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## Influence of EXCEL depreciation models teaching in contemporary corporation assets accounting

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### ABSTRACT

EXCEL is now the most commonly used spreadsheet processing software, and its powerful data processing capabilities have a high value for all industries. Today, colleges and universities also began teaching EXCEL, and more and more people who are familiar with EXCEL operations join companies' accounting system. EXCEL depreciation method plays an important role in enterprise asset accounting, particularly in business fixed assets depreciation. EXCEL depreciation model can promote the efficiency of enterprise accounting, so this paper conducts a brief analysis to the status quo of college accounting EXCEL teaching, and the building and the applications of EXCEL depreciation model and other related issues. By study, this paper finds the EXCEL depreciation model can indeed play an helpful role in corporate assets accounting, but also finds that the depth and breadth of EXCEL teaching is now lacking in the university accounting teaching, and a large number of enterprises in the future market development also requires a fair amount of modernized, high-quality accounting staff in accounting work, and there are many problems that need improvement in teaching.

### KEYWORDS

Depreciation method; EXCEL; Efficient accounting; Corporation accounting.



## INTRODUCTION

Microsoft Excel is a electronic forms processing software that Microsoft made for Windows operating system and the Apple Macintosh operating system. Especially in 1993 Microsoft Office released its 5.0 component that made EXCEL's entire user interface more friendly, more beautiful, the algorithm function more perfect, and can better adapt to all operating system platforms. Later, on the basis of powerful EXCEL functions, Microsoft made a successful marketing, and completely occupied the spreadsheet processing software market.

At present more software vendors are also using the original powerful digital data processing capabilities of EXCEL. The friendly interface of the original EXCEL makes the operation simpler, and directly put EXCEL in conjunction with other platforms to facilitate the management process control ; among which ESSAP (Excel & SQL platform) is a good example, combining EXCEL and MS, SQL database software can directly process the data business management. EXCEL software includes a powerful programming feature, and a powerful function feature. Depreciation accounting of business assets accounting work, especially in fixed assets has begun to use more and more functions of EXCEL. EXCEL depreciation model is only one of a EXCEL function models, but its rational use can bring considerable convenience to the accounting of fixed assets of enterprises.

Today, China's accounting industry has a new provision guideline: that is, a business enterprise must conducted the depreciation of fixed assets, the method should be selected according to the way the expected benefits are produced, and the asset depreciation accounting must be included in the total corporate assets accounting; General there are many accounting methods for the depreciation of assets, such as the double declining balance calculation method and the average method are both commonly used methods in the depreciation of assets, but the depreciation of fixed assets may be affected by various factors, such as the environment and asset management status, management methods; so this brings considerable difficulty for assets depreciation, especially in some larger enterprises which have more assets, the assets depreciation becomes a more complicated work. But EXCEL makes it possible for the complex fixed assets depreciation accounting of enterprises with its own powerful data processing capability and convenience. Use EXCEL to in corporation assets accounting work can significantly reduce the workload of corporation accounting work, and can do more accurate depreciation calculations. And depreciation calculating with EXCEL not just helps the corporation accounting staff to increase work efficiency, but also provides convenience for auditors, as well as the transparency of corporation assets, the reasonable use of corporation assets and resources.

### THE PRESENT SITUATION OF EXCEL ACCOUNTING TEACHING IN COLLEGES AND UNIVERSITIES

Today, EXCEL teaching is added in accounting teaching of colleges and universities in general, but there are still some problems in the process of EXCEL teaching.

#### **The lack of teaching resources**

Now carrying out specialized EXCEL teaching on the basis of the traditional professional courses is not enough in accounting teaching in colleges and universities, the main reason is the lack of teaching resources, which is the lack of professional teaching teams; insufficient number of teachers will lead to more theoretical teaching in EXCEL teaching, but EXCEL teaching requires a lot of practice to guide, so the lack of teachers often causes students do not know enough about EXCEL in classes, and cannot fit themselves into enterprises quickly enough.

#### **Imperfect supporting device and software in practical courses**

EXCEL teaching requires a lot of practice to be skillfully grasped, but professional digital classrooms in colleges and universities are not equipped enough, and cannot meet the need of the daily accounting teaching practice, and there are few practical simulated learning environments for students to exercise their ability of operation in real accounting work environments; this also leads to the low efficiency in EXCEL teaching. But in recent years China has began to promoting ordinary vocational undergraduate education, and carried out practical teaching in the teaching process gradually, as well as practical simulated environment teaching. This helps students to master the daily use of EXCEL, and improves their level of the operational use of EXCEL. But only a pilot test is not enough, we should promote real environmental simulation courses in EXCEL teaching in our colleges and universities to improve students' work ability.

#### **The teaching of EXCEL in accounting teaching courses is immature**

It's been not a long time since China's accounting industry began to popularize the use of EXCEL, and the concept of electronic office has just been accepted by most people gradually; colleges and universities haven't launched specialized EXCEL teaching for long, and EXCEL courses by different university teachers are various, schools do not pay enough attention to or have low requirements for EXCEL teaching; these lead to the lack of proper EXCEL college teaching. Today's EXCEL teaching in colleges and universities needs a unified teaching goal, to improve students' understanding of the application for EXCEL, and more time for self-learning, thus to really improve students' ability to apply EXCEL; after joining into each company's accounting system, students can contribute their strength for the enterprises' accounting work by the knowledge they learned. This also should be the purpose of the accounting EXCEL teaching in colleges and universities.

**DEPRECIATION MODEL OF FIXED ASSETS ESTABLISHED BY EXCEL**

Although the situation now of EXCEL teaching in colleges and universities is not optimistic, using EXCEL in the actual operation of a business still has a good effect in the re-training of finance and accounting graduates.

**Depreciation model of fixed assets using average annual method**

The annual average method in the actual depreciation accounting of enterprises is often called "straight-line method", this is a method that calculates the depreciation expense of fixed assets to the average durable years of assets, although such an approach can not show the accurate depreciation of the assets within a particular period, but can intuitively show the average amount of depreciation in each period. The calculation formula is:

$$\text{Annual depreciation} = \frac{\text{original cost of fixed assets}-\text{expected net salvage value}}{\text{expected service life}}$$

Original cost of fixed assets is the cost of purchasing assets, and expected net salvage value is the residual value before its discard time minusing the expense of liquidating assets, expected service life is the entire process time starting from using the assets to assets liquidation. Expected net salvage value is often expressed in percentage to show the proportion of net salvage value in the total assets. Using EXCEL and using the average method of depreciation calculation formula often involves SLN function models, the model can be directly built with SLN function. The calculation formula is:

=SLN(cost,salvage,life)

In the formula, cost equals to original cost of fixed assets; salvage equals to net salvage value; life equals to expected service life.

Eg. An enterprise has purchased an equipment costing 800,000 yuan, which is expected to be used for five years. By calculating we know the estimated net residual rate is about 5%, the asset depreciation calculation model based on the average method with EXCEL is shown in Figure 1:

	A	B	C	D	E	F
1	Known conditions					
2	original equipment cost(yuan)	800000	estimated net residual rate	5%		
3	depreciation year(year)	5				
4						
5	annual depreciation calculation table (unit: yuan)					
6	year	1	2	3	4	5
7	annual depreciation with straight-line method	152,000.00RMB	152,000.00RMB	152,000.00RMB	152,000.00RMB	152,000.00RMB

**Figure 1 : The depreciation model of fixed assets by straight-line method**

First, set the straight-line method function SLN“=SLN(\$B\$2,\$B\$2\*\$D\$2,\$B\$3)” in B7 cell, then set the value displayed in all formats, and then drag from B7 to F7 to get the annual assets depreciation of the equipment using straight-line method, and to help companies consider the use of equipments.

**Depreciation model of fixed assets using units-of-production method**

Using units-of-production method is because sometimes the usage load of assets in each period is different, that is to say, the equipment may have different workloads in different periods and have different loss value, so we cannot average the depreciation cost of equipments to each using period, and it cannot be calculated with straight-line method; when depreciation expense varies with different equipment load, we should use units-of-production method, so that the depreciation loss of equipments can be accurately calculated based on the unbalanced equipment loads; the method is mainly expecting the total amount of equipments' workload, and then calculating the depreciation cost of equipments per unit of workload, and calculating the real depreciation in per unit of working period based on the actual work. The specific formula is:

$$\text{Depreciation cost per unit of workload} = \frac{\text{Original cost of fixed assets}-\text{expected net salvage value}}{\text{Expected total workload}}$$

The result calculated by the formula actually need to be used in the next calculation, which is, during the service life, depreciation cost in a working period is actually the result that the actual workload within that period multiplied by the depreciation cost per unit of workload. The workload model of fixed assets depreciation cost, uses the same SLN function to calculate, only added the estimated total workload "life" in the parameters, so the value calculated by the function is the depreciation cost per unit of workload.

Eg. Continuing with the previous example, an enterprise purchased an 800,000 yuan equipment, which is expected to be used for five years, the service life is 10,000 hours in total, but with different working hours per year: the first year 3,000 hours, the second year 2,500 hours, the third year 1,800 hours, the fourth year 1,500 hours, and the five years 1,200. Then the depreciation model using units-of-production method is shown as Figure 2:

	A	B	C	D	E	F
1	Known conditions					
2	original equipment cost(yuan)	800000	estimated net residual rate	5%		
3	depreciation year(year)	5	total working hours	10000		
4	year	1	2	3	4	5
5	estimated working hours	3000	2500	1800	1500	1200
6	annual depreciation calculation table (unit: yuan)					
7	year	1	2	3	4	5
8	annual depreciation with units-of-production method	228,000.00RMB	190,000.00RMB	136,000.00RMB	114,000.00RMB	91,000.00RMB

**Figure 2: Depreciation model of fixed assets using units-of-production method**

First, set the units-of-production method function  $SLN^{*} = SLN(\$B\$2, \$B\$2 * \$D\$2, \$D\$3) * B5^{*}$  in B8 cell, then set the value displayed in all formats, and then drag from B8 to F8 to get the annual assets depreciation of the equipment using units-of-production method.

### Depreciation model of fixed assets using double declining balance method

Double declining balance method is essentially a calculation method of depreciation of fixed assets extended from of the straight-line method, which is calculating with double depreciation rate based on the straight-line method, its also a accelerated depreciation method to calculate the net depreciation cost of net book value of fixed assets in the beginning of each period. This paper will further discuss the similarity between it and the total number method. This method is to depreciate more in the initial using period of equipment and depreciate less in the later period, so we can more effectively recover the early loss value of fixed assets, the "wear and tear" of the assets can be compensated, the loss value of equipments can be reduced, and this compensation method can also better reflect the accuracy of accounting work. The calculation formula is: annual depreciation cost = net book value of fixed assets in the beginning of each period \* yearly depreciation rate

$$\text{Yearly depreciation rate} = \frac{2}{\text{Expected service life}}$$

In the formula:

And net book value of fixed assets in the beginning of each period = original cost of fixed assets - accumulated depreciation cost

When using the double declining balance method to build models and calculate the depreciation of fixed assets, it will usually require the use of DDB function because DDB function is to use the double declining balance method or other methods, and to directly do the declining balance calculation on the depreciation cost of fixed assets. The formula is:

$$=DDB(\text{cost}, \text{salvage}, \text{life}, \text{period}, \text{factor})$$

In the formula, cost equals to original cost of fixed assets; salvage equals to net salvage value; life equals to expected service life; period is the time during which the depreciation cost needs to be calculated, and the unit of "period" must be identical to the unit of "life"; factor is the declining balance rate. If factor is omitted, it is assumed as "2"; and it is important that these five parameters should all be positive numbers in double declining balance method.

However, the expected net salvage value will not be deducted from the enterprises' fixed assets at the beginning of each year, so when using the double declining balance method the book depreciated value of equipments and other fixed assets cannot be lower than the expected net salvage value; so the depreciation of fixed assets using the double declining balance method must be two years before the expiration of the depreciation of fixed assets, and should deduct the expected net salvage value of fixed assets in the net value of fixed assets, then average the remaining. It is the reason that we cannot directly use DDB function, but we can create macros to calculate.

In fact, "Macro" is the "automatic" tasks processing function that programmatically combines various orders and commands together, so it can automatically conducted repeated operations of the program through a series of programming instructions, and reduce the use of human resources and improve the efficiency of labor; and such an instruction is flexible and free. In general, there are two ways to use "Macro" in EXCEL, the first is to directly compile macro recording by using the Visual Basic Editor integrated into EXCEL, so that the program can be edited using according to the actual needs in the EXCEL process, but the capacity of Visual Basic Editor in EXCEL is limited; So there is a direct use of Visual Basic macro editing software for editing, and it can play "macro"'s powerful data mining and using function to its full strengths, and better adapt to the diverse needs of EXCEL use, develop the potential of EXCEL; The use of "macro" in the double declining

balance method directly uses the built-in Visual Basic Editor to edit the depreciation function CDDDB macro code, the code is shown as Figure 3:

```
Public function CDDDB(original cost of fixed assets, salvage, service life, period)
    ReDim dt(service life)
    St=0
    For i=1 To service life
        If i<= service life-2 Then
            dt(i)=DDB(original cost of fixed assets, salvage, service life, i)
            St=st+dt(i)
        Else: dt(i)=( original cost of fixed assets-st- salvage)/2
        Endif
    Next i
    CDDDB=dt(period)
End Function
```

**Figure 3 : Macro code of CDDDB function using double declining balance method**

This enables the use of the double declining balance method for the direct calculation of depreciation of fixed assets, and the direct use of CDDDB function.

Eg.A company purchased an equipment of which the original price is 1.2 million yuan, the early expected service life is 5 years, the net salvage value is estimated to be 48,000 yuan, then the depreciation calculation using the double declining balance method with EXCEL is shown as Figure 4:

	A	B	C	D	E	F
1	Equipment information					
2	Original equipment cost(yuan)	1200000				
3	Salvage value (yuan)	48000				
4	Depreciation year(year)	5				
5						
6	Depreciation calculation table using double declining balance method(yearly)					
7	Year	1	2	3	4	5
8	Depreciation value(yuan)	480000	288000	172800	105600	105600
9						

**Figure 4: Depreciation model of fixed assets using double declining balance method**

First, set the function “=CDDDB(\$B\$2,\$B\$3,\$B\$4,B7)” in B8 cell, then set the value displayed in all formats, and then drag from B8 to F8 to get the annual assets depreciation of the equipment using double declining balance method.

**Depreciation model of fixed assets using sum-of-the-years-digits method**

The sum-of-the-years-digits method method is the original value of fixed assets minus the expected net salvage value, and then multiply by an daily amount of depreciation, the annual average depreciation of fixed assets is a yearly diminishing fraction, of which the numerator is the residual life, and the denominator is the sum of the expected residual life figures each year. The formula is:

$$\text{annual depreciation rate} = \frac{\text{the residual life}}{\text{the sum of the expected residual life figures}} * 100\%$$

$$\text{annual depreciation} = (\text{original cost of fixed assets} - \text{expected net salvage value}) * \text{annual depreciation rate}$$

When doing depreciation calculation using the sum-of-the-years-digits method, we can directly use the SYD function.

The formula is:

$$=SYD(\text{cost}, \text{salvage}, \text{life}, \text{per})$$

In the formula, cost equals to original cost of fixed assets; salvage equals to net salvage value; life equals to expected service life; per equals to period, with the same unit as life.

Eg. A company purchased an equipment of which the original price is 1.2 million yuan, the initially expected service life is 5 years, the net salvage value is estimated to be 48,000 yuan, then the depreciation calculation using the sum-of-the-years-digits method with EXCEL is shown as Figure 5:

	A	B	C	D	E	F
1	equipment information					
2	original equipment cost(yuan)	1200000				
3	salvage value (yuan)	48000				
4	depreciation year(year)	5				
5						
6	depreciation calculation table using sum-of-the-years-digits method					
7	year	1	2	3	4	5
8	depreciation value(yuan)	384,000.00RMB	307,200.00RMB	230,400.00RMB	153,600.00RMB	76,800.00RMB

**Figure 5: Depreciation calculation table using sum-of-the-years-digits method**

### APPLICATION OF THE DEPRECIATION MODEL OF FIXED ASSETS

In fact, using EXCEL to calculate the depreciation of fixed asset is using different models for the calculation of various elements, and using different calculation models in different situations and changing the value of critical information can calculate different depreciation we need. Generally, these depreciation calculation models are relatively simple, and have great significance for accounting staff's work efficiency, for they not only improve the accuracy of asset accounting, but also increase the efficiency of accounting workers. This also shows that there should be more contents of business assets accounting depreciation model in the future accounting education of colleges and universities, and the EXCEL teaching should be strengthened to improve the ability of accounting graduates to use EXCEL in work.

### CONCLUSION

This research analyzes and discusses the problems and deficiencies in EXCEL teaching in colleges and universities, and then discusses the building of EXCEL depreciation calculation models, in the hope that it can be helpful for future accounting teaching and the accounting work of corporation assets.

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