Accounting and Finance Innovations

Chapter 9

Depreciation of Non-Current Assets

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Introduction

Generally, all firm have assets which are referred to as Non-current assets or fixed assets. These assets are not to be resold because they are permanent in nature and are specifically used for the purpose of generating or earning revenue and as such during each accounting period some of the historical cost of the assets must be charged to the profit or loss account before the true profit can be ascertained. Depreciation is the process of spreading the cost of non-current (fixed) assets over a period of time of its life. It is the assigned depletion in the value of non-current assets occurring in connection with human and natural causes. In otherwords, it is the allocation of the costs of non-current assets over its useful life. Non-current assets and other material assets used for the generation of revenue by firms reduce in their values as years go by such that their values will get to nil after certain years of usage. Companies use depreciation to accumulate yearly reserves to provide for the replacement of the assets so depreciated. While depreciation is the reduction in the value of non-current assets arising from usage, natural causes or technological advancement; provision for depreciation is a form of yearly reserves in order to replace the asset when it had completely worn off, or its book value exhausted. Depreciation charge is not an expenses in real sense but a provision for future expenses. Items of non-current assets that are normally subjected to depreciation include building, machineries, equipment, leasehold assets, motor vehicles and other locomotives, furniture and fitting, investment assets and any other assets that is non-current. These are otherwise called property, plants and equipment (PPE). Assets are said to be non-current when their convertibility to liquid or near-liquid (cash) is difficult and or when their values cannot be written off against the income statement within one accounting period.

CAUSES OF DEPRECIATION

The main causes of depreciation can be analyzed to include:

1. Physical factors
2. Wear and tear
3. Obsolescence
4. Market force

1) **Physical Factor:** Physical factors are natural effects devoid of human efforts. They include humidity, erosion, flood etc, which deplete the value of physical assets.
2) **Wear and Tears:** Wear and tears in the value of assets are caused by human efforts through usage. Property, plants and equipment used in production lines or vehicles used as pull cars reduce in their values over certain years of usages or mileages.
3. **Obsolescence:** Obsolescence (Technology) causes depreciation of assets through changes in technology. That is the introduction or the invention of new technology or new model of an asset which causes depletion in the value of the old model. For example the invention of computer brought down the usage and the market value of IBM electronic typewriter and the Olympia manual typewriter. Also, the continuous modernization of cars in the automobile industry causes serious depletion in the values of the old models of the same products.

4) **Market Forces:** Market forces are the effect of price changes in the value of asset due to the demand or supply of the asset, inflationary rate in the country, price appreciativeness etc. The 2009 world economic meltdown had resulted into high depreciation in the value of stocks. The general effects of market forces on any asset either results to its depreciation in value or its appreciation in value, hence influencing the demand and supply of the asset.

ARGUMENTS IN FAVOUR OF DEPRECIATION CHARGE AGAINST PROFIT

1. Depreciation is charged against the profit in order to recognize the fact that the assets contributed to the generation of the revenue of the organization. As labour is recognized and rewarded by salaries/wages and written off against the income statement yearly, it is only proper that the efforts and contributions of property, plants and equipment which equally aided revenue generation in the same accounting year be recognized and rewarded accordingly by depreciation charge.
2. The charge of depreciation against the income statement is to make provision for the replacement of the asset at a period when the asset would have been confirmed valueless or when its performance has become below company's tolerable capacity. The provision for depreciation is in line with going concern.

AGREEMENTS AGAINST DEPRECIATION CHARGES

Some authorities are beginning to raise issues against the computation of depreciation and charging same against the income of the organization as provision. Among the reasons raised are:

1. Like every other assets of a business organization, plant, property and equipment are financed by the promoters of the organization and setting some funds aside in the form of provision would suggest that the assets were borrowed.
2. Depreciation is merely devised to understate organizational profits as the life span of those assets so depreciated never exhausted as estimated.
3. Even when provisions are made for depreciation, funds so provided were never kept intact to replenish those assets but are reploughed into the business. It even occurs that some organizations approach finance houses to finance the acquisition of assets for which provisions had earlier been made.

FACTORS AFFECTING THE COMPUTATION OF DEPRECIATION

The following factors are of paramount importance in determining the depreciation chargeable on an asset in each accounting year:

1. The historical cost of the asset
2. The life span of the asset as determined by the user and in line with the relevant government (tax) authority
3. The residual (scrap) value of the asset
4. The company's deprecation policy
5. The established depreciation rate.

METHODS OF DEPRECIATION

Depreciation of property, plants and equipment is calculated in many ways but the most three methods are:

1. Flat charge of a specific amount throughout the estimated life-span of the asset
2. Reduced book value method where the applicable rate of depreciation is applied to the current book value of the asset.
3. The revaluation method where the depreciation charge in a particular year is determined after ascertaining the current market value of the asset so as to match the current value at the beginning of the year with the value at the end of the year. The difference between the periods is the amount chargeable to depreciation. This method is predominantly used in

computing depreciation of spare parts and items of small values. This methods is faced with criticisms in a period of hyper-inflation.

Depreciation charge is calculated in various ways, but will be limited to four popular methods:

1. Straight-line method
2. Reducing (diminishing) balance method
3. Sum-of the digits method and
4. Revaluation method

Straight-Line Method: The straight-line method is a method where an equal sum or amount is charged against the cost of the asset throughout the estimated life span of the asset. This means that the sum or amount charged as depreciation in the first year the asset is brought into usage will remain the same all through the remaining years of the asset.

Example: A machine was bought in 2018 for N30,000 and has an expected life of four (4) years and also has an estimated residual value of N2,000

$$\text{Depreciation per year} = \frac{\text{Cost of residual value}}{\text{Estimated residual value}}$$

$$= \frac{\text{N30,000} - \text{N2000}}{4}$$

$$= \frac{\text{N28,000}}{4}$$

$$= \text{N7,000 per annum}$$

N7,000 is charge as depreciation each year.

Reducing (Diminishing) Balance Method: This is a method where depreciation charge in an accounting year is computed based on the book value of the asset at the beginning of the accounting year. In reducing balance method, the applicable percentage rate and the book value of the asset must be given.

The rate of percent to write-off the reduced balance each year is predicated by means of the formula:

$$R = 1 - \sqrt[n]{S/C}$$

Where n = the number of years (life span of asset)
r = depreciation rate acquired
c - cost of the asset
s = the scrap (residual) value of the asset
I = constant

Example: Wome purchased on equipment in 2016 at the cost of N50,000 and the estimated life span of the equipment is five (5) years with N3,000 scrap value. The depreciation charge per year using reducing balance method is calculated thus:

$$r = 1 - \sqrt[5]{\frac{\text{N3000}}{\text{N50,000}}}$$

$$r = 1 - \sqrt[5]{0.06}$$

$$r = 1 - 0.57$$

$$r = 0.43 \text{ or } 43\%$$

The depreciation of each year is therefore

	₦
Cost	50,000
Depreciation year 1 at 43% (50,000)	21,500

Balance at beginning of second year	28,500	
Year 2 at 43% (28,500)		12,255
Balance at beginning of third year		16,245
Year 3 at 43% (16,245)		6,985
Balance at beginning of fourth year	9,260	
Year 4 at 43%	3,982	
Balance at beginning of fifth year		5,278
Year 5 at 43%	2.270	
		3,008

NB: At the end of the 5th year (2020), the value of the equipment reduced to N3008. The difference of 8 kobo is out of approximation.

Sum of the digits method (Rule 78): The sum of the digits method is slightly similar to the reducing balance method in the sense that both of them use established rate as the basis of computing chargeable depreciation cost each year. The uniqueness of the sum of digits method is that the rates applied on an asset changes as asset approaches its terminal life span. Also, the rate established in each year is applied on the cost of the asset directly.

The term "sum of the digits" is derived from the cumulative sum total of the number of years an asset is expected to last. The cumulative sum of the established life span of the asset is prorated to each accounting year and applied on the cost of the asset. If an asset is expected to last for five years and depreciation is charged yearly, it could be said that "rule 15" will apply i.e year 1+2+3+4+5 = 15

Specimen of "Rule 78"

Year (A)	1	2	3	4	5	6	7	8	9	10	11	12
Year Cum (B)	1	3	6	10	15	21	28	36	45	55	66	78
Rate	$^{1}/_{78}$	$^{2}/_{78}$	$^{3}/_{78}$	$^{4}/_{78}$	$^{5}/_{78}$	$^{6}/_{78}$	$^{7}/_{78}$	$^{8}/_{78}$	$^{9}/_{78}$	$^{10}/_{78}$	$^{11}/_{78}$	$^{12}/_{78}$
%	1.28	2.56	3.85	5.13	6.41	7.7	8.97	10.26	11.54	12.82	14.10	15.38

Example: Mazi Inno, a construction mogul at Anambra State, in January 2018 acquired a new road construction equipment called. "TYGERR: at the cost of N96,000.000. the equipment has N2,000.000 residual value with ten (10) years life span. Using the sum of the digits method, calculate the yearly depreciation charge.

Solution

1. Depreciation value of "TYGERR" N96,000,000 – N2,000,000 = N94,000,000

Year	Cumulative	Rate (a/55 X 100)	Cost of Asset ₦	Dep. Rule 78
A	B	C	D	(E) = (C x D)
1	1	1.8	94,000,000	1692000
2	3	3.6	94,000,000	3384000
3	6	5.5	94,000,000	5170000
4	10	7.3	94,000,000	6862000
5	15	9.1	94,000,000	8554000
6	21	10.9	94,000,000	10246000
7	28	12.7	94,000,000	11938000
8	36	14.5	94,000,000	13630000
9	45	16.4	94,000,000	15416000
10	55	18.2	94,000,000	17108000
				94,000,000

Revaluation Method: Some assets like the loose tools e.g the carpenter's hammers, chisels, blades, saws, planes are replaced at regular intervals usually less than a year and on which it would be very difficult to calculate depreciation by the other methods, described above are usually revalued at the end of the accounting period.
When using this method assets are valued at the beginning of the year and at the end of the year they are revalued and any difference is regarded as depreciation. Any new items acquired within the year end and added to the value at the beginning of the year.
Example:- A firm possessed loose tools worth N3,600 on 1st January, 2021. During the year, additional tools were bought at a cost of N750. On 31st December, 2021, the loose tools were valued at N3300.
Depreciation is calculated as follows:

	₦
Loose tools at the beginning (1/1/2021)	3,600
Additions during the year	750
	4,350
Less stock of loose at the year end	3,300
Depreciation	1,050

ACCOUNTING ENTRIES FOR DEPRECIATION
Depreciation charge on the income of a business is not actually a monetary expenditure incurred by the business but an accumulation of reserves kept for the purpose of acquiring another asset when the existing one would have exhausted usefulness.
Business assets are acquired either by immediate payment or by credit transaction or both. On acquisition of non-current asset, the accounting entries are:

Debit the asset account with the cost
Credit cash/bank or the vendor asset.

On the computation of depreciation chargeable for the year:
Debit the provision for depreciation account with the depreciation charged.
Credit the asset account with the depreciation charged.
At the end when income statement is prepared:
Debit the income statement with value of depreciation.
Credit provision for depreciation with the amount charged for the year.

ACCOUNTING OF ADDITIONAL ASSET
New fixed asset (property, plants and equipment – PPE) could be acquired and added to already existing ones which had previously suffered depreciation. Altogether, the assets will be subjected to depreciation at the end of the financial year using the applicable rates, new assets brought into a business will be depreciated proportionally to the number of months the asset was put into effective use during the accounting year. Put differently, newly acquired non-current asset will be subjected to depreciation to reflect the time (month) from which the asset was introduced into the business. For instance, if in an accounting year of twelve (12) months i.e January to December, an asset acquired was put into effective use on the 1st day of April, the depreciation charge for the accounting year will be prorated to nine (9) months (April to December)
Young Shall Grow transport acquired a new bus on 1st April, 2020, at the cost of N4,200.00. It is the policy of the company to depreciate its buses at the rate of 23% per annum. What is the depreciation charge of the bus at year end if the company makes up account on 31st December.
The depreciation charge will be 23% of N4,200,000 x $^{9}/_{12}$ months, i.e 0.23 x N4,200,00 x $^{9}/_{12}$= N724,500.

DISPOSAL OF EXISTING ASSETS
A property, plant or equipment existing in the books of a company which had suffered depreciation for some years but which useful economic value has not exhausted may be disposed (sold) off.

Organizations' disposed of their non- current assets for some reasons dispose of their non-current asset for some reasons some of the reasons enumerated are:

a) To generate such to support the acquisition of a more sophisticated one.
b) The fear that the market value of the asset may fall in the near future
c) The fear and anticipation what the model of the asset will soon phase out and loose its m0arket value.
d) To save cost where there are frequent and high rate of repairs and maintenance costs
e) To settle creditors in the face of liquidation

When an asset is disposed of by a going concern, two things are observed; one is that cash is realized and the other is that the asset is written off the books, it will show zero balance.

The accounting treatments on disposal of asset are:

DR - Cash with amount realized on disposal
CR - Asset account with disposal amount
DR - Provisions for depreciation account with accumulated depreciation suffered by the asset
CR - Asset account with accumulated depreciation value

The difference between the debt and the credit sides of the asset disposal account is either profit or loss on the disposal of the asset which is transferred to income statement.

Example: Engr. Amadi is into haulage business since 2015. At start in January 2015, he acquired one 30 tonnes Tipper and one Mitsubishi at the cost of N7,000,000 and N3,000,000 respectively. On 1st April, 2017, he acquired a self-loader at the cost of N8,000,000. It is the policy of Engr. Amadi to write off the assets in five (5) years leaving 5% balance as their residual value.

Required: calculate the amount chargeable to depreciation in 2015, 2016, 2017, 2018.

Solution:

ENGR AMADI

Assets		Tipper	Mitsubishi	Loads
		₦	₦	₦
Cost		7,000,000	3,000,000	8,000,000
Residual values		350,000	150,000	400,000
Depreciable value		6,650,000	2,850,000	7,600,000
Yearly Depreciation	1	1,330,000	570,000	1,520,000

ENGR AMADI

AMOUNT CHARGEABLE TO DEPRECIATION YEARLY

Year	Asset	Depreciation	Total
	₦	₦	₦
2015	30 tonnes tipper	1330,000	
2015	Mitsubishi	570,000	1900,000
2016	30 tonnes tipper	1330,000	
2016	Mitsubishi	570,000	1,900,000
2017	30 tonnes tipper	1330,000	
2017	Mitsubishi	570,000	
2017	Self Loader	1140000	3,040,000
2018	30 tonnes tipper	1330,000	
2018	Mitsubishi	570,000	
2018	Self loader	1520,000	3,420,000

NB: Self loader in 2017 was N1,140,000. The yearly depreciation charge on the machine was prorated to number of months it was used during the year. The machine was acquired in April and was effectively used for nine (9) months before year end. (1520,000 x 9/12) from April to December is 9 months.

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