Deprication Measurement on Computer Lab Inventory using Straight-Line Method

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Abstract. Institution or college, especially those with computer-related departement, the availability of a computer lab is very important to support teaching and learning activities, research, or training for the users. The equipment that recorded in the inventory of computer lab have a lifespan, and each year there will be depreciation or impairment of assets. Using straight-line method and the depreciation and amortization guideline from the regulation from the minister of the treasury of the Republic Indonesia in 2013 on the depreciation module of goods, it can be calculated the amount of depreciation of computer lab inventory such as computer and networking equipment. It is expected that with the use of straight-line method, there will be a depreciation analysis and issued a depreciation policy related to equipment inventory in computer lab.

1. Introduction
Educational institution, especially those with majors or disciplines of computer science, existence of a computer lab becomes very important. Computer laboratories that consist of computer and networking devices can be a learning tool of practicum, research tools for researchers, instrument for community service, and also to conduct training using computer technology. Along with the development of computer and network technology today, the needs related to computer and network specifications for computer labs can be adjusted to the funds owned by an educational institution. A computer and network equipment, regardless of price, surely have an economic lifespan. This economic lifespan is related to the life of the goods, in which case any goods will be depreciated. Depreciation means a certain amount of value that must be allocated to an asset/goods during its economic lifespan. Thus, the accumulated value of depreciation on a good can be used to replace the item when its economic life has reached its time.

The economical lifespan of an inventory item belonging to the technology category have faster economic lifespan than others. This is in accordance with Regulation of the Minister of Treasury No.96/PMK.03/2009, which stating that computer equipment belongs to cluster 1, which means the equipment belonging to this cluster has a maximum lifespan of four years.

There are several methods used in calculating the economic lifespan of goods, such as straight-line method, declining balance method and others. In this article the method used is straight-line method,
where in this method the depreciation cost is assumed to be the same amount for each year until the inventory is reaching maximum lifespan. This work will discuss the calculation of depreciation, time of lifespan, the estimated cost of maintenance and longevity of computer equipment commonly used in educational institutions. Hopefully, the management through the facilities and infrastructure department has the planning and calculation of procurement budgeting and allocation of equipment maintenance funds for the computer during its lifespan. In addition, this method can be a reminder for the management to have a plan in the procurement or rejuvenation of inventory so that the equipment in computer labs can be used to the maximum utilization.

2. Straight-Line Method
Depreciation is the accounting process in allocating the cost of tangible assets to the expenses in a systematic and rational way during the period expected to benefit from the use of assets. Fixed assets is one of the important tools and principal in a company engaged in manufacturing or activities to make the production process.

Fixed assets owned by the company, used by the company itself and these are not intended to be traded. tangible fixed assets owned by the company may have various forms, such as land, buildings, machinery and equipment, work tools, molds, furniture and office equipment, vehicles and place of goods that can be returned. Financial accounting standards state that the depreciable amount is allocated to each accounting period over the life of the asset by various systematic methods. Whichever methods is chosen, consistency in its use is necessary, regardless of company profitability level and taxation considerations, in order to provide an appeal of the results of its operations from one period to another.

One of the depreciation method used in this work is straight-line depreciation (Straight Line Method). straight-line method is more look at the time aspect than the usability aspect. This method is most widely applied by companies because it is most easily applied in accounting. In this straight-line depreciation method, the depreciation expense for each year is of equal value and is not affected by the outcome or output produced. The calculation of depreciation rates for the straight-line method is as follows:

\[ \text{Straight line method} = \frac{\text{Acquisition cost} - \text{estimated residual value}}{\text{Estimated lifespan}} \]

To estimate the lifespan can be seen in the following table

| Tangible property | Lifespan period | depreciation rates referred to verse (1) | depreciation rates referred to verse (2) |
|-------------------|----------------|-----------------------------------------|-----------------------------------------|
| I. non-buildings  |                |                                         |                                         |
| Cluster 1         | 4 years        | 25%                                     | 50%                                     |
| Cluster 2         | 8 years        | 12.5%                                   | 25%                                     |
| Cluster 3         | 16 years       | 6.25%                                   | 12%                                     |
| Cluster 4         | 20 years       | 5%                                      | 10%                                     |
| II. buildings     |                |                                         |                                         |
| permanent         | 20 years       | 5%                                      |                                         |
| impermanent       | 10 years       | 10%                                     |                                         |

Based on the law of income tax as seen in table 1 that the clustering of tangible property is divided into two, ie non-buildings and buildings. The quantity for each group is divided into 2, verse (1) which
is used for the straight line method calculation, while verse (2) is used for calculating in declining balance method.

For the classification of each cluster and also some examples of the property can be seen in table 2:

Table 2. Classification of Assets by Cluster

| No. | Cluster | Example |
|-----|---------|---------|
| 1   | Cluster 1 | 1. Wooden or rattan furniture and appliances including tables, benches, chairs, cabinets and the like that are not part of the building.  
2. Office machines such as typewriters, counters, duplicators, photocopiers, accounting / bookkeeping machines, computers, printers, scanners and etc.  
3. Other equipment such as amplifier, tape / cassette, video recorder, television and etc.  
4. Motorcycles, bicycles and tricycles.  
5. Tools of special purpose for the industry / service concerned.  
6. Communication tools such as telephone, fax, cell phone and etc. |
| 2   | Cluster 2 | 1. Metal furniture and appliances including tables, benches, chairs, cabinets and the like that are not part of the building.  
2. Air conditioning equipment such as air conditioners, fans and etc.  
3. Cars, buses, trucks, speed boats and etc.  
4. Container and etc |
| 3   | Cluster 3 | Machines used in the field of mining purpose |
| 4   | Cluster 4 | 1. Steam locomotives and tenders over rails.  
2. Electric locomotives over rails, run by batteries or by electric power from outside sources.  
3. Trains, passenger cars and freight, including special containers are made and equipped to be pulled with one device or some vehicle of transport.  
4. Passenger ships, freight vessels, ships specially made for the transport of certain goods (eg wheat, rocks, minerals and the like) including refrigerators and tankers, fishing vessels and etc, which weigh over 1,000 DWT. |

3. Result and Discussion

In this discussion, three examples of items that are always included in inventory of computers lab include: built-up desktop computer, air conditioning and projector. For a built-up desktop computer, with the purchasing price of Rp. 5,000,000 and purchased at the beginning of the year in the first month. If you see references in table 2, the built-up desktop computer in the category of cluster 1 with a lifespan for 4 years (table 1), estimated residual value of Rp 1,000,000, if the lifespan is in
accordance with the estimation that has been applied then the depreciation calculation can be seen in the following table:

**Table 3. Sample calculation for built-up desktop**

| Year | Purchased price and after minus residual value | % | Depreciation cost | Residual value per year |
|------|-----------------------------------------------|---|-------------------|------------------------|
| 1    | Rp 5.000.000                                 | 25%| Rp 1.000.000      | Rp. 3.000.000          |
| 2    | Rp 1.000.000                                 | 25%| Rp 1.000.000      | Rp. 2.000.000          |
| 3    | Rp 4.000.000                                 | 25%| Rp 1.000.000      | Rp. 1.000.000          |
| 4    | Rp 1.000.000                                 | 25%| Rp 1.000.000      | Rp. 0                  |

From table 3, it can be explained that educational institutions should set aside Rp 1,000,000 for computer maintenance and purchase of new computers when the useful life of goods is reaching the maximum lifespan in the fourth year.

The second example is air conditioning, assumed for the purchasing price of one air conditioning unit was Rp 4,000,000, because air conditioning categorized to the cluster 2, so the lifespan of this goods is 8 years. If the educational institution will replace the air conditioning unit within 10 years and the residual value of air conditioner is Rp 0, the result can be seen in the following table:

**Table 4. Sample calculation for air condition**

| Year | Purchased price | % | Depreciation cost | Residual value |
|------|-----------------|---|-------------------|----------------|
| 1    | Rp 4.000.000    | 12.5%| Rp 500.000       | Rp 3.500.000   |
| 2    |                | 12.5%| Rp 500.000       | Rp 3.000.000   |
| 3    |                | 12.5%| Rp 500.000       | Rp 2.500.000   |
| 4    |                | 12.5%| Rp 500.000       | Rp 2.000.000   |
| 5    |                | 12.5%| Rp 500.000       | Rp 1.500.000   |
| 6    |                | 12.5%| Rp 500.000       | Rp 1.000.000   |
| 7    |                | 12.5%| Rp 500.000       | Rp 500.000     |
| 8    |                | 12.5%| Rp 500.000       | Rp 0           |
| 9    |                | 12.5%| Rp 500.000       | - Rp 500.000   |
| 10   |                | 12.5%| Rp 500.000       | - Rp 1.000.000 |

In table 4 it can be seen that the lifespan of the goods has exceeded the predetermined estimate. This can cause losses from the utilization of goods due to the quality of goods has decreased, so it can be sure will appear cost or agenda of repair and maintenance on air conditioning that should not need to be done.

The third example is the projector with the assumption that the price per unit was Rp 5.000.000, this electronic device is used by the teacher or the presenter to display the information on the wall screen in a larger form so that the entire computer lab can see the material clearly. As an assumption, the residual value in this item was Rp 0. In this third example, if it refers to the clustering table then this item belongs to cluster 1 and its lifespan is four years. However, it was assumed that this item is purchased by mid-year:
Table 5. Sample calculation for projector

| Year | Purchased price | %     | Depreciation cost | Residual value |
|------|-----------------|-------|-------------------|----------------|
| 1    | Rp 5,000,000    | 12.5% | Rp 625,000        | Rp 4,325,000   |
| 2    |                | 25%   | Rp 1,250,000      | Rp 3,125,000   |
| 3    |                | 25%   | Rp 1,250,000      | Rp 1,875,000   |
| 4    |                | 25%   | Rp 1,250,000      | Rp 625,000     |
| 5    |                | 12.5% | Rp 625,000        | Rp 0           |

In the Table 5 it can be seen that the goods were purchased in the middle of the year, so the percentage of depreciation was adjusted to be halved. However, for the second year to fourth depreciation cost is calculated in accordance with the stipulated provisions. The age of the goods can reach the fifth year, but by the middle of the fifth year the goods are exhausted and must be replaced immediately with the new unit.

4. Conclusion
This method can estimate the depreciation expense that the management has to set aside for inventory of goods in an existing computer lab. The amount of depreciation cost is calculated from the year of purchase and the amount was the same. So that the depreciated expense can be allocated for repair, maintenance and purchase of new units if the goods have reached the maximum lifespan.

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