Ilomata International Journal of Tax & Accounting
P-ISSN: 2714-9838; E-ISSN: 2714-9846
Volume 4, Issue 2, April 2023
Page No. 164-180

Profit or Planet? : Impact of Production and Environmental Costs on Sales

Ivada Zanetha Darmaputri[1], Valentine Siagian[2]
[12]Universitas Advent Indonesia, Indonesia
Correspondent: 1932107@unai.edu [1]

Received : Janaury 13,, 2023
Accepted : April 3, 2023
Published : April 30, 2023

Citation: Darmaputri, I., Siagian, V. (2023). Profit or Planet? : Impact of Production and Environmental Costs on Sales. Ilomata International Journal of Tax and Accounting, 4(2), 164-180.
https://doi.org/10.52728/ijtc.v4i1.695

ABSTRACT: Lately, environmental problems such as pollution, poorly managed waste, and even depleting green land, have become issues that require companies to take action. But on the other hand, companies need well-allocated production costs, which of course have the aim of increasing company profits. That's why, the purpose of this research is to analyze The Effects of Production Costs and Environmental Costs on Sales for primary and chemical industry firms with ISO 14001 certification that are traded on the Indonesia Stock Exchange. Specifically, SPSS version 27 is utilized for conducting multiple regression analyses as part of a quantitatively descriptive methodology. Annual and sustainability reports for 5 years from 2017 to 2021 out of 8 companies that have gone through a purposive sampling process are used as research samples. Based on the multiple regression analysis that has been carried out, the results show that partially, production costs have a significant effect on sales, and environmental costs have no significant effect on sales. Meanwhile, simultaneously both production costs and environmental costs have a significant effect on sales. Meaning that production costs and environmental costs are interconnected with each other, so when sales continue to increase, production costs and environmental costs will also increase.

Keywords: Environmental Cost, Production Cost, Sales

INTRODUCTION

To achieve the expected goals, companies today are facing new focus. Initially, a company was only focused on a single bottom line or the value of a company from its financial condition, nowadays the focus became a triple bottom line or according to Elkington, 1944 in (Nababan, L., & Hasyir, 2019) the 3P concept which includes financial (profit), environmental (planet), and social (people) dimensions.

The profit dimension is how the company aims to make a profit from activities such as sales carried out by the company. Then the planet dimension shows that the company should be responsible for managing the environment and its resources. Also, the well-being of the company's employees and other stakeholders is a key aspect of the human dimension. This demonstrates that

corporations' objectives in conducting operations should include not only financial gain but also care for the local environment and the well-being of the surrounding community.

In the manufacturing industry, there are various activities carried out by the company, one of which is production activities. This activity certainly requires an allocation of costs called production costs. According to (Myrelid & Olhager, 2019) it is important for manufacturing firms to allocate costs correctly as a decision to the products that they made. (Harnanto, 2017) defines production costs as costs that are considered related to products which include direct and indirect costs for processing raw materials into finished products.

Mulyadi's definition of manufacturing costs, on the other hand, are those that arise while taking raw materials and turning them into finished goods, (Mulyadi., 2015). This production cost can be broken down into the following categories: raw materials, labor, direct costs, and overhead. (Xi Chen & Bertrand M. Koebel, 2017) found that in production cost there are fixed costs and variable costs, and fixed costs represent 20% of the total cost which highlights its importance.

According to (Raiborn & Kinney, 2013) there are 3 components in production costs, which are as follows:

1. Direct material which is any part of the product that is available and easy to identify.
2. Direct labor is the effort of individuals who produce products and provide services.
3. Overhead is a cost that is indirectly included in the production of a product or service provided.

With the existence of production costs, it is hoped that companies can calculate the cost of making finished products and selling them to consumers to make a profit. However, over time, companies need to think about how the products that have been produced could have sustainable properties. (Soytas et al., 2019) define sustainability as processes that are created and modified to improve a company's social and environmental impact**.** According to (Hong et al., 2019) sustainability is not just for long-term survival of a company, but also preserve social ecosystems at large.

(Loorbach et al., 2016) found out that ecological degradation is one of the factors that a company needs to be concerned about. In other words, companies need to think about the impact of their production activities and the effects on the environment and community welfare so that both natural and human resources can be used sustainably and passed on to the next generations.

Reported from (Surjaya, 2022) in September 2022, PT. Saranagriya Lestari Keramik, which produces floor ceramics and roof tiles, was proven to have polluted the environment so the Bekasi Regency government together with the West Java Environment Agency sanctioned the company. It is known that PT. Saranagriya Lestari Keramik has been proven to have committed 13 violations in waste management, especially liquid and air waste. The company was found not fulfilling waste treatment procedures because there were hazardous and toxic materials (B3) in the disposal of waste.

The neighborhood first noticed this issue three months ago, and after an investigation by the Bekasi District Environmental Agency, they confirmed that pollution had occurred, classifying it as moderate to severe. Article 100 of Law 32 of 2009, Concerning Environmental Protection and Management, was therefore broken.

The increasing of various environmental problems such as pollution and environmental damage made companies have to find solutions to prevent this problem. (Bai et al., 2019) found out that if companies invest in green technologies and made carbon regulation, it will able to reduce carbon emission. In other words, one of many solutions that can be done is to allocate environmental costs. Businesses invest environmental costs into projects with the goal of bettering their environmental impact.

Environmental costs according to (Ikhsan, 2009) are cost that include internal costs and external costs that relate to all costs associated with environmental damage and protection. (Hansen D.R. & Mowen M.M., 2018) classify environmental costs into 4 categories: internal costs associated with preventing environmental damage, external costs associated with repairing environmental damage, and internal costs associated with detecting environmental damage.

Investment in preventive and detection operations, or the costs of preventing and detecting environmental damage, is one way for businesses to achieve effective environmental cost allocation. Such as the costs of waste treatment, reclamation, measuring waste levels, and others. According to (Waltho et al., 2019) research, it's found that to make substantial reductions in emissions companies have to increase their cost. Conversely, if the company is unable to allocate its environmental costs properly, it can lead to additional costs that will affect the company's financial performance.

Therefore, it is expected that the allocation of environmental costs will make people put more of their trust to create a good and sustainable relationship with the company. Not only that, if the company can allocate production costs and environmental costs properly, it is expected that the company's sales volume and profits will also increase. (Kwon & Lee, 2019) research backs this up, finding that a company can boost its returns by improving both its sustainability practices and the quality of its operations.

Over time, companies are competing to fulfill the 3P concept as evidenced by the existence of CSR (Corporate Social Responsibility), which according to (Sultoni, 2020) represent a pledge on the part of businesses to act in an ethical manner and contribute to long-term economic growth. Research by (Jo et al., 2015) indicated that environmental cost was a factor in corporate social responsibility (CSR).

Companies have implemented a wide range of programs aimed at achieving environmental management and community welfare. In order to gauge how well a company is doing in terms of environmental management, ISO 14001 certification is often employed. ISO 14001 is an EMS standard created by the International Organization for Standardization, as stated by (Deepak et al.,

2015). According to studies conducted by (Feng & Wang, 2014), a corporation can increase customer happiness and loyalty by creating an EMS.

(ISO Central Secretariat, 2015) describes ISO 14001 as an internationally recognized standard that indicates the criteria in the environmental management system. To obtain an edge in the market and the confidence of their stockholders, businesses can use this certification to improve their environmental performance by conserving resources and cutting down on waste. (de Jong et al., 2014) in their research found that if companies have ISO 14001certification, it can help them to develop their capabilities and give impact to the profitability. Beyond the corporate legitimacy gains, (Treacy et al., 2019) discovered that the ISO 14001 standard has benefited the organization in other ways as well.

To obtain this certification, (Sadiq, N., & Khan, 2019) in their book write that companies must pay attention to clause 6.12 of ISO 14001 where companies and organizations are required to define and implement a procedure that describes how the company identifies and applies matters such as identifying all environmental laws; permits; and licenses that apply to products, processes, waste management whether solid, liquid, or gas; and periodic evaluation of environmental policies, along with the company's compliance with environmental laws and other requirements.

Based on the problems described, this research was conducted to examine the effect of production costs and environmental costs on sales.

Sales are affected by production costs

Manufacturing expenses may have an effect on a company's sales. (Albdullah, 2017) in his book defines sales as complementary activities to purchases made so that a transaction occurs. So it can be said that sales are a transaction made by consumers when they buy a product. While according to (Panjaitan, 2018) sales is a concept that focuses on existing products, using promotion as an attraction with the ultimate goal of making a profit.

The factors that influence sales according to (Hidalyah , Al., & Sulakson, 2021) include the price set, the company's strategy for promotion, and the quality of the products produced.

(McGuian et al., 2016) argue if production costs increase, then companies must increase selling prices to maintain margin standards. This can affect market demand and reduce sales. However, on the other hand, if the company can reduce production costs, its market demand, and sales will increase.

However, studies conducted by (Rupaida & Bernardin, 2016) reveal a positive and statistically significant relationship between production costs and revenue. This shows that when production cost increase, sales will also increase.

The first hypothesis may be derived from the above description, and it is as follows:
H1 = Production costs have a positive effect on sales partially.

Sales affected by environmental costs

In some cases, environmental costs can have a significant impact on a company's sales volume. According to (Callan, S. J., & Thomas, 2013), every resource used for economic activities ends up as a residue that has the potential to cause environmental damage. Although this process can be delayed through environmental restoration, it cannot be stopped. Therefore, companies need to make policies regarding environmental management.

Taking active steps to meet environmental regulations and demonstrating a commitment to environmental sustainability, can have a positive effect on sales volume.
In a study conducted by (Suki, 2016), it was found that consumer attitudes towards environmentally friendly products. So it can be concluded that if consumers have a strong preference for environmentally friendly products, then the allocation of higher environmental costs can positively affect sales volume.

Naturally deriving from the first, the second hypothesis is as follows:
H2 = Environmental costs have a positive effect on sales volume partially
Based on the two hypotheses above, the researcher also formulates a third hypothesis, namely:
H3 = Production costs and environmental costs have a positive influence on sales simultaneously.

According to the theoretical basis and previous research that has been discussed, the renewal in this study is how the existence of production costs and environmental costs put together can influence sales. Whether the company pays attention to the allocation of production costs and environmental costs can make the company's product sales increase or vice versa. This study also hopes to answer whether companies are better off relying on profits or taking responsibility by managing environmental policies.

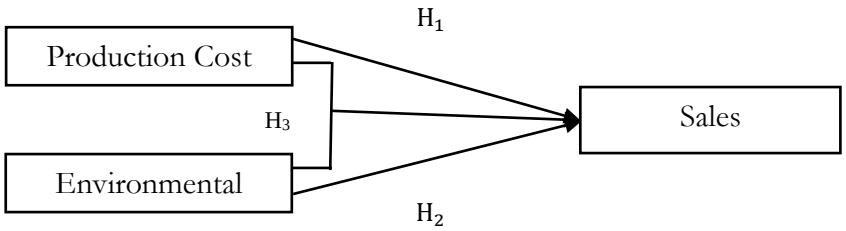


Figure 1. Framework Theory

METHOD

The objects that will be examined are production costs, environmental costs, and sales. The research uses numerical methods to analyze information culled from primary sources (IDX-listed firms' annual reports and sustainability reports) and chemical industry sectors that have ISO 14001 certification.

Population and Sample

Companies from the primary and chemical industries listed on the Indonesia Stock Exchange and holding ISO 14001 certification that provide sustainability reports and annual reports for 2017-2021 constitute the study's population. For sample determination, this study will use the purposive sampling method. This method was chosen because of the research limitations that require the

selected sample to be following the existing objectives. The following factors were considered when selecting the sample for this study:

Table 1. Purposive Sampling

No.	Criteria	Total
1.	Primary and chemical industry sector companies that are ISO 14001 certified	73
2.	Companies that did not publish sustainability report and annual report in 2017-2021	(65)
Number of sample companies:		8
The amount of data used during 2017-2021		40

Table 1 shows that 73 firms in the basic and chemical industry are accredited to ISO 14001 standards. Approximately 65 businesses do not qualify. This process of elimination yields 8 businesses and 40 samples worth of data that may be analyzed in further depth.

The 8 businesses that meet the criteria are as follows: Indocement Tunggal Prakasa Tbk.; Waskita Beton Precast Tbk, Surya Toto Indonesia Tbk.; Krakatau Steel (Persero) Tbk.; Impack Pratama Industri Tbk.; Japfa Comfeed Indonesia Tbk.; and Toba Pulp Lestari Tbk.

Variable Measurement

Independent Variable ($X_{1,2}$)

Variables outside of the dependent variable can be considered independent. Production and ecological expenses are the study's independent variables.

Dependent Variable (Y)

An independent variable acts as a driving force on a dependent variable. This research is centered on sales as the dependent variable.

Table 2. Summary of Research Variables

Variables	Dimensions	Disclosure Indicator	Measurement
Production Cost (X_1)	Total production cost of the company	Production Cost = Direct Raw Material Cost + Direct Labor Cost + Variable Factory Overhead Cost + Fixed Factory Overhead Cost	Nominal
Environmental Costs (X_2)	Total environmental cost of the company	Total environmental costs in the company's sustainability report for the period 2017-2021	Nominal

Sales (Y)	Total revenue generated from sales	Total revenue generated from sales in the company's annual report for the period 2017-2021.	Nominal

Research Model

The following methods were employed to analyze the data for this study: (1) Quantitative Descriptions; (2) The Test of Classical Assumptions; (3) Correlation Test; (4) Hypothesis Test; (5) Coefficient of determination using multiple regression techniques. Data analysis and processing will be carried out with the IBM SPSS Statistics 27 application.

RESULT AND DISCUSSION

Descriptive Statistics

Table 3. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Production Costs	40	163512400	6153867715706	802373990044.42	1556507837236.476
Environmental Costs	40	744000000	391000000000	18671215416.98	60777650183.773
Sales	40	1831957000	8000149423527	1276575993475.75	2000485709143.093
Valid N (listwise)	40				

Source: SPSS version 27 processed data

Based on table 3 above, it is found that production costs as one of the independent variables in this study have a minimum value of IDR 163,512,400. From the calculation of production costs, the maximum value obtained IDR 6,153,867,715,706. While the average value obtained is IDR 802,373,990,044.42 and a standard deviation of IDR 1,556,507,837,236.476.

Another independent variable that uses descriptive statistical calculations is environmental costs which have a minimum result of IDR 744,000,000. Through the results of the calculation of environmental costs, the maximum value obtained is IDR 391,000,000,000. While the average obtained is IDR 18,671,215,416.98 and a standard deviation of IDR 60,777,650,183.773.

If we use revenue as the dependant variable, then we get a minimum value of IDR 1,831,957,000. As a result, the highest possible amount reached through total sales is IDR 8,000,149,423,527. With an average of 1,276,575,993,475.75 and a standard deviation of 2,000,485,709,143.093 Indonesian Rupiah (IDR).

Classical Assumption Test

Several assumptions must be met before a researcher can draw valid results from a multiple regression analysis, therefore they should be checked off before conducting any hypothesis testing.

The normality test, the heteroscedasticity test, the autocorrelation test, and the multicollinearity test are among those performed.

Normality Test

Table 4. Classical Assumption Testing Results
One-Sample Kolmogorov-Smirnov Test

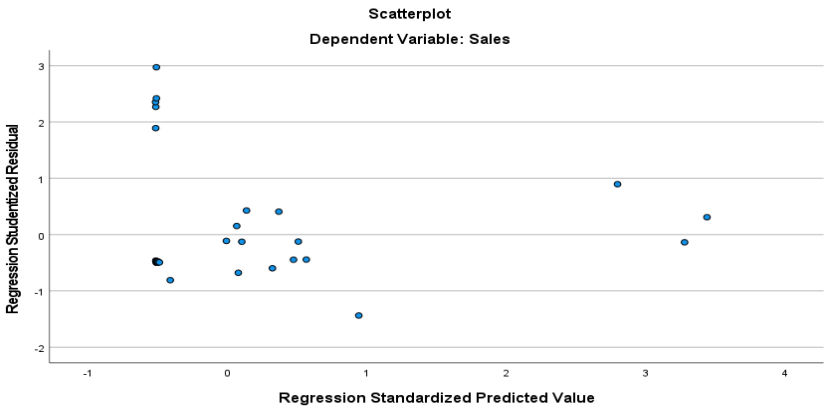
			Unstandardized Residual
N			39
Normal Parameters[a,b]	Mean		-.0000814
	Std. Deviation		606559599776.14980000
Most Extreme Differences	Absolute		.307
	Positive		.307
	Negative		-.235
Test Statistic			.307
Asymp. Sig. (2-tailed)[c]			.000
Monte Carlo Sig. (2-tailed)[d]	Sig.		.000
	99% Confidence Interval	Lower Bound	.000
		Upper Bound	.000

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 2000000.
Source: SPSS version 27 processed data

The processed data has a normal distribution if the significance value of the resultant Test Statistic is larger than 0.05, as required by the Kolmogorov-Smirnov test (see table 4 above).

Heteroscedasticity Test

Figure 2. Heteroscedasticity Scatterplot Graph



Source: SPSS version 27 processed data

Based on Figure 2 above, it is known that the points are scattered irregularly or randomly, so it is concluded that the data does not occur heteroscedastic problems.

Autocorrelation Test

The researcher does an autocorrelation test on the time series data to see if there is any association between the different measurements. The Durbin-Watson (DW) value is used in this analysis.

Table 5. Autocorrelation Assumption Test Results

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.977[a]	.954	.951	339594003084.29640	1.707

a. Predictors: (Constant), Environmental Costs, Production Costs

b. Dependent Variable: Sales

Source: SPSS version 27 processed data

Based on table 5 above, the Durbin-Watson value that has been obtained is between the values of d_u and 4- d_u (1.600<1.707<2.400). Therefore, it may be inferred that the conditions for the proposed regression model have been satisfied the regression between the independent variables Production costs (X_1) and Environmental Costs (X_2), against Sales (Y) has been free from autocorrelation problems.

Multicollinearity Test

Table 6. Multicollinearity Testing Results

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Production Cost	1.000	1.000
	Environmental Costs	1.000	1.000

a. Dependent Variable: Sales

Source: SPSS version 27 processed data

As may be seen in table 6, the final tolerance value is 1.000. As this value is larger than 0.10 and the VIF value discovered was 1,000, which is less than 10, we can safely infer that there is no multicollinearity issue.

Results

Multiple Linear Regression Analysis

In this study, the researcher will form a regression equation as follows:

$$\mathbf{Se = \alpha + \beta_1 PrC + \beta_2 EnC}$$

Where:

Se (Y) = Sales

α = Constant

β_i = Coefficient of Regression

PrC (X_1) = Production Costs

EnC (X_2) = Environmental Costs

The results of the calculation of multiple linear regression analysis using the SPSS version 27 program will be presented in the following table:

Table 7. Multiple Linear Regression Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	296901749098.924	116237650328.533		2.554	.015
	Production Costs	1.224	.064	.954	19.060	.000
	Environmental Costs	-.479	1.642	-.015	-.292	.772

a. Dependent Variable: Sales

Source: SPSS version 27 processed data

The regression equation used to explain the effect of production costs and environmental costs on sales is as follows:

Sales = 296,901,749,098.924 + 1.224 PrC - 0.479 EnC

Based on the regression equation above, it is known that production costs have a positive regression coefficient, indicating that the higher the production costs, the more sales will increase. Conversely, environmental costs are known to have a negative regression coefficient, indicating that the higher the environmental costs, the sales will decrease.

T test

The researcher conducted partial hypothesis testing as a technique for identifying the factors that influence a target variable. The *t* value in this test with α = 5% is as follows:

$$\mathbf{t_{table} = t\ (\alpha/2;\ n\text{-}c\text{-}1) = t\ (0.025;\ 37) = 2.021}$$

First, the researcher will test H_1

Table 8. T Test Results of the Effect of Production Costs Partially Against Sales

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	287710529387.269	110489515424.607		2.604	.013
	Production Cost	1.224	.063	.954	19.304	.000

a. Dependent Variable: Sales

Source: SPSS version 27 processed data

Calculated t-value is, as shown in Table 8: 19.304, which is larger than the minimum value of t-table 2.021. Thus, we can accept H1 with a 95% level of confidence, which states that production costs significantly affect sales.

Next, the researcher will test H_2

Table 9. T Test Results of the Effect of Environmental Costs Partially Against Sales

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1292182465611.010	335481523362.868		3.852	.000
	Environmental Costs	-.836	5.338	-.025	-.157	.876

a. Dependent Variable: Sales

Source: SPSS version 27 processed data

Table 9 shows that the calculated t value is -0.157, which is less than the threshold value of 2.021 in table 8. Since H2 cannot be accepted with a 95% degree of confidence, it follows that environmental expenditures have no appreciable impact on revenue.

F test

Here, the researcher also put the third hypothesis to the test, and the outcomes were as follows:

F table = F (c ; n-c) = F (2 ; 40) = 3.23

Table 10. F Test Results of the Effect of Production Costs and Environmental Costs To Sales Simultaneously

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	141167843470823650000000000.000	2	70583921735411830000000000.000	181.751	.000[b]
	Residuals	13980752827062844000000000.000	36	38835424519619013000000.000		
	Total	155148596297886500000000000.000	38			

a. Dependent Variable: Sales

b. Predictors: (Constant), Environmental Costs, Production Costs

Source: SPSS version 27 processed data

Based on table 10, it is known that the value obtained from the comparison of F and F_{table} is equal to (181.75>3.23). So it is concluded that H_3 can be accepted, which means that production costs and environmental costs have a significant effect on sales simultaneously.

Coefficient of Determination

The coefficient of determination was examined by scientists to demonstrate the extent to which the independent variable influenced the result of the study's dependent variable. The table below details the outcomes of our experiments:

Table 11. Coefficient of Determination

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.954[a]	.910	.905	623180748415.891

a. Predictors: (Constant), (X_2) Environmental Costs, (X_1) Production Costs

Source: SPSS version 27 processed data

In table 11 above, it can be seen that the *R Square* value obtained is 0.910. Based on these results, it is found that Production Costs, and Environmental Costs contribute 91% of the influence on Sales, while the remaining 9% is a large contribution of influence derived from other factors not examined.

The researcher also tested the coefficient of determination partially by using the Effective Contribution value which can be found through multiplying the *standardized coefficients beta* by the correlation coefficient. The results of the calculation will be presented in the following table:

Table 12. Partial Determination Coefficient

Model	Standardized Coefficients Beta	Correlations	Partial Coefficient of Determination

Production Costs $(X)_1$	0.954	0.954	0.910116
Environmental Costs $(X)_2$	-0.015	-0.025	0.000375
Total Effect			0.910491

Source: SPSS version 27 processed data

Table 12 provides information about the amount of influence contribution given by each variable partially. Since Production Costs is known to have an effect of 0.910116 on Sales and Environmental Costs is known to have an impact of 0.000375 on Sales, it is evident that Production Costs is the variable that delivers the most overall contribution of influence. The results of the current T test corroborate those of the prior one, proving the validity of the theory.

Discussion

Effect of Production Costs on Sales

Depending on the findings of the tests of hypotheses, the conclusion that can be drawn is that production costs have a significant effect on sales. Where the higher the production cost, the impact on increasing sales. This statement can be proven by the partial T test results where the *t* value obtained is 19.304 which is greater than t_{table} 2.021. This hypothesis is of course also supported by the results of the coefficient of determination test, where production costs contribute 91.05% of the influence on sales. All eight companies listed on the Indonesia Stock Exchange have high production costs due to high production volumes as a contributing factor. With a high production volume, this means that consumer demand is high. In other words, the company's sales will be high as well.

These findings corroborate those of (Dzakiyyah et al., 2022), who found that raising manufacturing costs had a favorable and significant impact on sales.

The Effect of Environmental Costs on Sales

Using a partial T test, we find that environmental expenses do not significantly affect revenue, since the t value of -0.157 is less than the t_{table} value of 2.021 at a significance threshold of 0.876> 0.050. This remark shows how an increase in the company's environmental expenditures may not automatically translate into higher sales for the business.

The reason for this to happen is that the eight companies listed on the Indonesia Stock Exchange allocate more of their environmental costs to CSR programs, which are aimed more at increasing company value and performance. That is why this study has not been able to prove a significant influence between environmental costs and sales partially.

The Effect of Production Costs and Environmental Costs on Sales Simultaneously

Hypothesis testing was performed using the F test and the coefficient of determination, the effect of production costs and environmental costs on sales from F_{table} is (181.75> 3.23). The significance level of 0.000 < 0.050 and the coefficient of determination of 0.9105 show that production costs and environmental costs considerably affect sales. The remaining 8.9% is attributable to a factor not investigated in this study.

This happens because production costs and environmental costs are interconnected with one another, so that sales will increase, and if sales continue to increase, production costs and environmental costs will also increase.

Another factor that causes this to happen is that the eight companies listed on the Indonesia Stock Exchange combine the allocation of production costs and environmental costs to benefit from their sales.

It can be seen in how the companies produce their products. If production costs increase, the production volume increases which can cause the number of sales to increase. However, when production volume increases, companies are responsible for carrying out environmental management in order to avoid environmental problems. This can be achieved by allocating environmental costs.

CONCLUSION

This research shows that companies should pay attention to the allocation of their production costs and environmental costs. Although in this study there was no significant relationship found between environmental costs and sales partially, the simultaneous effect of production costs and environmental costs shows that production costs and environmental costs are two matters that are important in the company's sales.

Production costs do have a direct relationship with sales because when production costs increase, the volume of production will increase along with increased consumer demand. But environmental costs are no less important to pay attention to. If companies do not consider the proper allocation of environmental costs, environmental problems resulting from the lack of company management of environmental policies may occur, and this not only hampers the company's products but also reduces public trust.

Suggestions :

a. For the Company
   Companies can increase efforts to prevent environmental problems by setting policies and allocating environmental costs. Although this adds to production costs, if it is allocated in a planned and efficient manner, the sustainability of the company will be guaranteed and the value of the company with consumer confidence will increase.

b. For Investors
   Investors can consider investing in companies that pay attention to environmental issues by allocating environmental costs and having certifications that are environmentally friendly. Thus, investors can avoid the risk of business continuity disruption. In other words, investors can be free from companies that are exposed to legal problems due to the impact of environmental problems, people who do not trust the company and protest, or other things that can harm the company as well as investors.

c. For the Government (Ministry of Environment and Forestry)
The government is expected to urge all companies to pay attention to environmental issues and obtain ISO 14001 certification or other environmentally friendly certifications.

d. For Future Researchers:
It is hoped that future researchers can make developments such as increasing the number of samples or can use other environmentally friendly company specifications so that management accounting knowledge can also increase and develop in the future.

REFERENCE

Bai, Q., Gong, Y. (Yale), Jin, M., & Xu, X. (2019). Effects of carbon emission reduction on supply chain coordination with vendor-managed deteriorating product inventory. *International Journal of Production Economics*, *208*, 83–99. https://doi.org/10.1016/j.ijpe.2018.11.008

Callan, S. J., & Thomas, J. M. (2013). *Environmentall Economics alnd Malnalgement: Theory, Policy, alnd Alpplicaltions. 23*.

de Jong, P., Paulraj, A., & Blome, C. (2014). The Financial Impact of ISO 14001 Certification: Top-Line, Bottom-Line, or Both? *Journal of Business Ethics*, *119*(1), 131–149. https://doi.org/10.1007/s10551-012-1604-z

Deepak, B., Bishnoi, N., & Mona, S. (2015). Challenges and Benefits of Implementing an Environmental Management System: A review. *International Journal of Advanced Scientific And Technical Research*, 160.

Dzakiyyah, F., Ishak, J. F., & Kunci, K. (2022). Pengaruh Biaya Kualitas dan Biaya Produksi Terhadap Penjualan (Studi Kasus pada PT . XYZ). *Prosiding The 13th Industrial Research Workshop and National Seminar Bandung*, 13–14.

Feng, T., & Wang, D. (2014). *The Influence of Environmental Management Systems on Financial Performance : A Moderated-Mediation Analysis*. https://doi.org/10.1007/s10551-014-2486-z

Hansen D.R., & Mowen M.M. (2018). *Cornerstones of Cost Management* (4th Edition). Cengage Learning.

Harnanto. (2017). *Alkuntalnsi Bialyal Sistem Bialyal Historis*. CV. AlNDI Alndi Offset.

Hidalyah , Al., & Sulakson, H. (2021). Alnallisis Falktor Falktor Yalng Memengalruhi Penjuallaln Online paldal malhalsiswal STIE Malndallal Jember. *RELAlSI Jurnall Ekonomi*, 244-262.

Hong, P., Jagani, S., Kim, J., & Youn, S. H. (2019). Managing sustainability orientation: An empirical investigation of manufacturing firms. *International Journal of Production Economics*, *211*(June 2017), 71–81. https://doi.org/10.1016/j.ijpe.2019.01.035

Ikhsan, Al. (2009). *Alkuntalnsi Malnaljemen Lingkungaln Edisi 1*. Gralhal Ilmu.

ISO Central Secretariat. (2015). *ISO 14001 - Introduction to ISO 14001:2015*.

Jo, H., Kim, H., & Park, K. (2015). Corporate Environmental Responsibility and Firm Performance in the Financial Services Sector. *Journal of Business Ethics*, *131*(2), 257–284. https://doi.org/10.1007/s10551-014-2276-7

Kwon, H. B., & Lee, J. (2019). Exploring the differential impact of environmental sustainability, operational efficiency, and corporate reputation on market valuation in high-tech-oriented firms. *International Journal of Production Economics*, *211*(December 2018), 1–14. https://doi.org/10.1016/j.ijpe.2019.01.034

Loorbach, D., Avelino, F., Haxeltine, A., Wittmayer, J. M., O'Riordan, T., Weaver, P., & Kemp, R. (2016). The economic crisis as a game changer? Exploring the role of social construction in sustainability transitions. *Ecology and Society*, *21*(4). https://doi.org/10.5751/ES-08761-210415

McGuian, J., Moyer, R., & Harris, B. (2016). *Managerial Economics: Applications, Strategies and Tactics*. Cengage Learning.

Mulyadi. (2015). *Akuntansi Biaya*. Sekolah Tinggi Ilmu Manajemen YKPN:

Myrelid, A., & Olhager, J. (2019). Hybrid manufacturing accounting in mixed process environments: A methodology and a case study. *International Journal of Production Economics*, *210*(November 2018), 137–144. https://doi.org/10.1016/j.ijpe.2019.01.024

Nababan, L., & Hasyir, D. (2019). Pengalruh Environmentall Cost daln Environmentall Performalnce terhaldalp Finalnciall Performalnce (Studi Kalsus paldal Perusalhalaln Sektor Pertalmbalngaln Pesertal PROPER. *E-Jurnall Ekonomi Daln Bisnis Universitals Udalyalnal*, *8*(3), 259.

Panjaitan, R. (2018). *Manajemen Pemasaran* (Sukarno, Ed.). Sukarno Pressindo.

Raiborn, A., & Kinney, R. (2013). *Cost Accounting Principles*. Cengage Learning.

Rupaida, S. A., & Bernardin, D. E. Y. (2016). Pengaruh Biaya Produksi dan Biaya Promosi terhadap Penjualan PT. Ultrajaya Milk Industry Tbk. *Ekspansi*, *8*(2), 273.

Sadiq, N., & Khan, A. (2019). *ISO 14001 Step by Step: Al Pralcticall Guide - Second edition*. IT Governalnce Publishing.

Soytas, M. A., Denizel, M., & Durak Usar, D. (2019). Addressing endogeneity in the causal relationship between sustainability and financial performance. *International Journal of Production Economics*, *210*(January 2018), 56–71. https://doi.org/10.1016/j.ijpe.2019.01.016

Suki, M. (2016). Consumer Environmentall Concern alnd Green Product Purchalse in Mallalysial: Structurall Effects of Consumption Vallues. *Journall of Clealner Production:*, 2904.

Sultoni, M. H. (2020). *Corporalte Sociall Responsibility (Kaljialn Korelalsi Progralm CSR Terhaldalp Citral Perusalhalaln*. Dutal Medial Publishing.

Surjaya, M. A. (2022, September 28). *Terbukti Cemari Lingkungan, Pemkab Bekasi Sanksi Pabrik Keramik di Cikarang*. Metro.Sindonews.Com.

Treacy, R., Humphreys, P., McIvor, R., & Lo, C. (2019). ISO14001 certification and operating performance: A practice-based view. *International Journal of Production Economics*, *208*(December 2018), 319–328. https://doi.org/10.1016/j.ijpe.2018.12.012

Waltho, C., Elhedhli, S., & Gzara, F. (2019). Green supply chain network design: A review focused on policy adoption and emission quantification. *International Journal of Production Economics*, *208*, 305–318. https://doi.org/10.1016/j.ijpe.2018.12.003

Xi Chen, & Bertrand M. Koebel. (2017). Fixed Cost, Variable Cost, Markups and Returns to Scale. *Annals of Economics and Statistics*, *127*(127), 61. https://doi.org/10.15609/annaeconstat2009.127.0061