

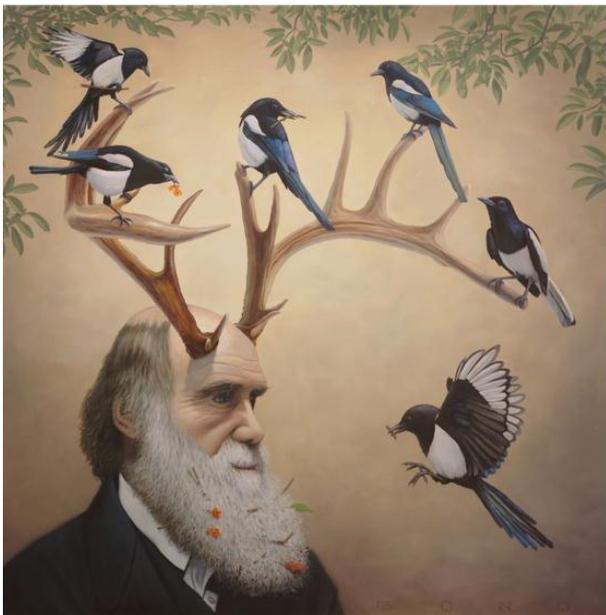
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# **Application of Environmental Cost Budget in the Framework of Assessing Management Performance of PT. Union Foods in 2014-2017**

**Suhartini<sup>1</sup>, Suryadi Winata<sup>2</sup>, Gregorius Widiyanto<sup>2</sup>, Lia Dama Yanti<sup>2\*</sup>, Rizky Pratama<sup>2</sup>**

<sup>1</sup>Department of Management, Faculty of Economic and Business, Universitas Serang Raya

<sup>2</sup>Department of Accounting, Faculty of Business, Universitas Buddhi Dharma  
<sup>\*</sup>lia.damay@ubd.ac.id

## **Abstract**

In the past decade, companies are required to take part in environmental protection and be responsible for the social conditions of the communities around the company. The impact of production activities or services of a company can cause various environmental problems that harm various parties. So the purpose of this study is to determine the extent to which PT. Union Foods has carried out social and environmental responsibilities, to find out the form of application of environmental costs used by PT. Union Foods, and to find out the achievement of management performance in implementing environmental cost budgets. The type of research used in this study is descriptive research with a qualitative approach. The results of this study are: (a) PT. Union Foods has carried out social and environmental responsibilities in accordance with government regulations by implementing a waste management system in accordance with its type and ensuring that the waste released into the environment is not polluted, (b) Application of environmental cost budgets carried out by PT. Union Foods is compiling an environmental cost budget by classifying environmental costs into 4 categories: environmental prevention costs, environmental detection costs, internal environmental failure costs and external environmental failure costs and budgeting environmental costs of 18% of operational costs, (c) the management performance of PT. Union Foods is not good enough in implementing the budget and realization of environmental costs because in 3 years in a row it is not profitable for the company

# **Aplicación Del Presupuesto De Costos Ambientales En El Marco De Evaluación Del Desempeño De La Gestión De Pt. Alimentos De La Unión En 2014-2017**

## Resumen

En la última década, las empresas deben participar en la protección del medio ambiente y ser responsables de las condiciones sociales de las comunidades que la rodean. El impacto de las actividades de producción o servicios de una empresa puede causar varios problemas ambientales que perjudican a varias partes. Entonces, el propósito de este estudio es determinar en qué medida PT. Union Foods ha llevado a cabo responsabilidades sociales y ambientales, para descubrir la forma de aplicación de los costos ambientales utilizados por PT. Union Foods, y para conocer el logro del desempeño de la gerencia en la implementación de presupuestos de costos ambientales. El tipo de investigación utilizada en este estudio es la investigación descriptiva con un enfoque cualitativo.

Los resultados de este estudio son: (a) PT. Union Foods ha llevado a cabo responsabilidades sociales y ambientales de acuerdo con las regulaciones gubernamentales mediante la implementación de un sistema de gestión de residuos de acuerdo con su tipo y asegurando que los residuos liberados al medio ambiente no estén contaminados, (b) Aplicación de presupuestos de costos ambientales realizados por PT. Union Foods está compilando un presupuesto de costos ambientales al clasificar los costos ambientales en 4 categorías: costos de prevención ambiental, costos de detección ambiental, costos de fallas ambientales internas y costos de fallas ambientales externas y presupuestar costos ambientales del 18% de los costos operativos, (c) el desempeño de la gestión de PT. Union Foods no es lo suficientemente bueno en la implementación del presupuesto y la realización de los costos ambientales porque en 3 años consecutivos no es rentable para la empresa

## I. INTRODUCTION

The issue of environmental damage has spread widely globally, from year to year the environmental conditions are increasingly alarming. This causes all people from various countries to begin to realize the importance of preserving the environment because it will have an impact on human life in the present and in the future. At present, the increasing number of companies is standing which is causing damage to the environment increasing-

ly uncontrolled and the activities of companies that causes environmental pollution are in the public spotlight.

As happened on August 17, 2018, section I region of the security office and enforcement of environmental law in the Sumatra region, the Ministry of Environment and Forestry, sealed and stopped the waste disposal activities of PT. Expravet Nasuba, which is engaged in the business of cutting and processing meat and poultry in the city of Medan, because it violates environmental laws, by removing liquid waste into the Deli River stream. The role of government is very important in this case, various regulations regarding the environment are published, starting from Law No. 23 of 1997 which was renewed into Law No. 32 of 2009 regulating environmental protection and management, then Law No. 40 of 2007 concerning limited liability companies through article 74 specifically regulates the obligation of companies to carry out social and environmental responsibilities, up to ISO 14001 international scale establishes a comprehensive environmental management system.

For this company, it will be a challenge for the management of the company to implement the rules and regulations related to social and environmental responsibility, because from every activity carried out by the company, it will cause a significant environmental cost. Environmental costs are impacts, both monetary and non-monetary as a result of activities that affect environmental quality. Environmental costs are costs incurred by the company to repair environmental damage that has been intentionally or unintentionally contaminated by company activities (Santoso & Dwi, 2018).

Environmental accounting is a term related to the inclusion of environmental costs into the accounting practices of companies or government institutions. Environmental accounting is defined as prevention, reduction and / or avoidance of impacts on the environment, moving from opportunity, starting from repairs to events that cause disasters to these activities (Saputra & Indrawati, 2018). This environmental cost will have an impact on the company's financial performance because management must prepare the environmental cost budget that is issued. A budget is a written plan regarding the activities of an organization that is expressed quantitatively for a certain period of time and is generally expressed in units of money.

By using the budget, it can be seen whether the performance of the management has carried out its duties properly or not. Measurement of company performance is very important for management to evaluate company

performance and planning goals in the future. Performance is a description of the level of achievement of an activity or policy in realizing the goals, objectives, mission, and vision of the organization contained in the strategic planning of an organization.

The existence of PT. Union Foods is engaged in manufacturing with products that are produced in the form of foods from confectionery and chocolate. The activities carried out by PT. Union Foods which are related to the environment and have the potential to produce waste are the processes of producing sweets, waste disposal, etc. which will be explained in this paper. From the activities carried out, PT. Union Foods has implemented a solid waste management system using incinerators and wastewater management using a Waste Water Management Installation.

This is also related to the calculation of the company's budget because the company will issue costs related to waste management and it must also be considered more the role of management performance in preparing the environmental budget. Even though PT. Union Foods has implemented a waste management system, PT. Union Foods does not want to register for ISO 14001 because of several considerations from management, one of which is to provide more budget to get ISO 14001 certification.

The objectives to be achieved from the study include; 1. To find out how far PT. Union Foods has implemented social and environmental responsibilities; 2. To find out the form of application of environmental costs used by PT. Union Foods; 3. To determine the achievement of management performance in implementing environmental cost budgets.

## II. RELATED WORKS/LITERATURE REVIEW (OPTIONAL)

### Budget

Budget is one of the most important tools in company management because with a budget, management can plan, organize and evaluate the course of an activity in a certain period. According to means that the budget is a plan of activities to be carried out by management in a period which is stated quantitatively (Sasongko & Parulian, 2010). Information that can be obtained from the budget includes the number of products and the selling price for next year.

### Environmental costs

In interpreting environmental costs there are two components that must be understood first, namely costs and the environment. According to (Mulyadi, 2014) said costs are sacrifices of economic resources, which are meas-

ured in units of money that have become or are likely to occur for certain purposes. according to Law number 32 of 2009 concerning Protection and Management of the Environment is the unity of space with all objects, power, circumstances, and living things, including humans and behavior, which affect nature itself, the continuity of life, and the welfare of humans and living things other.

After understanding both the meaning of the cost and environmental components, then the environmental costs according to (Hansen & Mowen, 2009) are costs that occur because of poor environmental quality or poor environmental quality that may occur. So, environmental costs are related to the creation, detection, improvement, and prevention of environmental degradation.

### Performance Management

Performance management is a means to get better results from organizations, teams and individuals within an agreed framework in planning goals, objectives and standards.

### III. METHODS

In this study using a type of research with a qualitative descriptive method that aims to reveal events or facts, circumstances, phenomena, variables and circumstances that occur when the study takes place by presenting what actually happened.

#### Source of research data

The data sources used by the authors in this study, among others:

- a. Primary data, which is data obtained directly at the research site which is the object of research. Primary data in this study were obtained by authors from PT. Union Foods which is located on Jalan Gatot Subroto KM 6.5 Jatake Tangerang by conducting a review directly into the company.
- b. Secondary Data, which is data obtained indirectly from the research site. Secondary data in this study obtained by the author came directly from PT. Union Foods in the form of annual budget reports and those relating to the research title

#### Operationalization of research variables

The variables studied include:

a. The independent variable (X) is a variable that affects the dependent variable.

The independent variable in this study is:

- 1) X1 : Budget
- 2) X2 : Environmental Costs

b. Dependent variable (Y) is a variable that is influenced by independent variables.

The dependent variable used in this study is management performance.

Data analysis technique

a. Make detailed environmental cost budgets based on classification of environmental costs.

Environmental costs are classified into 4 categories:

1) Environmental prevention costs.

Examples of environmental prevention costs are: supplier evaluation and selection, evaluation and selection of tools to control pollution, design, processes and products to reduce or eliminate waste, train employees, study environmental impacts, examine environmental risks, conduct research related to the environment, and so forth.

2) Environmental detection costs

Examples of environmental detection costs are: audit of environmental activities, inspection of products and processes (to be environmentally friendly), development of measures of environmental performance, implementation of pollution testing, verification of environmental performance of suppliers, and measurement of pollution levels.

3) Environmental internal failure costs.

Examples of internal environmental failure costs are: operating equipment to reduce the impact of pollution or reducing pollution, processing and disposal of toxic waste, maintaining pollution equipment, licensing facilities to produce waste, and recycling the remaining materials.

4) Environmental external failure costs.

Examples of external environmental failure costs: cleaning up polluted soil due to company production activities, restoring soil to natural conditions, loss of sales due to poor environmental reputation, inefficient use of raw materials and electricity, receiving medical treatment due to pollution, loss of employment due to pollution, loss of the benefits of the lake as a place of recreation, and damage to ecosystems due to solid waste disposal.

b. Calculate and compare environmental cost budgets using the method of analysis of variance.

The formula used in calculating the budget is to use the method of analysis

of variance according to (Rudianto, 2009):

$$\text{variance} = \text{Budget Total} - \text{Total Budget Realization}$$

$$\text{percentage variance} = \frac{\text{variance}}{\text{budget}} \times 100$$

Based on the above formula can be collected to calculate the percentage of budget achievement:

$$\text{Percentage of achievement} = \frac{\text{Total Budget Realization}}{\text{Budget Total}} \times 100$$

c. Analyze and explain the performance of the company's management in implementing environmental cost budgets.

After classifying based on the environmental cost budget according to its category, calculating and then comparing it, the last step is analyzing and explaining whether the performance of the company's management runs effectively and efficiently in compiling the budget

#### IV. RESULTS

The types of waste produced by PT. Union Foods:

a. Domestic solid waste

The type of production waste produced by PT. Union Foods is waste originating from the rest of the filter and carbon active (powder) and the results of press (solid) from the production process of glucose syrup, packaging of raw materials, candy wrapping plastic, plastic sheets (PVC, PP and PE), plastic wrapping oil, glass Plastic beverage processing is done with 3R efforts (reuse, recycle, recovery) and there is also solid waste in the form of company documents that exceed 5 years and under.

Waste is collected according to its type for the remaining waste of work activities (domestic waste) in the form of plastic, boxes, food scraps, residual filters and active (powder) carbon and press results (solids) are disposed of into the garbage container that has been provided, then handling waste is then disposed of periodic final waste disposal (1-2 times/day). For solid waste in the form of company documents that exceed 5 years and under are destroyed by burning using an incinerator.

Whereas for sheet plastic (PVC, PP and PE) recycled into raw materials and for plastic oil wrappers and plastic cups, drinks are collected and then sold to the container. Especially for raw material packaging returned to the supplier.

b. Waste materials are danger and toxic

Materials are danger and toxic waste produced and stored by PT. Union Foods are used oil, reagent residual solution, WWTP sludge, chemical packaging drum, contaminated cloth, contaminated jerk and used lights from activities. Solid waste containing Materials are danger and toxic waste is stored in TPSBL3 PT. Union Foods with an area of 10 M2 x 5 M2 with coordinates 6°19'99.9 "S and 106°57'30.3" E.

The processing of Materials are danger and toxic waste is stored not to exceed a period of 90 days from the time the waste is stored and then sold and carried by the collecting company or taken to the Materials are danger and toxic waste treatment facility that has permission from the Ministry of Environment and Forestry. But there are some Materials are danger and toxic wastes which are destroyed by burning using an incinerator

c. Liquid waste

Liquid waste produced by PT. Union Foods is a used water production activity carried out by PT. Union foods. The wastewater management control process includes: volume of waste water (per day), pH level of water (every morning before production), solid suspend (every morning before production), NH3N (checked every week), Chemical Oxygen Demand (checked every month).

PT. Union Foods is managed by the Waste Water Treatment Plant (WWTP). The land area for the WWTP area of 3,872 M2 has a capacity of 4,500 M3 month with a number of Permits for Liquid Waste Disposal No. 660.31/Kep-14-BPPT/2011. The Waste Water Treatment Plant (WWTP) system used by PT. Union Foods uses an anaerobic bacterial biology system. The average discharge of wastewater 42.5 M3/day, and the explanation of WWTP are divided into several parts:

1) Homogeneity

The process of inserting waste water into a homogeneous pond that previously had first passed the trap to capture large amounts of garbage or dirt, other floating material such as foam and oil that is clotting can also be taken directly by lifting it with a net. This pool is to refresh the condition of waste water, so the chemical process runs better.

2) Sedimentation I

The formed floc is deposited in the sedimentation pond I and periodically the mud is sucked up by the pump to the mud drying tub.

3) Aeration Process

Aeration is given using an aeration mixer and blower to increase the content of dissolved oxygen in the water needed by bacteria in decomposing

organic matter.

4) Sedimentation II

Pada sedimentasi II diharapkan suspend solid dan bakteri dapat mengendap sebagai lumpur

d. Waste treatment for WWTP sludge

Mud water from the sedimentation ponds I and II is pumped into a mud bath to dry in the sun. When it is dry, a layer of mud is taken for disposal. The process of pumping sedimentation mud is carried out once a day depending on the condition of the mud.

After knowing the types of waste that have been separated by type, the management of PT. Union Foods makes an environmental cost budget to implement the environmental management system by classifying environmental costs into 4 categories, namely: Environmental prevention costs, environmental detection costs, internal environmental failure costs, environmental external failure costs. Environmental costs greatly affect the financial performance of PT. Union foods because the amount of budgeted environmental costs ranges from 18% per year from operating costs. The following is a breakdown of costs based on the classification.

Table 1. Details of Environmental Cost Classification of PT. Union Foods

Classification of Environmental Costs	Information
<b>Environmental prevention costs</b>	
Training of QA QC staff & production (internal) employees	Costs incurred for training costs are followed by QC QA staff & production employees to carry out waste management activities due to production and operational activities.
Seminar on the environment held by the government/private sector	Costs incurred for attending seminars on the environment followed by staff / employees sent by PT. Union food which is then received knowledge can be practiced in company activities.
Designing old & new product designs	Costs incurred to design both old products and new products to keep abreast of developments and not pollute the environment.
Audit of ISO 9001 quality management system (Internal & External)	Costs incurred to obtain and maintain ISO 9001 quality management system certification obtained by PT. Union Foods.
Management of Waste Water Treatment Plant (WWTP)	Costs incurred to carry out management of Wastewater Management (WWTP) carried out by the WWTP starting from chemicals used to purchase equipment to manage WWTPs.
<b>Environmental detection costs</b>	
Air Quality Measurement & laboratory tests	Costs incurred to measure and test the air quality caused by both production and operational activities.
EMISS laboratory measurements & tests	Costs incurred to measure and test EMISS for production machinery and operational vehicles.
Monitoring & measuring noise levels	Costs incurred to monitor and measure the noise level of production machines.
Measurement & Test of laboratory wastewater	Costs incurred to measure and test liquid waste caused by both production and operational activities.
Observation of land that is absorbed by WWTPs & around the environment	Costs incurred for observing the company's land so that the quality of the land does not change and does not pollute the environment.
Monitoring the cleanliness of the office environment	Costs incurred to maintain the cleanliness of the company's environment so that company activities run well.
Health observation of employees and the surrounding community	Costs incurred to check the health of employees and surrounding communities are carried out regularly.
<b>Environmental external failure costs</b>	
Recycling sheet plastic waste (PVC, PP and PE)	Costs incurred to recycle plastic waste to be reused can be a useful material for production.
Incinerator Tool Maintenance	Costs incurred for the maintenance of 4 incinerators so that the tool can work properly.
Maintenance of WWTP Pumps	Costs incurred for maintaining 7 WWTP pumps so that waste water can flow properly.
Maintenance of Materials are danger and toxic waste disposal sites	Costs incurred to maintain the cleanliness of Materials are danger and toxic waste disposal sites and Materials are danger and toxic waste management sites
Maintenance of chimney production sites	Costs incurred for maintaining cleanliness of 10 chimneys in the production site.
<b>Environmental external failure costs</b>	
PT. Union Foods does not charge external failure costs	

### Analysis of research results

The data used in this study is the environmental cost budget data along with the realization of the 2014-2017 budget, which in the environmental cost budget data compiled by the management of PT. Union Foods in the realization of its implementation experienced a difference in the last three years. In assessing the management performance of this study using analysis of variance followed by descriptive analysis that is used to determine the factors that cause the discrepancy or difference between the budget and its realization by comparing the two and assessing if the environmental cost budget is smaller than the realization it is detrimental (unfavorable) and if the opposite is said to be favorable favorable.

To calculate the environmental cost budget, what must be known for the first time is operating costs because the amount of the environmental cost budget follows operational costs, which means the greater the company's operational costs, the greater the environmental costs. The following are data on operational costs and their realization in 2014-2017.

**Table 2. Budget Report and Realization of Operational Costs PT. Union Foods for 2014-2017**

No	Year	Operational Cost Budget	Realization of Operational Costs
1	2014	33.200.786.839	32.790.341.456
2	2015	38.613.541.413	37.326.729.255
3	2016	46.166.421.388	44.713.564.820
4	2017	55.008.374.455	52.366.397.560

In Rupiah

Based on the budget report and the realization of operational costs above, it can be seen that the operational cost budget has increased every year. Although it has increased every year, the annual realization does not exceed the planned budget. From the data above can be calculated the amount of the environmental cost budget in which PT. Union Foods sets the budget for environmental costs at 18%.

The following is an analysis based on data on environmental cost budget reports along with their realization in 2014-2017:

Classification of Environmental Costs	Budget	% Of the Budget Operational	Realization	Difference (Variance)	% Variance
<b>Environmental prevention costs</b>					
Training of QA QC staff & production (internal) employees	166.003.934	0,50%	135.876.500	30.127.434	18,15%
Seminar on the environment held by the government/private sector	83.001.967	0,25%	74.205.000	8.796.967	10,60%

Designing old & new product designs	830.019.671	2,50%	715.480.400	114.539.271	13,80%
Audit of ISO 9001 quality management system (Internal & External)	747.017.704	2,25%	620.468.520	126.549.184	16,94%
Management of Waste Water Treatment Plant (WWTP)	996.023.605	3,00%	1.160.480.500	(164.456.895)	-16,51%
Amount	<b>2.822.066.881</b>	<b>8,50%</b>	<b>2.706.510.920</b>	<b>115.555.961</b>	<b>4,09%</b>
<b>Environmental detection costs</b>					
Air Quality Measurement & laboratory tests	166.003.934	0,50%	130.548.530	35.455.404	21,36%
EMISI laboratory measurements & tests	166.003.934	0,50%	180.458.250	(14.454.316)	-8,71%
Monitoring & measuring noise levels	166.003.934	0,50%	149.845.750	16.158.184	9,73%
Measurement & Test of laboratory wastewater	415.009.835	1,25%	422.548.120	(7.538.285)	-1,82%
Observation of land that is absorbed by WWTPs & around the environment	166.003.934	0,50%	141.485.425	24.518.509	14,77%
Monitoring the cleanliness of the office environment	83.001.967	0,25%	84.151.230	(1.149.263)	-1,38%
Health observation of employees and the surrounding community	332.007.868	1,00%	340.350.575	(8.342.707)	-2,51%
Amount	<b>1.494.035.408</b>	<b>4,50%</b>	<b>1.449.387.880</b>	<b>44.647.528</b>	<b>2,99%</b>
<b>Environmental external failure costs</b>					
Recycling sheet plastic waste (PVC, PP and PE)	249.005.901	0,75%	300.546.575	(51.540.674)	-20,70%
Incinerator Tool Maintenance	249.005.901	0,75%	177.505.650	71.500.251	28,71%
Maintenance of WWTP Pumps	747.017.704	2,25%	803.214.855	(56.197.151)	-7,52%
Maintenance of Materials are danger and toxic waste disposal sites	166.003.934	0,50%	142.487.525	23.516.409	14,17%
Maintenance of chimney production sites	249.005.901	0,75%	220.488.750	28.517.151	11,45%
Amount	<b>1.660.039.342</b>	<b>5,00%</b>	<b>1.644.243.355</b>	<b>15.795.987</b>	<b>0,95%</b>
<b>Environmental external failure costs</b>					
Amount	0	0	0	0	0
Total	<b>5.976.141.631</b>	<b>18,00%</b>	<b>5.800.142.155</b>	<b>175.999.476</b>	<b>2,95%</b>

In Rupiah

Source: Data of PT. Union Foods is written by the author

Based on the 2014 environmental cost report data, the amount of the budget and the realization of environmental costs along with the variance can be calculated:

$$\text{Environmental budget 2014: } 33.200.786.839 \times 18\% = 5.976.141.631$$

$$\text{Year variance 2014: } 5.976.141.631 - 5.800.142.155 = 175.999.476$$

$$\text{Percentage of variance in year 2014: } \frac{175.999.476}{5.976.141.631} \times 100\% = 2,95\%$$

$$\text{Percentage of budget achievement: } \frac{5.800.142.155}{5.976.141.631} \times 100\% = 97,05\%$$

From these calculations, it can be seen that the 2014 environmental cost budget has a variance of 175.999.476 (smaller 2.95% of the budget) and absorption of the environmental cost budget reaches 97.05%, in this case it is profitable (Favorable) because the realization of environmental costs is not exceeding its budget, but there are several classifications of unfavorable environmental costs. The following is an analysis based on the cost classification:

a. In the classification of environmental prevention costs, the highlight of this classification is in the management of wastewater treatment plants because the realization of costs is greater than the budget, this is due in 2014 the addition of waste water lines from the production to the final shelter waste water so that it requires more costs. For other classification sections there are no problems which means that the budget prepared is effective.

b. In the classification of environmental detection costs, there are many unfavorable costs, namely measurement and laboratory testing of emissions caused by measurements and emission tests for all production machinery and operational vehicles, for measuring & testing laboratory wastewater caused by the presence of addition of waste water lines in the production section so that measurements and laboratory tests must be carried out on this pathway. To monitor office environment cleanliness, it is also caused by the addition of waste water lines because they must be periodically inspected for cleanliness, observation of health of employees and surrounding communities due to changes in doctor vendors. who experience a difference in contract prices to periodically check the health of employees and the surrounding environment. For other costs that are profitable, there are no problems because they are going well.

c. In the classification of internal environmental failure costs, there

are 2 (two) parts of costs that are unfavorable, namely the cost of recycling sheet plastic waste (PVC, PP, and PE) caused by the increasing amount of recycled plastic waste, and on the IPAL pump maintenance costs caused by damage to one of the pumps at the WWTP so that it requires a fee to repair it.

Based on the analysis of the overall environmental cost variance and environmental costs according to the 2014 cost classification above, it can be concluded in 2014 even though there were some parts of the costs that were not profitable for PT. Union Foods but overall the budget prepared is effective, this is a positive thing for management performance.

Table 4. Budget Report and Realization of Environmental Costs of PT. Union Foods in 2015

Classification of Environmental Costs	Budget	% Of the Budget Operational	Realization	Difference (Variance)	% Variance
<b>Environmental prevention costs</b>					
Training of QA QC staff & production (Internal) employees	193.067.707	0,50%	162.845.150	30.222.557	15,65%
Seminar on the environment held by the government/private sector	96.533.854	0,25%	83.754.500	12.779.354	13,24%
Designing old & new product designs	965.338.535	2,50%	1.445.244.512	(479.905.977)	-49,71%
Audit of ISO 9001 quality management system (Internal & External)	868.804.682	2,25%	724.503.235	144.301.447	16,61%
Management of Waste Water Treatment Plant (WWTP)	1.158.406.242	3,00%	1.073.548.250	84.857.992	7,33%
Amount	<b>3.282.151.020</b>	<b>8,50%</b>	<b>3.489.895.647</b>	<b>(207.744.627)</b>	<b>-6,33%</b>
<b>Environmental detection costs</b>					
Air Quality Measurement & laboratory tests	193.067.707	0,50%	144.548.750	48.518.957	25,13%
EMISI laboratory measurements & tests	193.067.707	0,50%	182.437.850	10.629.857	5,51%
Monitoring & measuring noise levels	193.067.707	0,50%	157.754.675	35.313.032	18,29%
Measurement & Test of laboratory wastewater	482.669.268	1,25%	692.657.625	(209.988.357)	-43,51%
Observation of land that is absorbed by WWTPs &	193.067.707	0,50%	143.584.360	49.483.347	25,63%

around the environment					
Monitoring the cleanliness of the office environment	96.533.854	0,25%	89.464.230	7.069.624	7,32%
Health observation of employees and the surrounding community	386.135.414	1,00%	345.461.540	40.673.874	10,53%
Amount	1.737.609.364	4,50%	1.755.909.030	(18.299.666)	-1,05%
<b>Environmental external failure costs</b>					
Recycling sheet plastic waste (PVC, PP and PE)	289.601.561	0,75%	396.543.250	(106.941.689)	-36,93%
Incinerator Tool Maintenance	289.601.561	0,75%	251.565.450	38.036.111	13,13%
Maintenance of WWTP Pumps	868.804.682	2,25%	792.465.325	76.339.357	8,79%
Maintenance of Materials are danger and toxic waste disposal sites	193.067.707	0,50%	157.562.535	35.505.172	18,39%
Maintenance of chimney production sites	289.601.561	0,75%	246.548.250	43.053.311	14,87%
Amount	1.930.677.071	5,00%	1.844.684.810	85.992.261	4,45%
<b>Environmental external failure costs</b>					
Amount	0	0	0	0	0
Total	6.950.437.454	18,00%	7.090.489.487	(140.052.033)	-2,02%

In Rupiah

Source: Data of PT. Union Foods is written by the author

Based on the 2015 environmental cost report data, the amount of the budget and the realization of environmental costs along with the variance can be calculated:

Environmental budget 2015:  $613.541.413 \times 18\% = 6.950.437.454$  38

Year variance 2015:  $6.950.437.454 - 7.090.489.487 = -140.052.033$

Percentage of variance in year 2015:  $\frac{-140.052.033}{6.950.437.454} \times 100\% = -2,02\%$

Percentage of budget achievement:  $\frac{7.090.489.487}{6.950.437.454} \times 100\% = 102,02\%$

From these calculations, it can be seen that the 2015 environmental cost budget has a variance of 140.052.033 and the absorption of the environmental cost budget reaches 102.02%, therefore overall the realization of the environmental cost budget is unfavorable, this is because in 2015 PT. Union Foods made a new product called Lime Hanimon and packaging renewal at the Lazery Bar, thus impacting on several environmental cost classifications. However, not all environmental cost classifications are Unfavorable. The following is an analysis based on the cost classification:

a. In this environmental prevention cost classification, there is one

cost that is unfavorable, namely the cost of designing old & new product design due to the 2015 production of a new product, lime Hanimon and packaging renewal at the Lazery Bar, so that it costs more than budgeted. For other classifications there are no problems which means that the budget prepared is effective.

b. In the classification of environmental detection costs, there is an unfavorable cost, namely the cost of measuring & testing laboratory wastewater due to many experiments to make new products so that the rate of cooking of candy increases and makes liquid waste increase as well. For other costs that are profitable, there are no problems because they are going well.

c. In the classification of internal environmental failure costs, there is an unfavorable cost, namely the cost of recycling sheet plastic waste. Other costs are effective.

Based on the analysis of overall environmental cost variance and based on the cost classification in 2015 above, it can be concluded that in 2015 management performance was quite good in budgeting environmental costs even though overall the realization of environmental costs was not favorable for PT. Union Foods, but this can be overcome by the management of PT. Union Foods to pay more attention if there are plans to make new products and packaging updates in the following year, the budget must be more prepared.

Table 5. Budget Report and Realization of Environmental Costs of PT. Union Foods in 2016

Classification of Environmental Costs	Budget	% Of the Budget Operational	Realization	Difference (Variance)	% Variance
<b>Environmental prevention costs</b>					
Training of QA QC staff & production (internal) employees	230.832.107	0,50%	178.546.550	52.285.557	22,65%
Seminar on the environment held by the government/private sector	115.416.053	0,25%	84.575.050	30.841.003	26,72%
Designing old & new product designs	1.154.160.535	2,50%	973.578.753	180.581.782	15,65%
Audit of ISO 9001 quality management system (Internal & External)	1.038.744.481	2,25%	747.543.454	291.201.027	28,03%
Management of Waste Water Treatment Plant (WWTP)	1.384.992.642	3,00%	1.698.658.050	(313.665.408)	-22,65%
Amount	3.924.145.818	8,50%	3.682.901.857	241.243.961	6,15%

Environmental detection costs						
Air Quality Measurement & laboratory tests	230.832.107	0,50%	157.425.375	73.406.732	31,80%	
EMISI laboratory measurements & tests	230.832.107	0,50%	191.486.655	39.345.452	17,05%	
Monitoring & measuring noise levels	230.832.107	0,50%	195.635.623	35.196.484	15,25%	
Measurement & Test of laboratory wastewater	577.080.267	1,25%	968.543.679	(391.463.412)	-67,84%	
Observation of land that is absorbed by WWTPs & around the environment	230.832.107	0,50%	154.386.050	76.446.057	33,12%	
Monitoring the cleanliness of the office environment	115.416.053	0,25%	90.914.595	24.501.458	21,23%	
Health observation of employees and the surrounding community	461.664.214	1,00%	358.546.544	103.117.670	22,34%	
Amount	<b>2.077.488.962</b>	<b>4,50%</b>	<b>2.116.938.521</b>	<b>(39.449.559)</b>	<b>-1,90%</b>	
Environmental external failure costs						
Recycling sheet plastic waste (PVC, PP and PE)	346.248.160	0,75%	334.835.505	11.412.655	3,30%	
Incinerator Tool	346.248.160	0,75%	267.968.470	78.279.690	22,61%	
Maintenance of WWTP	1.038.744.481	2,25%	1.666.852.300	(628.107.819)	-60,47%	
Pumps Maintenance of Materials are danger and toxic waste disposal sites	230.832.107	0,50%	163.748.264	67.083.843	29,06%	
Maintenance of chimney production sites	346.248.160	0,75%	254.566.302	91.681.858	26,48%	
Amount	<b>2.308.321.069</b>	<b>5,00%</b>	<b>2.687.970.841</b>	<b>(379.649.772)</b>	<b>-16,45%</b>	
Environmental external failure costs						

Amount	0	0	0	0	0
Total	<b>8.309.955.850</b>	<b>18,00%</b>	<b>8.487.811.219</b>	<b>(177.855.369)</b>	<b>-2,14%</b>

In Rupiah  
Source: Data of PT. Union Foods is written by the author

Based on the 2016 environmental cost report data, the amount of the budget and the realization of environmental costs along with the variance can be calculated:

$$\text{Environmental budget 2016: } 46.166.421.388 \times 18\% = 8.309.955.850$$

$$\text{Year variance 2016: } 8.309.955.850 - 8.487.811.219 = -177.855.369$$

$$\text{Percentage of variance in years 2016: } \frac{-177.855.369}{8.309.955.850} \times 100\% = -2,14\%$$

$$\text{Percentage of year budget achievement 2016: } \frac{8.487.811.219}{8.309.955.850} \times 100\% = 102,14\%$$

From these calculations, it can be seen that the 2016 environmental cost budget has a variance of -177,855,369 and the absorption of the environmental cost budget reaches 102.14%, meaning that the budget and revised budget for environmental costs in 2016 are not profitable for PT. Union foods, this is because in 2016 there were 4 (four) pumps at WWTP which suffered considerable damage and so that for several days the flow of wastewater was hampered and made some costs increased to repair the damage that occurred. The following is an analysis based on the cost classification:

a. In this environmental prevention cost classification there is one cost that is unfavorable, namely the cost of managing a Waste Water Treatment Plant (WWTP) caused by damage to 4 (four) pumps that make some WWTP lines run into pollution so that it costs money to buy equipment and chemicals to clean the waste water lines. For other costs there is no problem, which means that the budget prepared is effective.

b. In the classification of environmental detection costs, there is an unfavorable cost, namely the cost of measuring & laboratory testing of wastewater caused also because 4 WWTP pumps are damaged so that it requires a fee to check the polluted wastewater levels in the WWTP pathways. For other costs that are profitable, there are no problems because they are going well.

c. In the classification of internal environmental failure costs, there is one unfavorable cost, namely the maintenance cost of the WWTP pump because 4 pumps have been damaged severely so that it requires costs to repair them and after inspection only 2 can be repaired but for the other 2 pumps they must be replaced with new ones.

Based on the analysis of the overall environmental cost variance and based on the cost classification in 2016 above, it can be concluded in 2016 the

management of PT. Union Foods is not good enough in budgeting environmental costs because overall the realization of environmental costs is not profitable for PT. Union Foods, this happened because 4 WWTP pumps suffered severe damage which affected several environmental cost classifications.

With the occurrence of damage to the 4 pumps of the WWTP management in order to conduct a performance evaluation on the workshop and parts of the WWTP, and also highlighting this is management following up on the relevant section to provide the first sanction to work better in monitoring and maintaining the IPAL pump.

Table 6. Budget Report and Realization of Environmental Costs of PT. Union Foods in 2017

Classification of Environmental Costs	Budget	% Of the Budget Operational	Realization	Difference (Variance)	% Variance
<b>Environmental prevention costs</b>					
Training of QA QC staff & production (internal) employees	275.041.872	0,50%	248.566.052	26.475.820	9,63%
Seminar on the environment held by the government/private sector	137.520.936	0,25%	125.685.275	11.835.661	8,61%
Designing old & new product designs	1.375.209.361	2,50%	1.872.496.240	(497.286.879)	-36,16%
Audit of ISO 9001 quality management system (Internal & External)	1.237.688.425	2,25%	1.159.563.930	78.124.495	6,31%
Management of Waste Water Treatment Plant (WWTP)	1.650.251.234	3,00%	1.596.032.500	54.218.734	3,29%
Amount	<b>4.675.711.829</b>	<b>8,50%</b>	<b>5.002.343.997</b>	<b>(326.632.168)</b>	<b>-6,99%</b>
<b>Environmental detection costs</b>					
Air Quality Measurement & laboratory tests	275.041.872	0,50%	299.625.075	(24.583.203)	-8,94%
EMISI laboratory measurements & tests	275.041.872	0,50%	353.546.809	(78.504.937)	-28,54%
Monitoring & measuring noise levels	275.041.872	0,50%	248.468.425	26.573.447	9,66%

Measurement & Test of laboratory wastewater	687.604.681	1,25%	849.536.815	(161.932.134)	-23,55%
Observation of land that is absorbed by WWTPs & around the environment	275.041.872	0,50%	188.669.540	86.372.332	31,40%
Monitoring the cleanliness of the office environment	137.520.936	0,25%	129.785.922	7.735.014	5,62%
Health observation of employees and the surrounding community	550.083.745	1,00%	478.468.960	71.614.785	13,02%
Amount	<b>2.475.376.850</b>	<b>4,50%</b>	<b>2.548.101.546</b>	<b>(72.724.696)</b>	<b>-2,94%</b>
<b>Environmental external failure costs</b>					
Recycling sheet plastic waste (PVC, PP and PE)	412.562.808	0,75%	394.529.510	18.033.298	4,37%
Incinerator Tool	412.562.808	0,75%	328.486.963	84.075.845	20,38%
Maintenance of WWTP	1.237.688.425	2,25%	1.194.268.652	43.419.773	3,51%
Pumps	275.041.872	0,50%	220.948.469	54.093.403	19,67%
Maintenance of Materials are danger and toxic waste disposal sites	412.562.808	0,75%	267.468.514	145.094.294	35,17%
Maintenance of chimney production sites					
Amount	<b>2.750.418.723</b>	<b>5,00%</b>	<b>2.405.702.108</b>	<b>344.716.615</b>	<b>12,53%</b>
<b>Environmental external failure costs</b>					
Amount	0	0	0	0	0
Total	<b>9.901.507.402</b>	<b>18,00%</b>	<b>9.956.147.651</b>	<b>(54.640.249)</b>	<b>-0,55%</b>

In Rupiah

Source: Data of PT. Union Foods is written by the author

Based on the 2017 environmental cost report data, the amount of the budget and the realization of environmental costs along with the variance can be calculated:

$$\text{Environmental budget 2017: } 55.008.374.455 \times 18\% = 9.901.507.402$$

$$\text{Year variance 2017: } 9.901.507.402 - 9.956.147.651 = -54.640.249$$

$$\text{Percentage of variance in year 2017} = \frac{-54.640.249}{9.901.507.402} \times 100\% = -0,55\%$$

$$\text{Percentage of year budget achievement 2017} = \frac{9.956.147.651}{9.901.507.402} \times 100\% = 100,55\%$$

From these calculations it can be seen that the 2017 environmental cost budget has a variance of -54,640,249 and the absorption of the environmental cost budget reaches 100.55% which means it is not profitable for PT. Union Foods, although only slightly more than what was planned. The variance is because in 2017 PT. Union Food made another new product, namely Strawberry Strawberry Lazery, Vanilla Lazery Milk, and Moka Lazery Milk. The following is an analysis based on the cost classification:

a. In this environmental prevention cost classification there is one cost that is unfavorable, namely the cost of designing old & new product designs due to the creation of new products, namely the Strawberry Lazery Milk, Vanilla Lazery Milk, and Moka Lazery Milk. For other costs there is no problem, which means that the budget prepared is effective.

b. In the classification of environmental detection costs, there are three unfavorable costs, namely the cost of measuring & testing the air quality laboratory and on the cost of measuring & testing laboratory wastewater due to the increase in the number of production before because of the addition of new products Lazery Milk Strawberry, Vanilla Lazery Milk, and Moka Lazery Milk, and also on the cost of measuring & testing EMISI laboratories due to the addition of machines to produce new products Strawberry Lazery Milk, Vanilla Lazery Milk, and Moka Lazery Milk. For other costs that are profitable, there are no problems because they are going well.

c. In the classification of the cost of internal environmental failure is quite good because all realization of the budget for environmental costs is favorable, this is a positive value.

Based on the analysis of the overall environmental cost variance and based on the cost classification in 2017 above, it can be concluded that in 2017 management performance is quite good in preparing the environmental cost budget, although overall the realization of environmental costs is a bit unfavorable for PT. Union Foods. But something that can be evaluated in 2017 is the management of PT. Union Foods should be able to learn from 2015, which at the time made new products and budgeted even more.

After analyzing the year from 2014-2017, the following is the recapitulation of the budget and realization of environmental costs in 2014-2017 and the recapitulation of the environmental cost budget based on the classification of environmental costs according to the difference category:

Table 7. Budget Recapitalization and Realization of Environmental Costs of PT. Union Foods for 2014-2017

No	Years	Budget Total	Total Realization	Variance
1	2014	5.976.141.631	5.800.142.155	175.999.476
2	2015	6.950.437.454	7.090.489.487	(140.052.033)
3	2016	8.309.955.850	8.487.811.219	(177.855.369)
4	2017	9.901.507.402	9.956.147.651	(54.640.249)

Table 8. Budget Recapitalization and Realization of Environmental Costs of PT. Union Foods for 2014–2017 Based on Difference Categories

Classification of Environmental Costs	Difference Category			
	2014	2015	2016	2017
<b>Environmental prevention costs</b>				
Training of QA QC staff & production (Internal) employees	Favorable	Favorable	Favorable	Favorable
Seminar on the environment held by the government/private sector	Favorable	Favorable	Favorable	Favorable
Designing old & new product designs	Favorable	Unfavorable	Favorable	Unfavorable
Audit of ISO 9001 quality management system (Internal & External)	Favorable	Favorable	Favorable	Favorable
Management of Waste Water Treatment Plant (WWTP)	Unfavorable	Favorable	Unfavorable	Favorable
<b>Environmental detection costs</b>				
Air Quality Measurement & laboratory tests	Favorable	Favorable	Favorable	Unfavorable
EMISl laboratory measurements & tests	Unfavorable	Favorable	Favorable	Unfavorable
Monitoring & measuring noise levels	Favorable	Favorable	Favorable	Favorable
Measurement & Test of laboratory wastewater	Unfavorable	Unfavorable	Unfavorable	Unfavorable
Observation of land that is absorbed by WWTPs & around the environment	Favorable	Favorable	Favorable	Favorable
Monitoring the cleanliness of the office environment	Unfavorable	Favorable	Favorable	Favorable
Health observation of employees and the surrounding community	Unfavorable	Favorable	Favorable	Favorable
<b>Environmental external failure costs</b>				
Recycling sheet plastic waste (PVC, PP and PE)	Unfavorable	Unfavorable	Favorable	Favorable
Incinerator Tool Maintenance	Favorable	Favorable	Favorable	Favorable
Maintenance of WWTP Pumps	Unfavorable	Favorable	Unfavorable	Favorable
Maintenance of Materials are danger and toxic waste disposal sites	Favorable	Favorable	Favorable	Favorable
Maintenance of chimney production sites	Favorable	Favorable	Favorable	Favorable
<b>Environmental external failure costs</b>				
	0	0	0	0

Based on budget report data and realization of environmental costs of PT. Union Foods classifies environmental costs into 4 cost classifications, but only 1 classification of costs that are not budgeted is the cost of external environmental failure, this is because PT. Union Foods has ensured that the waste produced from both production and operational activities does not pollute the environment before being released into the environment and also PT. Union Foods allocates 18% of operational costs for environmental costs divided into three other cost classifications, namely environmental prevention costs of 8.5%, environmental detection costs of 4.5% and internal environmental failure costs of 5%, in addition to all activities PT. Union foods already has official permission from the government and are regularly checked 5 (five) years by the Tangerang City Environmental

Management Agency, so that PT. Union Foods is very confident not to budget for external environmental failure costs.

Based on the research data analysis above, even though from 2014 - 2017 only in 2014 the total budget and realization were of the favorable ones, but it could be said that the management performance of PT. Union Foods is quite good in implementing the environmental cost budget because only in 2016 there was a swelling of the cost of internal environmental failure, due to the lack of monitoring and maintenance at the WWTP pump that was carried out by the relevant part. For 2015 and 2017 can be taken into consideration in terms of both making new products and renewing the design of old products for the following year management can prepare a more mature budget.

Despite the management performance of PT. Union Foods is quite good, but it can be even better if PT. Union Foods also implements an environmental management system (ISO 14001), not only relying on a quality management system (ISO 9001) because implementing an environmental management system and obtaining an ISO 14001 certificate can help identify, prioritize and regulate environmental risks that occur due to business activities. In addition, ISO 14001 has good benefits for companies starting from being able to reduce environmental costs because ISO 14001 requires a commitment to continuous improvement to create and build a public image or the company's reputation to be good in the eyes of the public and other companies. Thus the management of PT. Union Foods only has one homework which is implementing an environmental management system and obtaining international certification, namely ISO 14001.

Unlike the previous researchers conducted by (Rohelmy, ZA, & Hidayat, 2015) at PT. Emdeki Utama concerning the Effectiveness of the Application of Environmental Costs in Efforts to Minimize Environmental Impacts. PT. Emdeki Utama does not have PROPER (Environmental Performance Assessment Program) permits issued by the Ministry of Environment every 5 years because the cost of permits is very expensive and burdensome for companies only to provide an assessment of the company's environmental conditions but PT. Emdeki Utama continues to carry out environmental management by implementing the Go Green program. By implementing the Go Green program, PT. Emdeki Utama managed to minimize environmental impacts by increasing the environmental budget and PT. Emdeki Utama has received ISO 14001 international certification. However, similarities were made by previous researchers conducted by (Indrawati & Rini, 2018) at the Tabanan Regional General Hospital re-

garding Analysis of Environmental Accounting Applications at the Tabanan Regional General Hospital. Tabanan Regional General Hospital conducts waste treatment based on the type of waste and is then processed before being released into the environment so as not to pollute the environment and Tabanan Regional General Hospital also classifies environmental costs into 4 categories namely environmental prevention costs, environmental detection costs, internal environmental failure costs and external failure costs environment, and also the similarity is not budgeting for external environmental failure costs because the Tabanan Regional General Hospital and PT. Union Foods never throws waste out of the environment that causes harm to the surrounding community.

## **V. CONCLUSIONS**

Based on the data that has been analyzed regarding the application of the environmental cost budget in order to assess the management performance of PT. Union foods in 2014 - 2017. So conclusions can be obtained, as follows:

1. PT. Union Foods has carried out social and environmental responsibilities in accordance with government regulations contained in laws No.32 of 2009 and Law No.40 of 2007 article 74 by conducting a good waste management system and being periodically checked by the Management Agency Environment Tangerang city.
2. PT. Union Foods has prepared an environmental cost budget by classifying environmental costs into 4 categories, namely: environmental prevention costs, environmental detection costs, internal environmental failure costs and external environmental failure costs. By classifying environmental costs, PT. Union foods can easily allocate its budget and the amount of environmental costs is measured by the percentage of operating costs, PT. Union food made a policy of the percentage of environmental costs amounting to 18% of operational costs.
3. Based on data analysis using analysis of variance, the management performance of PT. Union Foods is quite good at implementing environmental cost budgets, only the management of PT. Union Foods has one homework namely implementing an environmental management system and obtaining an international standard ISO 14001 certification.

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