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Study on the Influencing Factors of the Profitability of A-share Listed Catering Companies Based on DuPont Analysis

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Abstract: This study aims to determine the financial indicators that affect the profitability of Chinese A-share listed catering companies. The literature shows that more profitable companies are often more competitive and can also bring greater returns to investors. Therefore, it seems very necessary to identify the factors that affect the profitability of A-share listed catering companies. This study was based on the samples of the four catering companies, Tongqinglou, Guangzhou Restaurant, Quanjude Group, Xi'an Catering, listed on China A-shares from 2018 to 2022. In order to determine the indicators affecting the profitability of the listed catering companies, based on DuPont analysis and massive reading of the literature, I conducted a large number of data analysis on the financial statements of these four companies and preliminarily determined 12 indicators. These indicators are from the aspects of solvency, operating ability, profitability and development ability, from a financial point of view, which seems more reasonable. In order to determine the significance of the impact of each indicator on profitability, I used correlation analysis for screening. And finally, seven influencing factors of the profitability of A-share listed catering companies were determined, namely: Return on Equity(Y1), Return on Asset(Y2), Sales Profit Margin(Y3), Cost Profit Margin(Y4), Earnings Per Share(Y5), Assets Turnover(Y8), and Profit Rate on Fixed Assets(Y12). On the contrast, the Operating Net Interest Ratio(Y7) is inversely related to Return on Equity, Equity Multiplier(Y9) ,Inventory Turnover(Y10),Accounting Receivable Turnover(Y11) and Debt to Asset Ratio(Y6) could not significantly reflect the profitability of listed catering companies.
Keywords: Catering company, ROE, DuPont analysis, influencing factors, correlation analysis

I. Introduction

Profitability refers to the ability of an enterprise to obtain profits, also known as the capital or capital appreciation ability, which usually is shown in the amount of enterprise income and its level in a certain period of time. Through the analysis of the profitability, we can find out the problems in the operation and management link. Many scholars choose the DuPont analysis method, the most commonly used financial ratio analysis method to analyze the profitability of enterprises, and put forward specific suggestions for a certain company based on the analysis results. For example, analysisthe performances of food beverage and tobacco businesses return[1]. Financial ratio analysis is a good tool to analyze the profitability of enterprises, while financial ratio analysis has a strong interdisciplinary characteristics, for example, for demand-side flexibility[2], for Hydrogen production from landfill biogas[3]. Therefore, we can assume that we can also successfully use this analysis in the catering industry, in order to find out and determine the indicators that affect the profitability of catering companies, so as to improve the profitability of catering enterprises.

In 2021, China's national catering revenue totaled 46895 billion yuan, up 18.6%; the catering revenue of units above designated size was 10434 billion yuan, up 23.5% year on year. At the same time, the catering industry continues to play a key role in stabilizing jobs and promoting employment. The total number of employees rose 12.4% year on year, rose about 6% from the same period last year, the data showed.[4]

Although the DuPont analysis method, as an index analysis method, its application in financial analysis is very common. However, DuPont analysis performed in the catering industry seems rarely. Warylak M chose the polish catering enterprises as the research object, using the method of DuPont, analyzed their profitability and solvency, and put forward the suggestion of improving the surveyed enterprise financial situation. That the company can adopt the following measures: issuing new shares, transferring part of the operating profits to equity capital, improving the financial output by deducing the cost, and attracting new consumers to increase equity by introducing preferential[5]. Qiu Rui analyzed the financial indicators of Haidilao from the recent three years and found that its cost control, diversified investment and asset utilization efficiency, compared with its competitors, need to be improved[6]. However, there is still a gap on the study of both the analysis of the profitability of all A-share listed catering companies and the determination of the financial indicators affecting the profitability of China's A-share listed catering companies.

II. literature review

2. 1Empirical review

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The DuPont analysis, also known as the strategic profit model, is a common way to break down Return on Equity (ROE) into two important components as we can see from the following equation[7]:

ROE = (Return on Asset)*(Equity Multiplier)

Another point of view from Amanda Maharani Subiakto, ROE is affected by three components: operating efficiency(measured by Net Profit Margin), asset utilization (measured by Assets Turnover), and financial leverage (measured by Equity Multiplier).

In fact, both of the two opinions are based on the balance sheet and income statement to analysis the Return on Equity (ROE). If we continue to break it down, it seems that we can find more indicators that affect ROE, such as the following equation:

Return on Equity(ROE)= Return on Asset(ROA)* (Equity Multiplier)

= Net Profit Margin*Assets Turnover*Equity Multiplier

=(Net profit/Sales) * (Sales/Average Total Assets) * (Total Assets/Total Stockholders' Equity)

From the above formula, we can clearly see that if the sales rises, then Return on Asset will also rise. From this point of view, it is very important to improve the sales ability of the enterprise. If the net profit of the enterprise rises, then Return on Asset will also rise, so the cost control of the enterprise becomes more important. Based on this, I chose Return on Equity(ROE), Return on Asset(ROA), Sales Profit Margin, Cost Profit Margin, Operating Net Interest Ratio, Equity Multiplier these 6 indicators as the first step.

The traditional DuPont analysis method has certain index limitations, so in the process of research, many scholars have adopted the improved DuPont analysis method, so as to identify more data affecting the corporate profit indicators. Through data collation and simple calculation, the original data of 20 financial indicators of new energy vehicle companies are obtained from the aspects of solvency, operating ability, profitability and development ability[8] .Study on the influencing factors of the profitability of listed companies from the four aspects of capital profitability, asset profitability, commodity profitability and market value of listed companies. Research found that the Return on capital, Return on Assets, Sales Profit Margin, Cost margin and Earnings Per Share and Return on Equity, namely, Return on Assets, Sales Profit Margin, Cost Profit Margin, Earnings Per Share can promote the improvement of the profitability of listed companies [9]. Another study on the impact of financial ratios on Earnings Per Share demonstrated a statistically significant relationship between ROE, financial leverage and Earnings Per Share by applying a regression model[10]. In another study, profitability was divided into asset turnover and margins to see if some forecasting gained . The results confirm that this can reflect the future profitability of the company. The author believes that an important aspect affecting catering enterprises is the asset turnover rate of enterprises[11]. In fact, it is more vivid in terms of the dining turnover rate, which refers to how often the table runs during business hours. But it is difficult for us to obtain the data of the enterprise table turnover rate, so the index reflecting the asset turnover rate is particularly important to explain and improve the profitability of enterprises. To some extent, the Debt to Asset Ratio reflects the solvency of the enterprise. The greater the Debt to Asset Ratio seems to mean that the greater the debt repayment pressure. At first glance, the debt has a negative impact on the profitability, because the interest rate will increase costs and reduce profits. But in reality, if the return on investment is higher than the debt interest rate, then the debt has a positive impact on profitability. So the Debt to Asset Ratio is also an important indicator.

Therefore, on this basis, Debt to Asset Ratio, Earnings Per Share, Assets Turnover, Inventory Turnover, Accounts Receivable Turnover, and Profit Rate on Fixed Assets are added as additional indicators to affect the profitability of enterprises.

2. 2Theoretical Review

Factor analysis method is an important method to conduct financial analysis. Factor analysis method decomposes the whole into several local analysis methods, including the factor decomposition method of financial ratio and the difference factor decomposition method. The ratio factor decomposition method refers to the method of dividing a financial ratio into several influencing factors. For example, the return on assets can be decomposed into the product of two ratios of Return on Asset and the income multiplier. Financial ratio is a unique concept of financial statement analysis, and financial ratio decomposition is a unique method of financial statement analysis.

The factors may be defined by an inductive application or through deduction from a formal theory. They can be used to describe actual data regularities or to estimate universal patterns from a sample[12] . Exploratory factor analysis is a complex and multivariate statistical technique commonly employed in information system, social science, education and psychology[13].

III. Research methodology

3. 1 research sample

Up to May 2023, there are 4 catering companies listed on the main board, namely Tongqinglou (stock code: 605108), Guangzhou Restaurant (stock code: 603043), Quanjude Group (stock code: 002186), and Xi'an Catering (stock code: 000721). The first letter would be used to representative of the company's full name in the following tables.For example,the capital letter T stands for Tongqinglou.The capital letter G stands for Guangzhou Restaurant.The capital letter Q stands for Quanjude Group.And the capital letter X stands for Xi'an Catering.

In this paper, the financial data of these four financial reports from 2018 to 2022 are selected as a sample to study their profitability. In order to determine the significance of the influence of each index on profitability, correlation analysis was used to screening.

The strength of profitability is usually advanced in the three aspects of capital utilization ability, asset utilization ability and operation ability. In the analysis of the balance sheet and income statement data of the four listed companies, the author found that the Return on Equity, Return on Asset, Assets Turnover and Profit Rate on Fixed Assets were significantly higher than that of Quanjude Group and Xi'an Catering. In terms of operation capacity, the Sales Profit Margin, Cost Profit Margin, Inventory Turnover, Accounts Receivable Turnover and Operating Net Interest Ratio are positively correlated with their profitability. According to DuPont's analysis, whether the Debt to Asset Ratio and the Equity Multiplier has a great influence on profitability, still needs to be further analyzed. When reviewing the recent reactions of the four companies in the stock market, based on the shareholders' concern on profitability, the author thinks about maybe the Earnings Per Share can be included in the analysis of the factors influencing profitability. Accordingly, the specific variables are shown in Table 1.

3. 2 Hypotheses and variables

variables	ratio	descriptions	encode
Return on Equity	Earnings After Taxes/Stockholders' Equity*100%	Amount of return earned as a percentage of shareholders' equity	Y1
Return on Asset	Earnings After Taxes/Total Assets *100%	The level of profit earned by the company from the use of all its assets	Y2
Sales Profit Margin	Total profit /inome *100%	the level of profite from sales, the profit earned per yuan of sales revenue	Y3
Cost Profit Margin	Total profit/cost*100%	The higher the variableis, the smaller the cost the enterprise has to pay for profits, the better the cost control is, and the stronger the profitability is	Y4
Earnings Per Share	Earnings After Tax/Outstanding Shares	The ratio reflects after-tax profits generated per share. The higher the ratio, the more profit is made	Y5
Debt to Asset Ratio	Total Debt/Total Asset *100%	Reflects the ability of enterprises to use financial leverage	Y6
Operating Net Interest Ratio	net profit/income*100%	Reflect the ability of business income to create net profit	Y7
Assets Turnover	Total Revenue or Sales/Total Assets*100%	It reflects the turnover speed of all assets from input to output, and reflects the management quality and utilization efficiency of all assets	Y8
Equity Multiplier	Total Assets/Total Stockholders' Equity	reflects the size of an enterprise's financial leverage. The larger the Equity Multiplier, the smaller the proportion of capital invested by shareholders in assets, and the larger the financial leverage	Y9
Inventory Turnover	Cost of Goods Sold or Cost of Sales/Inventories*100%	reflect the turnover speed of inventory, that is, whether the liquidity of inventory and the amount of inventory funds are reasonable	Y10
Accounts Receivable Turnover	Total Revenue or Sales/Accounts Receivable*100%	a measure of enterprise Accounts Receivable Turnover speed and management efficiency index	Y11
Profit Rate on Fixed Assets	total profit/assets*100%	reflect the utilization effect of fixed assets of enterprises comprehensively	Y12

Table 1: Profitability indicators of A-share listed catering companies

Based on the data analysis, this paper proposes four hypotheses:

Hypothesis 1: Whether the improvement of Return on Equity(Y1), Return on Asset(Y2), Profit Rate on Fixed Assets(Y12) and Operating Net Interest Ratio(Y7), which are supposed to directly reflect profitability and to drive the improvement of profitability.

Hypothesis 2: Whether the improvement of the Assets Turnover(Y8), Sales Profit Margin(Y3), Cost Profit Margin(Y4), Inventory Turnover(Y10) and Accounts Receivable Turnover(Y11), which are supposed to reflect the operating capacity and to drive the improvement of profitability.

Hypothesis 3: Whether the improvement of Equity Multiplier(Y9) and Debt to Asset Ratio(Y6) decomposed according to DuPont's analysis will lead to the improvement of profitability.

Hypothesis 4: Whether the increase in Earnings Per Share(Y5) that shareholders focus on will drive the improvement in profitability.

Name	Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12
T	2018	0. 2542	0. 1766	0. 1793	0. 2176	1. 3354	0. 3052	0. 1345	1. 4424	1. 4393	11. 1421	340. 5359	0. 8421
T	2019	0. 2005	0. 1485	0. 1811	0. 2155	1. 3173	0. 2591	0. 1351	1. 1872	1. 3498	8. 4535	353. 8425	0. 8378
T	2020	0. 0971	0. 0822	0. 1914	0. 2308	0. 9256	0. 1532	0. 1428	0. 7238	1. 1810	10. 3315	234. 4154	0. 6222
T	2021	0. 0733	0. 0508	0. 1202	0. 1336	0. 5541	0. 3075	0. 0896	0. 6322	1. 4448	12. 6431	219. 9770	0. 3756
T	2022	0. 0471	0. 0323	0. 0738	0. 0781	0. 3600	0. 3155	0. 0560	0. 5821	1. 4610	13. 7282	83. 2837	0. 1612
G	2018	0. 1922	0. 1532	0. 1831	0. 2218	0. 9489	0. 2031	0. 1511	1. 0967	1. 2549	7. 8152	37. 5567	1. 2289
G	2019	0. 1734	0. 1308	0. 1542	0. 1816	0. 9491	0. 2457	0. 1266	1. 1146	1. 3257	7. 1996	32. 3831	0. 7531

G	2020	0. 1814	0. 1210	0. 1721	0. 2068	1. 1491	0. 3332	0. 1412	0. 9713	1. 4996	8. 9573	25. 8771	0. 6336
G	2021	0. 1770	0. 1170	0. 1755	0. 2102	0. 9987	0. 3391	0. 1452	0. 8977	1. 5131	9. 2586	28. 8515	0. 5879
G	2022	0. 1508	0. 0911	0. 1566	0. 1818	0. 9375	0. 3958	0. 1296	0. 7704	1. 6552	8. 5480	29. 1686	0. 4068
Q	2018	0. 0513	0. 0406	0. 0676	0. 0706	0. 2661	0. 2077	0. 0462	0. 8691	1. 2621	10. 1515	26. 3085	0. 1827
Q	2019	0. 0250	0. 0196	0. 0449	0. 0455	0. 1273	0. 2119	0. 0251	0. 7795	1. 2688	7. 7381	16. 7472	0. 1190
Q	2020	-0. 2243	-0. 1631	-0. 3624	-0. 2573	-0. 9217	0. 2727	-0. 3630	0. 4187	1. 3749	11. 8180	6. 1658	-0. 5589
Q	2021	-0. 1620	-0. 0965	-0. 1897	-0. 1531	-0. 5556	0. 4045	-0. 1808	0. 5385	1. 6792	16. 1297	7. 0294	-0. 3955
Q	2022	-0. 3862	-0. 1962	-0. 4161	-0. 2863	-0. 9585	0. 4919	-0. 4113	0. 4378	1. 9680	11. 7972	5. 0984	-0. 7038
X	2018	0. 0124	0. 0065	0. 0340	0. 0329	0. 0167	0. 4735	0. 0168	0. 4223	1. 8994	11. 1316	19. 3112	0. 0513
X	2019	-0. 0773	-0. 0435	-0. 0954	-0. 0872	-0. 0961	0. 4378	-0. 0959	0. 4211	1. 7788	10. 4908	21. 8350	-0. 1487
X	2020	0. 0122	0. 00612	0. 0213	0. 0168	0. 0154	0. 4989	0. 0187	0. 3482	1. 9958	9. 2743	18. 5527	0. 0279
X	2021	-0. 3704	-0. 1100	-0. 3272	-0. 2428	-0. 3436	0. 7031	-0. 3302	0. 3689	3. 3685	12. 8512	15. 2199	-0. 3988
X	2022	-0. 4083	-0. 1376	-0. 4564	-0. 3096	-0. 3860	0. 6629	-0. 4570	0. 3060	2. 9667	10. 8283	9. 3350	-0. 4081

Table 2: Original data of profitability indicators of A-share listed catering companies

The purpose of the article is to obtain indicators affecting the profitability of listed catering companies. Therefore, the indicators we hypothesized need to be obtained after further correlation analysis. Before the correlation analysis, we need to calculate the value of the index first. In Table 2 below, Y1-Y12 respectively represent 12 different indicators. T, G, Q, X are the abbreviations of the names of the four A-share listed catering companies.

variables	observed value	average	standard deviation	minimum value	max value	variance
Return on Equity	20	0. 001	0. 20711	-0. 41	0. 25	0. 043
Return on Asset	20	0. 0215	0. 11264	-0. 2	0. 18	0. 013
Sales Profit Margin	20	-0. 0046	0. 22201	-0. 46	0. 19	0. 049
Cost Profit Margin	20	0. 0354	0. 19064	-0. 31	0. 23	0. 036
Earnings Per Share	20	0. 332	0. 72716	-0. 96	1. 34	0. 529
Debt to Asset Ratio	20	0. 3611	0. 14879	0. 15	0. 7	0. 022
Operating Net Interest Ratio	20	-0. 024	0. 20739	-0. 46	0. 15	0. 043
Assets Turnover	20	0. 7164	0. 32456	0. 31	1. 44	0. 105
Equity Multiplier	20	1. 6843	0. 56524	1. 18	3. 37	0. 319
Inventory Turnover	20	10. 5144	2. 2463	7. 2	16. 13	5. 046
Accounts Receivable Turnover	20	76. 5747	112. 76029	5. 1	353. 84	12714. 883
Profit Rate on Fixed Assets	20	0. 2108	0. 53455	-0. 7	1. 23	0. 286

Table 3: Descriptive statistical results

3. 3 Data analysis and empirical results

As shown in Table 3, Sales Profit Margin, Sales Profit Margin, Sales Profit Margin and Earnings Per Share of the four listed catering companies during 2018-2022 are 2.15%, -0.46%, 3.54% and 0.332 yuan respectively. The average Sales Profit Margin is less than 0, while the average Return on Equity is only 0. 1%. This shows that the overall profitability of A-share listed catering companies in the past five years is relatively poor. The minimum values of Return on Equity, net interest rate on total assets, profit margin on sales, profit margin on cost and Earnings Per Share of listed companies are respectively -41%, -118%, -46%, -31% and -0.96 yuan, and the maximum values are 25%, 18%, 158%, 19%, 23% and 1.34 yuan. It can be seen that although there are only 4 listed catering companies, their respective performance still exists a relatively large gap. The most significant indicators are the Accounts Receivable Turnover and Inventory Turnover. The longest receivable turnover period of all the four catering companies is just 1.03 days, while the shortest receivable turnover period of all the four catering companies is 71.57 days. The fastest Inventory Turnover was 22.62 days and the slowest was 50.69 days. Bad performance of the Inventory Turnover, for the catering industry, means revenue capacity is not strong. Generally speaking, catering companies with stronger profitability have more bargaining power and longer account period from its suppliers in the market. While the bad Accounts Receivable Turnover would absolutely bring out the worrying profitability of catering companies.

		Return on Equity	Return on Asset	Sales Profit Margin	Cost Profit Margin	Earnings Per Share	Debt to Asset Ratio	Operating Net Interest Ratio	Assets Turnover	Equity Multiplier	Inventory Turnover	Accounts Receivable Turnover	Profit Rate on Fixed Assets
		Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12
Return on Equity	Pearson correlation	1	. 963**	. 977**	. 975**	. 907**	-. 712**	. 975**	. 798**	-. 737**	-. 525*	. 479*	. 913**
	Sig.		0	0	0	0	0	0	0	0	0. 017	0. 033	0
Return on Asset	Pearson correlation	. 963**	1	. 957**	. 974**	. 974**	-. 609**	. 949**	. 847**	-. 582**	-. 570**	. 527*	. 972**
	Sig.	0		0	0	0	0. 004	0	0	0. 007	0. 009	0. 017	0
Sales Profit Margin	Pearson correlation	. 977**	. 957**	1	. 989**	. 906**	-. 679**	. 999**	. 726**	-. 684**	-. 500*	. 467*	. 903**
	Sig.	0	0		0	0	0. 001	0	0	0. 001	0. 025	0. 038	0
Cost Profit Margin	Pearson correlation	. 975**	. 974**	. 989**	1	. 945**	-. 685**	. 983**	. 778**	-. 675**	-. 533*	. 509*	. 941**
	Sig.	0	0	0		0	0. 001	0	0	0. 001	0. 016	0. 022	0
Earnings Per Share	Pearson correlation	. 907**	. 974**	. 906**	. 945**	1	-. 532*	. 892**	. 836**	-. 490*	-. 555*	. 589**	. 952**
	Sig.	0	0	0	0		0. 016	0	0	0. 028	0. 011	0. 006	0
Debt to Asset Ratio	Pearson correlation	-. 712**	-. 609**	-. 679**	-. 685**	-. 532*	1	-. 671**	-. 648**	. 952**	0. 366	-0. 38	-. 631**
	Sig.	0	0. 004	0. 001	0. 001	0. 016		0. 001	0. 002	0	0. 113	0. 098	0. 003
Operating Net Interest Ratio	Pearson correlation	. 975**	. 949**	. 999**	. 983**	. 892**	-. 671**	1	. 709**	-. 684**	-. 493*	0. 439	. 891**
	Sig.	0	0	0	0	0	0. 001		0	0. 001	0. 027	0. 053	0
Assets Turnover	Pearson correlation	. 798**	. 847**	. 726**	. 778**	. 836**	-. 648**	. 709**	1	-. 594**	-. 494*	. 574**	. 852**
	Sig.	0	0	0	0	0	0. 002	0		0. 006	0. 027	0. 008	0
Equity Multiplier	Pearson correlation	-. 737**	-. 582**	-. 684**	-. 675**	-. 490*	. 952**	-. 684**	-. 594**	1	0. 316	-0. 329	-. 574**
	Sig.	0	0. 007	0. 001	0. 001	0. 028	0	0. 001	0. 006		0. 174	0. 157	0. 008
Inventory Turnover	Pearson correlation	-. 525*	-. 570**	-. 500*	-. 533*	-. 555*	0. 366	-. 493*	-. 494*	0. 316	1	-0. 029	-. 598**
	Sig.	0. 017	0. 009	0. 025	0. 016	0. 011	0. 113	0. 027	0. 027	0. 174		0. 903	0. 005
Accounts Receivable Turnover	Pearson correlation	. 479*	. 527*	. 467*	. 509*	. 589**	-0. 38	0. 439	. 574**	-0. 329	-0. 029	1	. 527*
	Sig. （双尾）	0. 033	0. 017	0. 038	0. 022	0. 006	0. 098	0. 053	0. 008	0. 157	0. 903		0. 017
Profit Rate on Fixed Assets	Pearson correlation	. 913**	. 972**	. 903**	. 941**	. 952**	-. 631**	. 891**	. 852**	-. 574**	-. 598**	. 527*	1
	Sig.	0	0	0	0	0	0. 003	0	0	0. 008	0. 005	0. 017	

** At the 0. 01 level (two-tailed), the correlation was significant.

* At the 0. 05 level (two-tailed), the correlation was significant.

Table 4: correlation analysis results of A-share listed catering companies

In order to further determine the correlation between the 12 indicators in Table 1 and the profitability of catering enterprises, the author uses spss26.0 to conduct correlation analysis on each financial indicator and screen out the indicators with high correlation. The analysis results are as Table 4.

According to Table 4, after correlation analysis of 12 indicators including Return on Equity(Y1), Return on Asset(Y2), Sales Profit Margin(Y3), Cost Profit Margin(Y4), Earnings Per Share(Y5), Debt to Asset Ratio(Y6), Operating Net Interest Ratio(Y7), Assets Turnover(Y8), Equity Multiplier(Y9), Inventory Turnover(Y10), Accounts Receivable Turnover(Y11),Profit Rate on Fixed Assets(Y12).To avoid confusion, let's use a simplified form for the following description.In short,Y6, Y7, Y9, Y10 and Y11 are excluded. Therefore, seven indexes of solvency are retained in the end: Return on Equity(Y1), Return on Asset(Y2), Sales Profit Margin(Y3), Cost Profit Margin(Y4), Earnings Per Share(Y5), Assets Turnover(Y8), and Profit Rate on Fixed Assets(Y12). Through the screening of indicators, the profitability index system of A-share listed catering companies after screening is arranged as Table5.

Name	Year	Y1	Y2	Y3	Y4	Y5	Y8	Y12
T	2018	0. 2542	0. 1766	0. 1794	0. 2176	1. 3354	1. 4424	0. 8421
T	2019	0. 2005	0. 1485	0. 1811	0. 2155	1. 3173	1. 1872	0. 8378
T	2020	0. 0972	0. 0822	0. 1914	0. 2308	0. 9255	0. 7238	0. 6222
T	2021	0. 0733	0. 0508	0. 1202	0. 1336	0. 5541	0. 6321	0. 3756
T	2022	0. 0471	0. 0322	0. 0738	0. 0781	0. 3560	0. 5821	0. 1612
G	2018	0. 1922	0. 1532	0. 1831	0. 2218	0. 9489	1. 0967	1. 2289
G	2019	0. 1734	0. 1308	0. 1542	0. 1816	0. 9491	1. 1146	0. 7531
G	2020	0. 1814	0. 1210	0. 1721	0. 2068	1. 1491	0. 9713	0. 6336
G	2021	0. 1770	0. 1170	0. 1755	0. 2101	0. 9987	0. 8977	0. 5879
G	2022	0. 1508	0. 0911	0. 1566	0. 1818	0. 9375	0. 7703	0. 4068
Q	2018	0. 0513	0. 0406	0. 0676	0. 0706	0. 2661	0. 8691	0. 1827
Q	2019	0. 0249	0. 0196	0. 0449	0. 0455	0. 1273	0. 7795	0. 1190
Q	2020	-0. 2243	-0. 1631	-0. 3624	-0. 2573	-0. 9217	0. 4187	-0. 5589
Q	2021	-0. 1620	-0. 0965	-0. 1897	-0. 1531	-0. 5556	0. 5385	-0. 3955
Q	2022	-0. 3862	-0. 1962	-0. 4161	-0. 2863	-0. 9585	0. 4378	-0. 7038
X	2018	0. 0124	0. 0065	0. 0340	0. 0329	0. 0167	0. 4223	0. 0513
X	2019	-0. 0773	-0. 0435	-0. 0954	-0. 0872	-0. 0961	0. 4211	-0. 1487
X	2020	0. 0122	0. 0061	0. 0213	0. 0168	0. 0154	0. 3482	0. 0279
X	2021	-0. 3704	-0. 1100	-0. 3272	-0. 2428	-0. 3436	0. 3689	-0. 3988
X	2022	-0. 4083	-0. 1376	-0. 4564	-0. 3096	-0. 3860	0. 3060	-0. 4081

Table 5: Profitability indicators of A-share listed catering companies

IV. Conclusion

According to the results of the final screening of the above correlation analysis, we could answer the previous hypothesis with results.

First of all, the improvement of Return on Equity(Y1), Return on Asset(Y2) and Profit Rate on Fixed Assets(Y12) that directly reflect profitability will drive the improvement of profitability. While there is no significant correlation between Operating Net Interest Ratio(Y7) and corporate profitability. If we look back Operating Net Interest Ratio(Y7) at the data in 2020, Guangzhou Restaurant and Tongqinglou are 14.12% and 14.28% respectively, almost the same. But their Return on Equity(Y1) in 2020 is 18.14% and 9.71% respectively. It's interesting. The Operating Net Interest Ratio(Y7) is inversely related to Return on Equity(Y1) , it just proved that our correlation analysis was right.

Secondly, the improvement of the Assets Turnover(Y8), Sales Profit Margin(Y3) would reflect the operating capacity will drive the improvement of profitability. While there is no significant correlation between Inventory Turnover(Y10) and corporate profitability.Neither is the Accounts Receivable Turnover(Y11). The improvement of turnover is indeed very important for the catering industry. Faster turnover brings healthier cash flows. The data I chose is from 2018-2022, when the covid-19 is ravaging the world.

Thirdly, Equity Multiplier(Y9) and Debt to Asset Ratio(Y6) could not significantly reflect the profitability of listed catering companies. Actually,if we scan the original data in table 2, it’s easy to find the Equity Multiplier of all the four catering companies seems the same,while their ROE is totally different.

At last, the increase in Earnings Per Share(Y5) that shareholders focus on would reflect the profitability of listed catering companies. The ratio reflects after-tax profits generated per share. The higher the ratio, the more profit would be made.The results of correlation analysis just confirm this view.

In short, Return on Equity(Y1), Return on Asset(Y2), Sales Profit Margin(Y3), Cost Profit Margin(Y4), Earnings Per Share(Y5), Assets Turnover(Y8), and Profit Rate on Fixed Assets(Y12) are the final indicators who would affect and reflect the profitability of listed catering companies. This plays a paving role for further research on the profit strategy or financial early warning mechanism of listed catering companies. The deficiency of this paper lies in some limitations in the selection of indicators. The way of index screening is single, and there may be false deletion and wrong deletion, so there is still a lot of in-depth space for relevant research in the future.

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References

[1]. GÜMÜŞ U T, & YILDIRIM F.(2022). *DuPont Analysis Performances of Food Beverage and Tobacco Businesses Return of Periodic Return*. Journal of Current Researches on Business and Economics, 12 (1), 19-30.

[2]. Forero-Quintero J F, Villafáfila-Robles R, &Barja-Martinez S, et al. (2022). *Profitability analysis on demand-side flexibility: A review*. Renewable and Sustainable Energy Reviews, 169: 112906.

[3].Vidal-Barrero F, Baena-Moreno F M, &Preciado-Cardenas C, et al.(2022). *Hydrogen production from landfill biogas: Profitability analysis of a real case study*. Fuel, 324: 124438.

[4]. 2022 Annual Report on China's Catering Industry

[5]. Warylak M. (2021).*Analysis and assessment of profitability and solvency of selected companies in the catering industry*. Katedra Finansów i Systemów Finansowych. 3(1): 49-56.

[6]. Qiurui. (2022).*Study on the Profitability of Catering Enterprises under the Background of COVID-19—A Case Study of Haidilao Limited Company*. Advances in Applied Mathematics, 2022, 11: 6532.

[7]. Soliman, M. T. (2008). *The use of DuPont analysis by market participants*. The Accounting Review, 83(3), 823-853.

[8]. Zhang Ge. (2023).*A enterprise financial risk warning evaluation based on entropy weight method and efficacy coefficient method*. International Business Accounting, 8(2), 8-15.

[9]. Kuang Yushu, Wei Jieyu, &Sun Qin. (2022). *Research on the influencing factors of the profitability of listed companies —— Based on the data of A-share listed companies from 2011 to 2020*. Business Accounting, 7(3): 102223.

[10]. Taani, K. (2011). *The effect of financial ratios, firm size and cash flows from operating activities on Earnings Per Share: (an applied study: on Jordanian industrial sector)*. International journal of social sciences and humanity studies, 3(1), 197-205.

[11]. Fairfield, P. M. , & Yohn, T. L. (2001). *Using asset turnover and profit margin to forecast changes in profitability*. Review of Accounting Studies, 6(4), 371-385.

[12]. Rummel R J. (2022). *Applied factor analysis*. Northwestern University Press, 1988.

[13]. Taherdoost H, Sahibuddin S, &Jalaliyoon N.(2022). *Exploratory factor analysis; concepts and theory*. Advances in applied and pure mathematics, 27: 375-382.