

THE APPLICATION OF EXCEL IN THE ANALYSIS OF FINANCIAL STATEMENTS

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ABSTRACT: *The intuitive interface, powerful data processing function and simple operation skills of Excel, it can meet the different requirements of financial staff on the data from each link of financial management, help enterprise financial managers to convert large amounts of data into data that is easy to analyze and evaluate. This paper takes the financial statements of Cha Cha Food CO., Ltd. from 2012 to 2016 as an example to describe the specific application of Excel in the analysis of financial statements.*

KEYWORDS : Excel, Financial Statements, Financial Data Analysis

INTRODUCTION

Excel is a kind of modern handled electronic abacus for financial staffs, it is one of the most used data analysis tools in daily accounting work (Degui Guo, 2012), it is gradually indispensable in the enterprise accounting and financial work with its special tools, functions and so on (Wenjing Xu, 2015), financial staffs need to use excel to analyze financial statements. In addition, the analysis of financial statements is also an important part of the project research reports. The commonly used method of "calculator + manual tabulation" is to make reports with large business volume, complicated calculation and laborious modification with time-consuming (Jun Pu, 2006). Today the financial management of enterprises has been established by the electronic form, using modern software mathematical functions for calculation, not only does the enterprise save the time of financial management decision and high software development cost (Wenying An, 2013), it also simplifies work and increases data accuracy.

How to use excel to complete the analysis of enterprise financial statements? How to reflect the development process and trend of the enterprise? This paper briefly describes the application process of calculation and chart making in the analysis of financial statements by excel, so as to understand the operating conditions of enterprises in different years and predict future development. This article hopes to help accounting practitioners.

Concept and application of Excel

Excel is a kind of data processing software from Microsoft's office, it is as a necessary tool for corporate financial accounting analysis, forecasting, and improvement now (Chunlin Sun, 2011). It involves a lot of knowledge, including powerful table processing functions, graphics processing functions, rich mathematical functions and strong compatibility (Yutong Fan, 2005). Excel is not only a commonly used spreadsheet software, its functions can also be used in the accounting and financial management. Through operation, users can process large

amounts of complex data into data, charts, and models that are easy for managers to use, thus it can simplify individual or organization workload, facilitate reading and analysis, and improve work efficiency. It plays an important role in various data analysis and research.

Excel has very widely application. Xinle Li(2018) has proposed that Excel can be applied to the comprehensive educational administration system of colleges and universities to calculate the credit performance of certain specified courses, Wending Lin (2018) puts forward the specific application of Excel in students' registration and college enrollment. Jinchun Wei(2018) thinks Excel also has huge application foreground in file management; Fuyun Jia(2018) proposes a new non-functional solution, using Excel to make payroll and so on, the specific applications of Excel are endless. In terms of financial management, Excel can be used to perform regression analysis and financial forecast for enterprise financial data(Aijun Zhong & Dan Zhou,2018); it can establish enterprise accounts receivable analysis model(Lihua Wen,2018), provide reference for enterprise financial manager to make decision; Besides, it also uses Excel to manage, analyze and forecast the financial statement data of enterprises. All in all, Excel is widely used and convenient in scientific research and office work.

Specific application of Excel in financial statements

Analysis of financial statements, must be based on financial ratios, evaluation indicators from short-term solvency ratio, long-term solvency ratio, operation ability and profitability ratio calculation, comparison and numerical data changes size to explain the development and the profit and loss of the company, so as to analysis the company's current status and predict the future trend.

In order to better illustrate the application of excel in the analysis of financial statements, and this paper selects the financial statements of Cha Cha Food CO., Ltd. in 2012-2016. Due to limited space, only important data are selected from the balance sheet, income statement and cash flow statement. The excel shown in this article belongs the 2013 version.

Data entry

The original report data is displayed in excel in two ways, one is automatic generation, the other is manual input one by one. In the automatic generation, you can download the file format of the spreadsheet online, directly import the data into the excel page, and then delete the data you don't need; You can also use database. The basic method is to first lower the database files in excel, then input the analysis content, and finally save it (Nannan Sun & Yi Yang,2010).

Table Setting

The settings of the financial ratio analysis table, input the indicators of financial ratio analysis in Excel: Vertically input each analysis element of four ratios of short-term solvency, long-term solvency, operating capacity and profitability, and horizontally input year. It can draw the box line for the financial ratio analysis table and the financial statement of the listed data, and adjust the storage grid format, as adjust column height and column width font and color (As shown in figure 1 and figure 2).

	A	B	C	D	E	F
1	2012~2016 Financial Statement Data					Unit:10K(RMB)
2	Year	2012	2013	2014	2015	2016
3	Item					
3	Monetary capital	160,215	43,299	66,835	35,202	22,999
4	Accounts receivable	8,800	8,840	9,629	12,333	14,996
5	Other receivables	923	670	2,108	4,818	1,336
6	Inventories	52,777	83,296	95,051	118,304	108,585
7	Subtotal of current assets	248,174	247,399	276,551	310,774	263,888
8	Total of assets	329,554	387,142	428,065	458,081	422,014
9	Subtotal of current liability	60,624	111,804	141,324	160,860	114,628
10	Total of liabilities	64,721	117,254	146,103	164,956	118,866
11	Total of owner's equity	264,832	269,888	281,962	293,125	303,148
12						
13	Gross operating income	274,985	298,845	311,323	331,137	351,301
14	Net profit	29,528	25,648	29,226	36,515	35,904
15	Net cash flow from					
16	operating activities	29,671	-134	15,733	26,673	47,235

Figure 1. Financial statement data of cha-cha food co., LTD from 2012 to 2016

	I	J	K	L	M	N
1	Year	2012	2013	2014	2015	2016
2	Item					
2	1.Short-term solvency ratio					
3	Working capital					
4	Current ratio					
5	Quick ratio					
6	Cash ratio					
7	Cash flow ratio					
8	2.Long-term solvency ratio					
9	Asset-liability ratio					
10	Equity ratio					
11	Equity multiplier					
12	Debt-to-long capital ratio					
13	Cash flow to liability ratio					
14	3.Operating capacity ratio					
15	Receivables turnover ratio					
16	Inventory turnover ratio					
17	Current assets turnover					
18	Working capital turnover rate					
19	Non-current assets turnover					
20	Total assets turnover					
21	4.Profitability ratio					
22	Operating net profit margin					
23	Return on Assets					
24	Rate of Return on Common					
25	Stockholders' Equity					

Figure 2. Financial ratio analysis data table

Data Calculation

Table 1 shows the calculation formulas for different indicators. When calculating the financial ratio indicators, according to the position of each element of the formula corresponding to the financial statements, the number of rows and columns of the indicators is input into the cell of the financial ratio analysis table.

Table 1. Financial ratio analysis table

1.Short-term solvency ratio	
Working capital=Subtotal of current assets -Subtotal of current liabilities	Current ratio=Subtotal of current assets/ Subtotal of current liabilities
Quick ratio=Quick assets/Subtotal of current liabilities	Cash ratio=Monetary capital/Subtotal of current liabilities
Cash flow ratio=Net cash flow from operating activities / Subtotal of current liabilities	
2.Long-term solvency ratio	
Asset-liability ratio =(Total of liabilities / Total of assets)*100%	Equity ratio= Total of liabilities /Total of owner's equity
Equity multiplier= Total of assets /Total of owner's equity	Debt-to-long capital ratio=[Non-current liabilities/(Non-current liabilities + Total of owner's equity)]*100%
Cash flow to liability ratio=(Net cash flow from operating activities/ Total of liabilities)* 100%	
3.Operating capacity ratio	
Receivables turnover ratio=365/(Gross operating income/Accounts receivable)	Inventory turnover ratio=365/(Gross operating income/Inventories)
Current assets turnover=365/(Gross operating income/Subtotal of current assets)	Working capital turnover rate=365/(Gross operating income/ Working capital)
Non-current assets turnover=365/(Gross operating income/ Non-current assets)	Total assets turnover=365/(Gross operating income/Total of assets)
4.Profitability ratio	
Operating net profit margin=(Net profit/ Gross operating income)*100%	Return on Assets=(Net profit/Total of assets)*100%
Rate of Return on Common Stockholders' Equity =(Net profit/ Floating equity) *100%	

Take 2012 as an example. Working capital J3= Subtotal of current assets-Subtotal of current liabilities=B7-B9, press the "Enter" key after entering the formula. Excel gets the answer 187550 directly (as shown in Figure 3). Current ratio J4= Subtotal of current assets/Subtotal of current liabilities=B7/B9, the answer is 4.09; Quick ratio=Quick assets/Subtotal of current

liabilities, but Quick assets are different from current assets, it includes Monetary capital, Transactional financial assets and assets such as various receivables that can be quickly realized in a short period of time. Therefore, Quick ratio $J5=(B3+B4+B5)/B9=2.80$. The calculation of the other ratios is based on the above calculation method. After calculating the various indicators in 2012, select the "J3: J25" range, the mouse will be placed in the lower right corner of the range, and the black cross plus sign will appear. Click the black plus sign and drag the mouse to the right at J25. The 2013~2016 data will automatically apply the 2012 formula to complete the data calculation for the entire table (as shown in Figure 4).

2012~2016 Financial Statement Data						Unit:10K(RMB)	Item	Year	2012
Year	2012	2013	2014	2015	2016				
Item									
Monetary capital	160,215	43,299	66,835	95,202	22,999	Working capital		=B7-B9	
Accounts receivable	8,800	8,840	9,629	12,333	14,995	Current ratio			
Other receivables	923	670	2,108	4,818	1,336	Quick ratio			
Inventories	52,777	83,296	95,051	118,304	108,585	Cash ratio			
Subtotal of current assets	248,174	247,399	276,551	310,774	263,888	Cash flow ratio			
Total of assets	329,554	387,142	428,085	458,081	422,014	2.Long-term solvency ratio			
Subtotal of current liabilities	60,624	111,804	141,324	160,860	114,628	Asset-liability ratio			
Total of liabilities	64,721	117,254	146,103	164,956	118,866	Equity ratio			
Total of owner's equity	264,832	269,888	281,962	293,125	303,148	Equity multiplier			
						Debt-to-long capital ratio			

Figure 3. Demonstration of working capital calculation

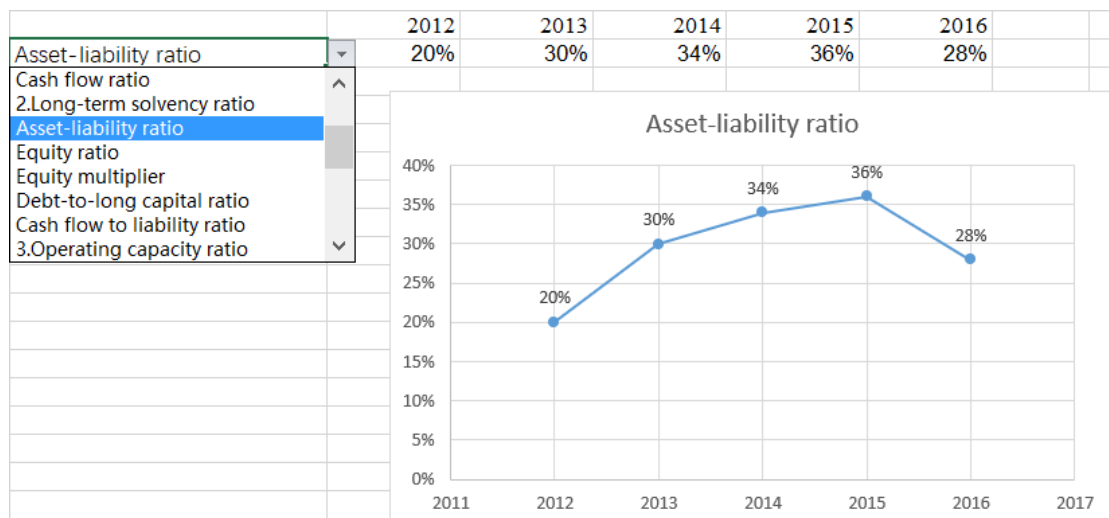
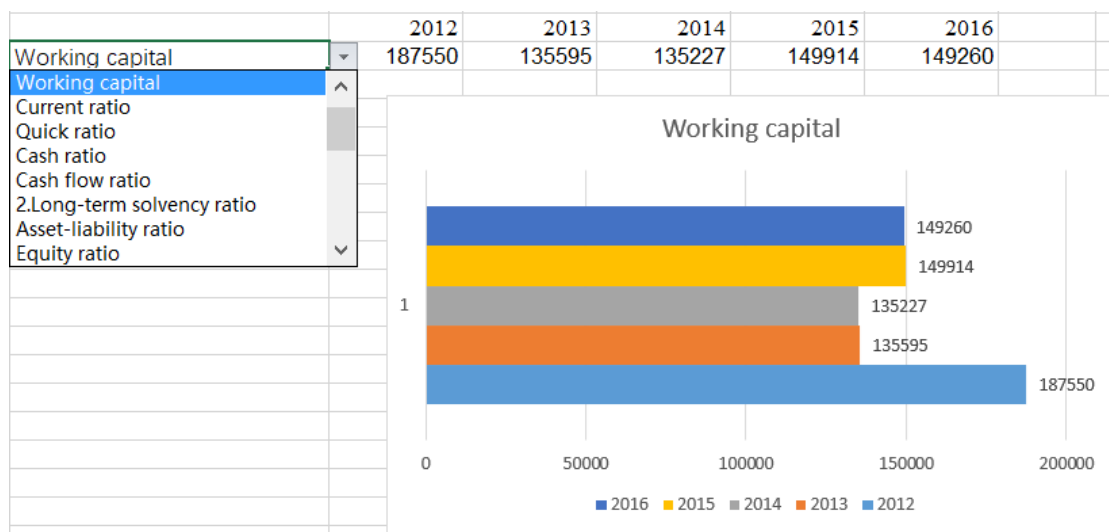
Item	Year	2012	2013	2014	2015	2016
1.Short-term solvency ratio						
Working capital		187550	135595	135227	149914	149260
Current ratio		4.09	2.21	1.96	1.93	2.30
Quick ratio		2.80	0.47	0.56	0.33	0.34
Cash ratio		2.64	0.39	0.47	0.22	0.20
Cash flow ratio		0.49	0.00	0.11	0.17	0.41
2.Long-term solvency ratio						
Asset-liability ratio		20%	30%	34%	36%	28%
Equity ratio		0.24	0.43	0.52	0.56	0.39
Equity multiplier		1.24	1.43	1.52	1.56	1.39
Debt-to-long capital ratio		1.52%	1.98%	1.67%	1.38%	1.38%
Cash flow to liability ratio		45.84%	-0.11%	10.77%	16.17%	39.74%
3.Operating capacity ratio						
Receivables turnover ratio		11.68	10.80	11.29	13.59	15.58
Inventory turnover ratio		70.05	101.74	111.44	130.40	112.82
Current assets turnover		329.41	302.17	324.23	342.55	274.18
Working capital turnover rate		248.94	165.61	158.54	165.24	155.08
Non-current assets turnover		108.02	170.68	177.64	162.37	164.29
Total assets turnover		437.43	472.84	501.87	504.93	438.47
4.Profitability ratio						
Operating net profit margin		10.74%	8.58%	9.39%	11.03%	10.22%
Return on Assets		8.96%	6.62%	6.83%	7.97%	8.51%
Rate of Return on Common Stockholders' Equity		11.15%	9.50%	10.37%	12.46%	11.84%

Figure 4. Financial ratio analysis table

When the data in the "A2: F16" range of the financial statements are changed, the financial ratios will change as well. Through the use of excel for calculation, it simplifies the calculation of each and every step by hand, saves time, reduces the process, and improves the working efficiency of financial staff.

Plotting dynamic statistical charts

After completing the financial ratio analysis table, this paper plot dynamic statistical charts based on the data for analysis. The dynamic nature of the chart is to show the corresponding changes according to the annual data of different indicators. The dynamic charts plotting results are shown in Fig. 5, Fig. 6, and Fig. 7.



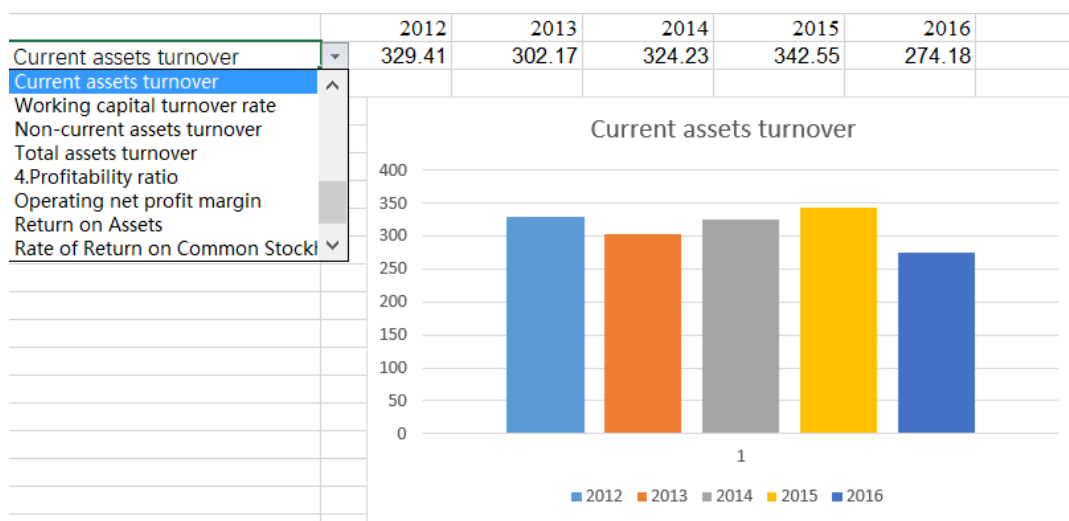


Figure 5, Figure 6 & Figure 7: Dynamic Charts

The process of making dynamic statistical chart is as follows:

First, select the "I2:I25" project scope, click the "Definition Name" of the **【Formula】** tab **【Defined Name】** group, change the name in the pop-up "New Name" dialog box and press "OK" (Figure 8 Shown). Then repeat this method, select the "I1:N1" and "J2:N25" ranges respectively, and enter "Year" and "Data" in the "Name" of **【Definition Name】**.

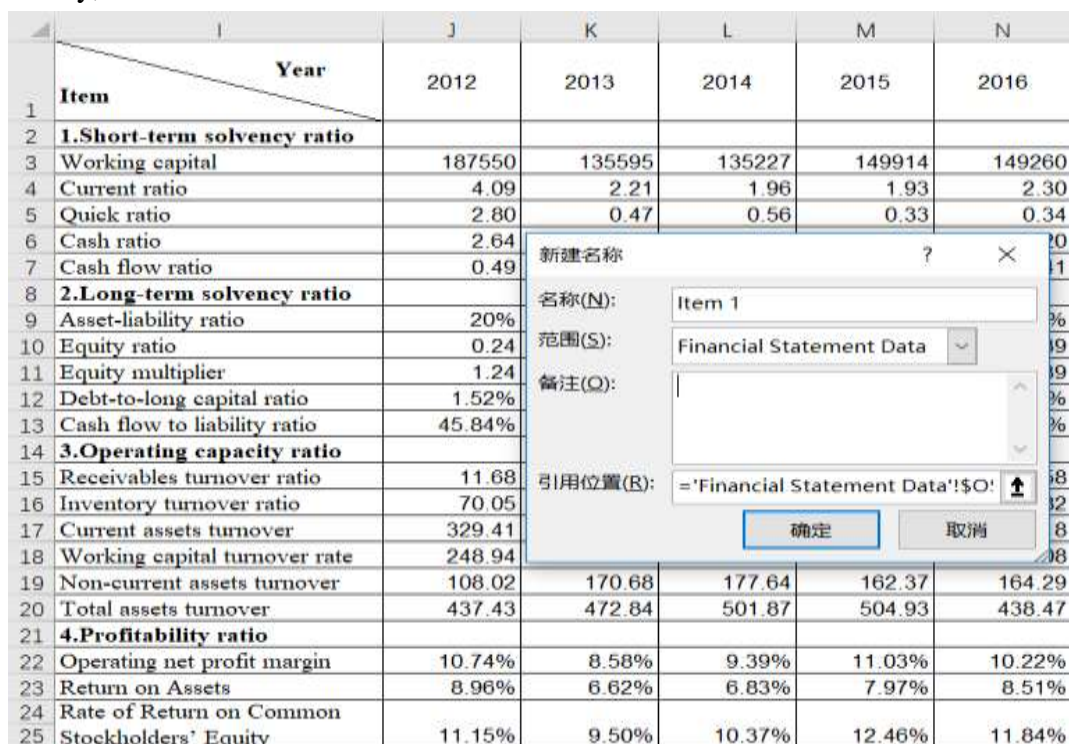


Figure 8. Definition Name

Next, put the year in the blank position of the excel layout and create a new table with the range "I27:N28". Click the I28 cell, click "Data Validation" in the **【Data】** tab **【Data Tools】**

group, select the "List" command in "Allow in the cell", and enter "= Item 1" in "Source" . Click "OK" to complete, the result is shown in Figure 9.

	2012	2013	2014	2015	2016
1.Short-term solvency ratio					
1.Short-term solvency ratio					
Working capital					
Current ratio					
Quick ratio					
Cash ratio					
Cash flow ratio					
2.Long-term solvency ratio					
Asset-liability ratio					

Figure 9. Data Validation table 1

Then, in J28 enter the formula “=INDEX (Data, MATCH (\$I28, Item 1,0), MATCH (J\$27, Year,0))”, the cell will automatically get the corresponding data. Copy this formula to "K28:N28" to complete the data fill.

	L	M	N	O	P	Q
27		2012	2013	2014	2015	2016
28	Working capital	187550	135595	135227	149914	149260

Figure 10. Annual validity data

Finally select the "I27:N28" range, click the drop-down arrow in the **【Insert】** tab **【Chart】** group, and select the appropriate chart. This form can be automatically converted based on the selected indicator data. The results are shown in Figures 5, 6, and 7 above.

Data Analysis

From the comprehensive analysis of various indicators, Chacha Food Co., Ltd. has fluctuated during the period from 2012 to 2016. It is not a continuous development and has the characteristics of volatility.

From the short-term solvency analysis of individual indicators, the quick ratio and cash ratio in 2012 are significantly different from those in the other four years. The important factor affecting the credibility of the quick ratio is the liquidity of receivables. In terms of long-term solvency, the most prominent data is the negative value of the cash flow and debt ratio in 2013. Since the debt cannot be negative under normal circumstances, the net cash flow of the company at that time was negative, indicating that the company has been unable to generate cash flow through its operating activities and needs to turn over its own funds. From the perspective of the accountability turnover rate of the operating capacity, it has increased in the past two years. Accounts receivable is an important current asset of an enterprise. The higher the turnover rate, the faster the company can recover accounts receivable, which can reduce bad debt losses and improve asset liquidity. The operating profit margin of the profitability

ratio and the net profit margin of the total assets are rising developments. The higher the profitability indicator, the stronger the company's ability to obtain profits.

CONCLUSION

Enterprise financial management plays an important role in enterprise development. In the analysis of enterprise financial statements, the enterprise data can be sorted out and calculated with the help of excel, and the complex data can be processed into intuitive and clear data in a short time, it is convenient to manage and analyze the financial data of the enterprise, and the making of dynamic chart is convenient for the enterprise to quickly browse the business situation for many years and predict the business situation of the enterprise in a certain period in the future, in order to make corresponding management decisions in advance; When the established cell data needs to be changed, other tables associated with it will also be modified, it greatly improves the efficiency and quality of work. The application of Excel in financial management helps managers to analyze, evaluate and forecast the current development status and trend of enterprises. Enterprises should train employees to flexibly use the working knowledge and skills of excel software, improve the work effect.

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