


Depreciation

lecture 2



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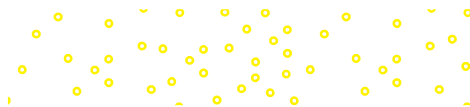
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Depreciation

[\ di-'prē-shē-ā-shun]

An accounting method used to allocate the cost of a tangible or physical asset over its useful life.





Depreciation

Depreciation : is the process of allocating the cost of a plant asset over its useful (service) life in a rational and systematic manner . Cost allocation enables companies to properly match expenses with revenues in accordance with the expense recognition principle.

الاندثار : هو عملية توزيع تكلفة الأصل على مدى عمره الإنتاجي (الخدمي) بطريقة عقلانية ومنتظمة. يمكن تخصيص التكلفة الشركات من مطابقة النفقات مع الإيرادات بشكل صحيح وفقاً لمبدأ التعرف على النفقات.

Measuring Depreciation قياس الاندثار

1- Cost : Earlier , we explained the issues affecting the cost of a depreciable asset. Recall that companies record plant assets at historical cost, in accordance with the measurement principle .

التكلفة: شرحنا سابقاً المشكلات التي تؤثر على تكلفة الأصول القابلة للاندثار . تذكر أن الشركات تسجل الأصول بالتكلفة التاريخية، وفقاً لمبدأ القياس.

2- Useful life : Is an estimate of the expected productive life, also called service life, of the asset for its owner. Useful life may be expressed in terms of time, units of activity (such as machine hours) , or units of output .

العمر الإنتاجي: هو تقدير العمر الإنتاجي المتوقع، ويسمى أيضاً مدة خدمة الأصل لمالكه. يمكن التعبير عن الحياة المفيدة في من حيث الوقت، وحدات النشاط (مثل ساعات الآلة)، أو وحدات انتاج.

3- Salvage value : Is an estimate of the asset's value at the end of its useful life This value may be based on the asset's worth as scrap or on its expected trade-in value .

قيمة الإنقاذ: هي تقدير لقيمة الأصل في نهاية عمره الإنتاجي وقد تعتمد هذه القيمة على قيمة الأصل كخردة أو على قيمة المتاجرة المتوقعة به.



Depreciation Methods:

Depreciation is generally computed using one of the following methods :

- 1- Units-of-production وحدات الإنتاج
- 2- Straight-line القسط الثابت
- 3- Decreasing charge methods : طرق التحميل المتناقص
a) Sum-of-the-years'-digits . مجموع سنوات العمر
b) Declining-balance method . طريقة الرصيد المتناقص

1- Units-of-production

useful life is expressed in terms of the total units of production or use expected from the asset, rather than as a time period . The Units-of-production method is ideally suited to factory machinery .

Under Units-of-production method we use the following formula :

يتم التعبير عن العمر الإنتاجي من حيث إجمالي وحدات الإنتاج أو الاستخدام المتوقعة من الأصل، وليس كفترة زمنية. تعتبر طريقة وحدات الإنتاج مناسبة بشكل مثالي لآلات المصانع .
تحت طريقة وحدات الإنتاج نستخدم الصيغة التالية :

$$\text{Units-of-Production depreciation} = (\text{Cost} - \text{Salvage (Residual) value}) \div \text{Estimated Units of Useful}$$

Example 1 : A company purchased a car at 12,000 ID its salvage value is 2000 ID, the number of kilometers estimated during the useful life is 100,000 km.

Required : Compute depreciation amount .

Solution :

$$\begin{aligned}\text{Units-of-Production depreciation} &= (\text{Cost} - \text{Salvage value}) \div \text{Estimated Units of Useful} \\ &= (12,000 - 2000) \div 100,000 \\ &= 0.10 \text{ Per km.}\end{aligned}$$



Example 2 : Baghdad Company purchased a truck cost 41,000 \$. The company expects the service estimated useful life 5 Years . During that time, Estimated useful life—Units 100,000 mi . The residual or salvage value is 1000 \$. The depreciation for each period varies with the number of units the asset produces, as the table below shows for Baghdad Company .

Years	Number of Units
1	20,000
2	30,000
3	25,000
4	15,000
5	10,000
Total	100,000

Required : calculate annual depreciation for the five – year using units-of-production method .

Solution :

$$\begin{aligned} \text{Units-of-Production depreciation} &= (\text{Cost} - \text{Salvage value}) \div \text{Estimated Units of Useful} \\ &= (41,000 - 1000) \div 100,000 \\ &= 0.40 \$ \text{ Per mile .} \end{aligned}$$

Year	Computation		Depreciation Expense	End of Year	
	Depreciation Per Unit	Number of Units		Accumulated Depreciation	Book Value
1/1/2011					\$41,000
31/12/2011	\$0.40	20,000	\$ 8,000	\$ 8,000	33,000
31/12/2012	0.40	30,000	12,000	20,000	21,000
31/12/2013	0.40	25,000	10,000	30,000	11,000
31/12/2014	0.40	15,000	6,000	36,000	5,000
31/12/2015	0.40	10,000	4,000	40,000	1,000
			\$ 40,000		

The entry to record first year's depreciation is as follows:



Depreciation Expense—truck 8000

Accumulated Depreciation—truck 8000

(To record depreciation for the period)

2- Straight-Line (SL) Method

An equal amount of depreciable cost is allocated to each period, by means of this formula:

$$\text{Straight-line depreciation} = (\text{Cost} - \text{Residual value}) \div \text{Estimated Useful Life}$$

$$\text{Straight- line rate} = (100\% \div \text{useful life})$$

Example 3 : By using above information in example (2) calculate the depreciation by using Straight-Line Method .

Required : Compute depreciation amount for five years .

Solution :

$$\begin{aligned} \text{Straight-line depreciation} &= (\text{Cost} - \text{Residual value}) \div \text{Estimated Useful Life} \\ &= (41,000 - 1000) \div 5 \\ &= 8000 \text{ Per year .} \end{aligned}$$

Depreciation Expense—truck 8,000

Accumulated Depreciation—truck 8,000

(To record depreciation for the period)

$$\begin{aligned} \text{Straight- line rate} &= (100\% \div \text{useful life}) \\ &= (100\% \div 5) \\ &= 20 \% . \end{aligned}$$



The below shows a depreciation calculation for five years :

Straight-Line Depreciation for a Truck

Year	Computation		Annual Depreciation Expense	End of Year	
	Depreciable Cost	Depreciation Rate		Accumulated Depreciation	Book Value
1/1/2011					\$41,000
31/12/2011	\$40,000	20%	\$ 8,000	\$ 8,000	33,000
31/12/2012	40,000	20%	8,000	16,000	25,000
31/12/2013	40,000	20%	8,000	24,000	17,000
31/12/2014	40,000	20%	8,000	32,000	9,000
31/12/2015	40,000	20%	8,000	40,000	1,000
			\$ 40,000		

3- Decreasing charge methods :

a) Sum-of-the-years'-digits :

In this method the annual depreciation compute according to the following formula:

$$\text{Sum of the years digits} = \frac{n(n+1)}{2}$$

Example 3 : By using above information in example (2) calculate the depreciation by using Sum-of-the-years'-digits .

Required : Compute depreciation amount for five years .

Solution :

$$\begin{aligned} \text{Sum of the years} - \text{digits} &= \frac{n(n + 1)}{2} \\ &= \frac{5(5+1)}{2} \\ &= 15 \text{ years} . \end{aligned}$$



Sum-of-the-Years'-Digits Depreciation for a Truck

Year	Computation			Annual Depreciation Expense	End of Year	
	Depreciable Cost	Remaining life in Years	Depreciation Fraction		Accumulated Depreciation	Book Value
1/1/2011						\$41,000
31/12/2011	\$40,000	5	5/15	\$13,333	\$13,333	28,667
31/12/2012	40,000	4	4/15	10,667	24,000	17,000
31/12/2013	40,000	3	3/15	8,000	32,000	9,000
31/12/2014	40,000	2	2/15	5,333	37,333	3,667
31/12/2015	40,000	1	1/15	2,667	40,000	1,000
				\$ 40,000		

b) Double Declining-Balance :

This method multiplies the declining book value by a fixed percentage , Unlike other methods, the declining-balance method does not deduct the salvage value in computing the depreciation base .

$$\text{Double-declining balance depreciation} = (\text{Cost} - \text{Accumulated depreciation}) * 2/\text{life}$$

Example 3 : By using above information in example (2) calculate the depreciation by using Straight-Line Method .

Required : Compute depreciation amount for five years .

يتم احتساب الاندثار للسنة الأولى كما يلي :

$$\begin{aligned} \text{DDB depreciation, year 1} &= (41,000 - 0) * 2/5 \\ &= 41,000 * 0.40 \\ &= 16,400 . \end{aligned}$$

في السنة الثانية ، مقدار الاندثار سينقص لان الموجود سيكون له اندثار متراكم كما يلي :



$$\begin{aligned} \text{DDB depreciation, year 1} &= (41,000 - 16,400) * 2/5 \\ &= 24,600 * 0.40 \\ &= 9,840 . \end{aligned}$$

وتستمر هذه العملية حتى السنة الأخيرة .

Double-Declining-Balance Depreciation for a Truck

Year	Computation		Annual Depreciation Expense	End of Year	
	Depreciable Cost	DDB Rate		Accumulated Depreciation	Book Value
1/1/2011					\$41,000
31/12/2011	\$41,000	40%	\$16,400	\$16,400	24,600
31/12/2012	24,600	40%	9,840	26,240	14,760
31/12/2013	14,760	40%	5,904	32,144	8,856
31/12/2014	8,856	40%	3,542	35,686	5,314
31/12/2015			4,314	40,000	1,000
			\$ 40,000		