.

PT Asam Tbk is part of the MIND ID which is engaged in coal mining. By the end of 2023, the 's business network will 5 mining areas and 3. To improve competitiveness and meet the growing market demand, PT Bukit Asam Tbk has implemented various development strategies. The company invests in technology and innovation to improve the operational efficiency of its mining activities. In addition, PT Bukit Asam Tbk continues to expand its domestic and international market reach through strategic partnerships and operational expansion as well as making collaborative strategic efforts with infrastructure service providers such as transportation and ports (Brinanti et al., 2021).

Table 1

Coal production, coal railways transportation, coal sales at the mine mouth, and coal inventory in Tanjung Enim at PT Bukit Asam Tbk since 2018-2023

Year	Coal Production (Tons)	Coal Railways Transportation (Ton)	Coal Sales at The Mine Mouth (Tons)	Coal Inventory at Tanjung Enim (Ton)
2023	40.889.717	32.423.156	3.170.681	10.875.180
2022	36.264.750	28.837.280	2.377.196	9.346.330
2021	29.264.866	25.404.725	2.092.417	4.296.057
2020	24.234.371	23.782.705	1.385.226	2.528.332
2019	28.075.436	24.245.436	1.667.080	3.461.892
2018	25.368.000	22.686.767	1.382.261	1.298.972
Total	143.207.423	124.956.914	8.904.180	20.931.582

Data PT Bukit Asam, Tbk 2024

Data in 1.1 of at PT Bukit Asam, Tbk from the 2018 to the 2023. In 2020 was compared to other years, 24,234,37 in 2023 the highest five, namely 40,889,717. While the transportation and sales of Mine Mouth from 2018 - 2023 amounted to 133,861,094 tons the final stock in 2023 amounted to 10,875,180 tons.

Table 2
 TLS Expenditure of PT Bukit Asam, Tbk 2018-2023

No.	Railway Transportation	
	Year	Volume
1	2023	32.423.156
2	2022	28.837.280
3	2021	25.404.725
4	2020	23.782.705
5	2019	24.245.436
6	2018	22.686.767

Data PT Bukit Asam, Tbk 2024

Shows the data in Table of PT Bukit Asam, Tbk's train transportation expenditure for 2018 to 2023, with the volume of coal shipments fluctuating over a five-year period. The lowest shipment was recorded in 2018, which was 22,686,767 tons, while 2023 recorded the highest shipment volume of 32,423,156 tons.

Table 3
 Sales of PT Bukit Asam, Tbk in Tanjung Enim in 2018 - 2023

Year	Tanjung Enim Sales		Total
	Via UPTE	FOT	
2023	3.170.681	63.595	3.234.276
2022	2.307.690	69.506	2.377.196
2021	2.092.417	-	2.092.417
2020	1.385.226	-	1.385.226
2019	1.667.080	-	1.667.080
2018	1.382.261	-	1.382.261

Data PT Bukit Asam, Tbk 2024

The data in the table sales volume PT. Bukit Asam, Tbk in 2018 to 2023, shows a fluctuating sales trend. In 2018, the lowest total sales were recorded at 1,382,261 tons, while the highest sales were achieved in 2023 with a volume of 3,234,276 tons.

In recent years, PT Bukit Asam, Tbk has faced a major challenge to maintain market share while increasing consumer interest in its coal products. An important factor that influences consumer purchasing decisions is the quality of the product as well as what is offered. High-quality coal guarantees the efficiency of its utilization in various industrial sectors, while competitive ones become the main determinant for customers in choosing suppliers (Lee et al., 2017).

Along with the development of technology and increasing market competition, PT Bukit Asam Tbk began to adopt a logistics-based distribution strategy outside the KAI (Kereta Api Indonesia) line. Logistics plays a central role in coal distribution as it has a direct impact on total cost as well as product availability in the market. By adopting a more flexible logistics system, such as trucking, the company hopes to reach more consumers and adapt to diverse customer needs (Hallak, 2006; Chao, 1998).

Based on the observed phenomenon and company data, there is a buildup of coal stock due to the difference between coal production and delivery through rail transportation and multi-mine sales. Therefore, the author considers it important to find solutions related to stock management at PT Bukit Asam, Tbk by selling coal through the "free on barge mother vessel" (FOBMV) method. FOBMV is a sales system in which coal is transported directly from the mine to the buyer's jetty using a transport truck or conveyance owned by the customer. This approach aims to increase sales outside of railways, which are limited and require large investments and considerable time to develop (Bian & Forsythe, 2012; Hung et al., 2016; Pookulangara & Koesler, 2011).

Method

Hair (2010), also explained that the minimum sample size should be five observations for each parameter estimate and a maximum of ten observations for each parameter estimate. In this study, with the number of questions in the

questionnaire as many as 30, the required sample size is five times the number of questions, namely $5 \times 30 = 150$ respondents. Thus, the sample used in this study consisted of 150 respondents, which included a homogeneous population in the same area and had similarities in the type or brand of product purchased. The sampling technique used in this study was purposive random sampling. Research respondents include customers and prospective customers who purchase coal through a non-KAI logistics-based sales system at PT Bukit Asam, Tbk in 2024 and beyond.

In this study, the data obtained from questionnaire answers using a Likert scale is ordinal. The method applied is the *Method of Successive Intervals* (MSI), which functions as a scaling method to convert the ordinal measurement scale to an interval scale (Sugiyono, 2020).

Result and Discussion

Table 4
Normality Test Results
One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residuals
N		150
Normal Parameters	Mean	.0000000
	Std. Deviation	.58658564
Most Extreme Difference	Absolute	.094
	Positive	.063
	Negative	-.094
Kolmogrov-Smirnov Z		.094
Asymp. Sig. (2-tailed)		.133

Data Source: Processed from Questionnaire, 2024

Based on the normality test results in the table, shows that the data is normally distributed. This is indicated by the *Kolmogorov-Smirnov* test which shows results that have a significance level of 0.133 which is above 0.05.

Multicollinearity Test Results

The multicollinearity test aims to test whether the regression model found a correlation between independent variables. To find out whether multicollinearity occurs, it can be seen from the VIF and *tolerance* values contained in each variable as in the table below:

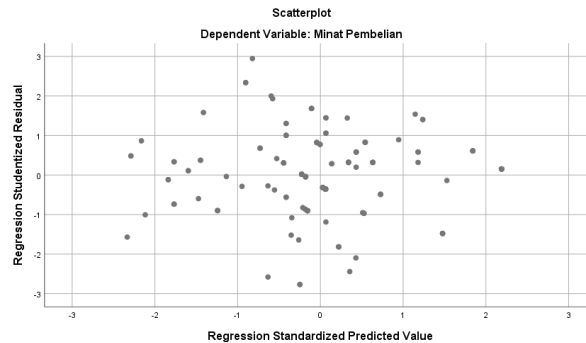
Table 5
Multicollinearity Test Results

Test Of Multicollinearity	VIF	Cutt Off	Description
Product Quality	1,621	< 10	No Multicollinearity
	1,470	< 10	No Multicollinearity

Data Source: Processed from Questionnaire, 2024

Based on the results from the table, shows that there is no multicollinearity between the independent variables because it shows the VIF value is less than 10. Thus, in this model, there is no multicollinearity problem.

Heteroscedasticity Test Results



Data Source: Processed from Questionnaire, 2024

Based on the picture above, it shows that there is no heteroscedasticity, because the data distribution does not form a certain line or there is no clear pattern, and the points spread above and below zero on the Y axis.

Research Analysis Results

Multiple Linear Regression Analysis Results

Multiple linear regression analysis was carried out to determine the effect of product quality variables (X) on purchase intention (Y). Based on the test results obtained as follows:

Table 6
Multiple Linear Regression Analysis Results

Model	Coefficients			
		Unstandardized Coefficients	Standardized Coefficients	
1		B	Std. Error	Beta
	Constant	.760	.191	
	Product Quality	.507	.059	.519
	Purchase Intention	.365	.059	.376

Data Source: Processed from Questionnaire, 2024

Based on the table, the results of multiple linear regression analysis can be expressed with the following equation:

$$Y = 0,760 + 0,507X_1 + 0,365X_2 + e$$

- 1) The constant value of 0.760 indicates that the amount of purchase interest is 0.760. If the product quality variable (X) is 0 (zero).
- 2) The regression coefficient value of the product quality variable of 0.507 means that the quality of the product provided increases the purchase interest. With this value and a regression coefficient value of 0.507, this shows that there is a positive influence between product quality on interest in purchasing coal through non-KAI logistics-based sales at PT Bukit Asam, Tbk.
- 3) The variable regression coefficient value of 0.365 means that what is given increases purchase interest. With this value and a regression coefficient value of 0.365, this shows that there is a positive influence between Coal purchase interest through non-KAI logistics-based sales at PT Bukit Asam, Tbk.

Table 7
Test Results of Correlation Coefficient (r) and Coefficient of Determination (R²)
Model Summary^b

Model	r	R Square	Adjusted R Square	Std. Error of the Estimate
1	.795	.632	.627	.590563

Data Source: Processed from Questionnaire, 2024

Based on the table, it can be seen that the correlation coefficient (r) between the independent variable and the dependent variable is 0.785 or 78.5%. This shows that the correlation or relationship between the independent variable and the dependent variable has a strong level of relationship (in the range of 0.60 - 0.79). The coefficient of determination (R²) of 0.632 indicates that the independent variable, namely product quality (X) can explain the dependent variable, namely purchase intention (Y) by 63.2%, while the remaining 36.8% is explained by other factors that are not included in this study.

Hypothesis Test Results

F Test Results

The F test in this study was conducted to identify whether the regression equation model was feasible or not feasible to use to explain the effect of the independent variables on the dependent variable. Based on the test results and data processing, the test results are as follows:

Table 8
F Test Results

Model		ANNOVA ^b				
		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	88.022	2	44.011	126.192	.000
	Residuals	51.268	147	.349		
	Total	139.291	149			

Data Source: Processed from Questionnaire, 2024

Based on the results in the table, a significance value of 0.000 is obtained because the significance value of 0.000 < 0.05, it can be said that the linear regression model obtained is feasible to be used to explain the effect of product quality on interest in purchasing coal through non-KAI logistics-based sales at PT Bukit Asam, Tbk.

Results of the t-test

The t-test is carried out to determine how much influence the independent variables individually have on the dependent variable. This study with a significance of 5% or $\alpha = 0.05$. The t-test results can be seen in Table 4.14 as follows:

Table 9
Results of the t-test

Model	Coefficients			t	Sig.	
	Unstandardized Coefficients	Standardized Coefficients				
1	B	Std. Error	Beta			
	(Constant)	.760	.191			
	Product Quality	.507	.059	.519	8.559	.000

Data Source: Processed from Questionnaire, 2024

Based on the results of the analysis calculations in the table, it can be described as follows, the product quality variable (X), has a beta value of 0.507 with a significant value of 0.000 which is smaller than 0.05. This shows that the product quality variable has a positive and significant influence on interest in purchasing coal through non-KAI logistics-based sales at PT Bukit Asam, Tbk. This shows that the product quality variable has a positive and significant influence on interest in purchasing coal through non-KAI logistics-based sales at PT Bukit Asam, Tbk. This proves that the first hypothesis on product quality variables has a positive and significant effect can be accepted.

The Effect of Product Quality on Interest in Purchasing Coal Through Non-KAI Logistics-Based Sales at PT Bukit Asam, Tbk

Product quality is the ability of a product to perform its function, which is also one of the main factors relied upon by marketers in promoting the product (Kotler & Armstrong, 2019). The quality of a product can be evaluated based on several varying criteria, given differences in consumer needs and preferences. Perceptions of quality reflect consumers' overall view of the product, which in turn can influence purchase intention. Consumer purchase intention is formed through a personal evaluation of a product or service that includes an assessment of its quality, usefulness, as well as the expected benefits of consuming the product. Thus, product quality has a significant impact on consumer purchase intention (Naini et al., 2022).

Respondents' responses to the responsive and fast complaint-handling indicator showed the lowest value. This indicates that the speed of handling consumer complaints still does not meet expectations. Some respondents said that the complaint-handling process was less responsive, especially when complaints were submitted through electronic messaging media such as WhatsApp and email, which took several working days to get a response (Agnihotri et al., 2017; Wan et al., 2022).

In contrast, respondents' responses to the indicator of the quality of coal produced by PT Bukit Asam, Tbk by the product information submitted showed the highest score. This indicates that PT Bukit Asam Tbk has provided clear coal product information that is consistent with the quality of the products offered. The company also utilizes the official website to provide details of product types, photos, and complete product specifications, which helps consumers better understand the products available (Meesala & Paul, 2018; Ladhari, 2010).

Conclusion

Based on the results of research and analysis that has been carried out, it can be concluded that Product quality has a positive and significant effect on interest in purchasing coal through non-KAI logistics-based sales at PT Bukit Asam, Tbk.

Acknowledgments

Thanks to those who have helped so that this manuscript can be accepted and published in international journals.

References

- Agnihotri, R., Trainor, K. J., Itani, O. S., & Rodriguez, M. (2017). Examining the role of sales-based CRM technology and social media use on post-sale service behaviors in India. *Journal of Business Research*, 81, 144-154. <https://doi.org/10.1016/j.jbusres.2017.08.021>
- Akbar, A. R., & Suwitho, S. (2019). Pengaruh Kualitas Produk, Harga dan Strategi Promosi Terhadap Minat Beli. *Jurnal Ilmu dan Riset Manajemen (JIRM)*, 8(11).
- Amron, A. (2018). The influence of brand image, brand trust, product quality, and price on the consumer's buying decision of MPV cars. *European Scientific Journal, ESJ*, 14(13), 228.
- Bian, Q., & Forsythe, S. (2012). Purchase intention for luxury brands: A cross cultural comparison. *Journal of business research*, 65(10), 1443-1451. <https://doi.org/10.1016/j.jbusres.2011.10.010>
- Brinanti, B., Wahab, Z., Widiyanti, M., & Rosa, A. (2021). The influence of product quality and promotion on the purchase decision of NPK retail non subsidy fertilizer at PT. Pupuk Sriwidjaja Palembang in the South Sumatra Region. *International Journal of Business, Economics and Management*, 4(4), 494-501. <https://doi.org/10.21744/ijbem.v4n4.1814>
- Chao, P. (1998). Impact of country-of-origin dimensions on product quality and design quality perceptions. *Journal of Business research*, 42(1), 1-6. [https://doi.org/10.1016/S0148-2963\(97\)00129-X](https://doi.org/10.1016/S0148-2963(97)00129-X)

- Citrawati, V. D., Prakosa, A., & Basri, A. I. (2021). Pengaruh Pengetahuan, Promosi, Produk, dan Reputasi Terhadap Minat Menabung di Tabungan Tamansari BPR Bantul. *Equilibrium: Jurnal Ilmu Manajemen*, 1(1), 1-8.
- Erlangga, H. (2021). Effect of digital marketing and social media on purchase intention of Smes food products. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(3), 3672-3678.
- Hair. (2010). *Multivariate Data Analysis (Seventh Ed)*. Pearson Prentice Hall.
- Haitao, N. (2022). Analysis of product variety and price on purchase decisions. *International Journal of Advanced Multidisciplinary*, 1(1), 73-82.
- Hallak, J. C. (2006). Product quality and the direction of trade. *Journal of international Economics*, 68(1), 238-265. <https://doi.org/10.1016/j.jinteco.2005.04.001>
- Hung, Y., de Kok, T. M., & Verbeke, W. (2016). Consumer attitude and purchase intention towards processed meat products with natural compounds and a reduced level of nitrite. *Meat science*, 121, 119-126. <https://doi.org/10.1016/j.meatsci.2016.06.002>
- Jayabaya, P., & Madiawati, P. N. (2018). Pengaruh Penerapan Bauran Pemasaran Digital Terhadap Minat Beli Pengguna Kereta Api Melalui Aplikasi Mobile Kai Access. *JURISMA: Jurnal Riset Bisnis & Manajemen*, 8(2), 113-126.
- Kotler, P., & Armstrong, G. (2019). *Prinsip-Prinsip Pemasaran (12th ed.)*. Erlangga.
- Ladhari, R. (2010). Developing e-service quality scales: A literature review. *Journal of retailing and consumer services*, 17(6), 464-477. <https://doi.org/10.1016/j.jretconser.2010.06.003>
- Lee, W. I., Cheng, S. Y., & Shih, Y. T. (2017). Effects among product attributes, involvement, word-of-mouth, and purchase intention in online shopping. *Asia Pacific Management Review*, 22(4), 223-229. <https://doi.org/10.1016/j.apmr.2017.07.007>
- Meesala, A., & Paul, J. (2018). Service quality, consumer satisfaction and loyalty in hospitals: Thinking for the future. *Journal of Retailing and Consumer Services*, 40, 261-269. <https://doi.org/10.1016/j.jretconser.2016.10.011>
- Naini, N. F., Santoso, S., Andriani, T. S., Claudia, U. G., & Nurfadillah, N. (2022). The effect of product quality, service quality, customer satisfaction on customer loyalty. *Journal of consumer sciences*, 7(1), 34-50.
- Pookulangara, S., & Koesler, K. (2011). Cultural influence on consumers' usage of social networks and its' impact on online purchase intentions. *Journal of retailing and consumer services*, 18(4), 348-354. <https://doi.org/10.1016/j.jretconser.2011.03.003>
- Prasetyo, B., Adil, M., Soelistya, D., & Rosyihuddin, M. (2022). The importance of product quality, price perception and service quality in achieving customer satisfaction. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, 5(1), 5457-5471.
- Rachmadita, I. B. (2020). *Pengaruh Produk, Harga, Promosi Penjualan, Pemasaran Langsung Dan Digital Terhadap Minat Beli Konsumen Natasha Skin Clinic Center Banjarmasin* (Doctoral dissertation, Universitas Islam Kalimantan MAB).
- Rangkuti, A. (2020). Possible 2020 Regional Head Elections As A Response To The Covid 19 Pandemic In Various Perspectives. *Law Review: ISSN (Print)*, 2723-3413.
- Rosillo-Díaz, E., Blanco-Encomienda, F. J., & Crespo-Almendros, E. (2020). A cross-cultural analysis of perceived product quality, perceived risk and purchase intention in e-commerce platforms. *Journal of Enterprise Information Management*, 33(1), 139-160.
- Siregar, T. A. (2021). *Pengaruh produk, promosi dan pelayanan terhadap minat masyarakat untuk menabung emas pada PT. Pegadaian Syariah Cabang Alaman Bolak Padangsidempuan* (Doctoral dissertation, IAIN Padangsidempuan).
- Sugiyono, D. (2020). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif Dan R & D*. Alfabeta.
- Sukowati, I. L. (2022). *Pengaruh Price Dan Product Quality Terhadap Minat Beli Produk Farly Shop Dalam Perspektif Bisnis Islam (Pada Farly Shop Kotagajah Kabupaten Lampung Tengah)* (Doctoral dissertation, UIN Raden Intan Lampung).
- Tregear, A., & Ness, M. (2005). Discriminant analysis of consumer interest in buying locally produced foods. *Journal of Marketing management*, 21(1-2), 19-35.
- Wan, G., Cao, Y., & Wang, S. (2022). Evaluation of a joint replenishment policy with sales-based threshold and stochastic demand. *Computers & Industrial Engineering*, 172, 108525. <https://doi.org/10.1016/j.cie.2022.108525>
- Wells, J. D., Valacich, J. S., & Hess, T. J. (2011). What signal are you sending? How website quality influences perceptions of product quality and purchase intentions. *MIS quarterly*, 373-396.