

An Empirical Analysis of the Influencing Factors of Total Assets Period of Medical Manufacturing Enterprises in Guangdong Province

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Abstract: Based on the relevant data of 29 medical manufacturing companies in Guangdong Province from 2009 to 2020, this paper uses a multiple linear regression model to conduct an empirical study on the influencing factors of their total asset turnover. The research results show that the size of the company and the number of boards of directors are significantly negatively correlated with the total asset turnover rate, and the operating income, the number of employees, the year-on-year growth rate of operating income, the amount of research and development investment and the total asset turnover rate are significantly positively correlated. On this basis, it also studied macroeconomic factors and found that the year-on-year growth rate of GDP is a key factor affecting the turnover rate of total assets. The results of this study have been inspired by how to accelerate the turnover rate of total assets, with a view to providing relevant references for improving the operational capabilities of enterprises.

Keywords: medical enterprise, total asset turnover rate, corporate scale, business income, GDP growth rate

1. Issue proposes and related literature

Nowadays, with the rapid development of the national economy and the increasing social mobility, the people's demand for public service products is becoming stronger, and Guangdong's medical manufacturing enterprises are developing rapidly. According to relevant statistics, the average annual growth rate of the output value of medical devices in Guangdong Province is about 25%. In 2017, the total output value of medical devices in Guangdong Province exceeded 100 billion yuan. In 2020, Guangzhou's biomedical industry will grow at an average annual rate of about 10%. In 2020, the total investment in 50 key biomedical projects in the city will exceed 72 billion yuan. However, Guangdong medical manufacturing companies are still facing obstacles in many aspects, such as business model, revenue scale, management level, etc., especially in terms of the company's total asset turnover. The total asset turnover rate will affect operational performance and enhance corporate competitiveness. Therefore, it is particularly important to analyze the influencing factors of the company's total asset turnover rate.

At present, scholars have carried out relevant research on the turnover rate of total assets of enterprises, and have achieved fruitful results. From the research content and perspective, one is to analyze the relationship between total assets of enterprises and urban economic growth, such as Lan Yu, Liu Bin research shows that the total assets of Shanghai listed companies and the turnover rate of mobile assets are present in Shanghai. Significantly positively correlated.^[1] The second is to explore the influencing factors of total assets turnover rate, Huang Shan, Zhao Xinyang believes that the number of monetary capital of the enterprise has a significant impact of the number of inventories, the number of fixed assets, the number of fixed assets, and the product structure have a significant impact on total assets.^[2] The third is to analyze the relationship between the total assets of the enterprise and the high growth rate of enterprises. Wei Wenlan, Li Hongsong believes that the high growth of the company is commonly influenced by multiple factors, but in the flow ratio, the speed ratio, accounts receivable turnover rate, inventory turnover rate, total assets turnover rate, main business profit margin, net profit growth rate, main profit growth rate, sales cash ratio, executive hold share ratio, the external guarantee rate, and equity distribution rate indicators have more significant embodiments.^[3] From the perspective of research, companies analyze the relevant factors of the total asset turnover rate of the relevant variables and the design of the design of the measurement model.^[4]

In summary, domestic scholars use a variety of ways to explore the inner mechanism of total assets

of the company. But so far, there is no scholar to conduct special research on the factor of total assets of medical manufacturing enterprises. Therefore, this paper uses the existing research methods and experience to incorporate 29 medical enterprises that have been listed in Guangdong Province into the scope of research, collect the annual panel data of 2009-2020 and conduct empirical analysis, to identify the key to the total turnover of the company's total assets. Factors provide decision-making support to improve the operation management level of Guangdong Province Medical Manufacturing Enterprises.

2. Theoretical analysis and hypothesis

Based on the research results of the above-mentioned scholars, it can be seen that there are many factors affecting the turnover rate of the total assets of a company. Considering the availability of data and the feasibility of the research, this article mainly considers the factors that affect the company's characteristic variables, management level variables, and macro factors. Three dimensions of control variables. Enterprise characteristic variables include enterprise size, operating income, and number of employees; Management level variables include year-on-year growth rate of operating income, the number of boards of directors, and the amount of R&D investment; macro-factor control variables include year-on-year growth rate of GDP and income tax expenses.

2.1 Impact of enterprise characteristic variables on total assets turnover rate

The bigger the size of the company, it means that the more cumbersome the department within the enterprise, the company needs to recruit talents, the higher the demand for hardware and software environment and information construction. Enterprises have improved the difficulty in human resource allocation, slowing down the turnover rate, thus enabling the overall operational efficiency of the enterprise, and the overall sales level of the company and the total asset turnover rate will be affected. Therefore, the total asset turnover rate is negatively correlated with the scale of the enterprise.

The more the number of enterprises, the larger the human resources storage amount, the higher the employee of each post, the higher the best match, which can make it personal, thus enhance the employee's work efficiency, bringing more high efficiency. Therefore, the total asset turnover rate is positively correlated with the number of enterprise employees.

The business income and sales level are positively correlated. The stronger the sales ability of the company, the higher the sales level, the better the operation of the company's operational revenue, and the total asset turnover rate will also improve accordingly. Therefore, the total asset turnover rate is related to the enterprise business income. This puts a hypothesis 1.

H1: Total asset turnover is negatively correlated with enterprise size, and positively correlated with operating income and number of employees.

2.2 Management of horizontal variables on total assets turnover rate

When the company's operating income increased year-on-year growth rate, the sales rate of enterprises is also improved, and the total profit has a growth trend, and the sales capacity of the company is significantly improved. Therefore, the total asset turnover rate of enterprises is positively related to the year-on-year growth rate of enterprise business income. This puts a hypothesis 2.

H2: The total asset turnover rate is positively related to the year-on-year growth rate of the business income of medical enterprises.

When the investment in the company's research and development is large, its independent innovation ability, and the profitability will be improved accordingly, thus improving the operational efficiency and benefits of enterprises, and the business income and business growth rate will also have an upward trend. Thus, the total asset turnover of the company has accelerated. Therefore, the total asset turnover rate is positively correlated with the amount of money investment in the company.

The more people's number of people's board, the more complex the internal organizational structure, and the board decision efficiency and corporate operation efficiency will be reduced, and the individual responsibility of each directors will also be challenged, which will reduce the overall operational performance and business income of the enterprise. Therefore, the total asset turnover rate is negatively correlated with the number of people's board of directors. This puts a hypothesis 3.

H3: Total asset turnover is positively correlated with the amount of R&D investment and negatively

correlated with the number of directors.

2.3 GDP increased year-on-year growth rate, income tax expenditure on total asset turnover rate

The faster GDP growth rate is, the higher the level of economic development representing a region, and it will increase the policy of policies in the region's region and the implementation of relevant funds, thus improving the overall operational benefits of the enterprise and accelerating the total asset turnover rate. Therefore, the total asset turnover is positively correlated with the GDP growth rate.

The income tax expenses of the enterprise are related to business profit. The higher the income tax expenses you have to pay, the more business profits on behalf of enterprises, the operational efficiency of the company and the overall sales level are good, thus accelerating the total assets of the enterprise. This puts a hypothesis 4.

H4: Total asset turnover is positively correlated with year-on-year GDP growth rate and income tax expense.

3. Research design

3.1 Sample selection and data source

This article mainly selects the panel data of 29 medical manufacturing companies in Guangdong Province from 2009 to 2020 as the analysis object, and analyzes the factors affecting the company's total asset turnover rate. The data mainly comes from the Guotaian database and the wind statistical yearbook database.

3.2 Varia description

In this paper, variables are defined as follows:

(1) Total asset turnover rate (IM) is interpreted variable;

(2) Enterprise scale (SD), operating income (AG), number of employees (CS) is a corporate characteristic variable; business income is growing in a year-on-year increase rate (HG), R & D input amount (SR), board number (ULR) is corporate management horizontal interpretation variable;

(3) GDP growth rate (ET) in China, income tax fees (CCI) are macro-factor control variables, T is the time variable, i represents the i-i enterprise.

3.3 Metering Economics Model Design

Assuming that the relationship between each influencing factor and Y is linear, the multi-linear regression model is: $YT = C + \beta_1SD + \beta_2AG + \beta_3CS + \beta_4HG + \beta_5SR + \beta_6ULR + \beta_7ET + \beta_8CCI + \epsilon$, C is constant, β is a variable coefficient, ϵ is a random disturbance.

4. Empirical inspection and analysis

4.1 Descriptive statistics and correlation analysis

Table 1: Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Total assets	348	100223887.0800	73144484535.4500	5186894601.473796	10102119540.7930430
Corporate scale	348	18.3325	25.0157	21.434136	1.4821768
Operating income	348	700000.0000	64951777641.8300	2801227477.064659	6512314213.8460310
Number of staff	348	132.0000	25853.0000	2623.873563	4159.1740037
Operating income growth rate	348	-.6042	263.2713	1.628212	18.3874047
Number of directors	348	1.0000	11.0000	7.933908	1.8358265
R & D investment amount	344	50327.0000	180162000000.0000	650872219.607297	9708567264.4715350
Year-on-year GDP growth rate	348	2.3000	10.6359	7.366427	2.0120783
Income tax expense	342	-113684050.2900	1267650978.8700	91883378.561754	160429713.1589870
Total asset turnover rate	348	.0007	7.6363	.627009	.5740626
Valid N (listwise)	338				

This paper uses SPSS statistical analysis software to analyze the collected sample data of 29 medical manufacturing companies in Guangdong Province from 2009 to 2020. The results of descriptive statistical analysis are shown in Table 1. The average value of the total asset turnover rate of medical manufacturing companies in Guangdong Province At 0.627, the company with the fastest annual total asset turnover rate can reach 7.636 times, while the slowest is only 0.001 times, with a standard deviation of 0.574.

Table 2: Variables Entered/Removed^a

Model 1	Variables Entered	Variables Removed	Method
	The size of the company, the growth rate of business income, the amount of research and development, the growth rate of GDP, the number of boards, income tax fees, business income, number of employees B.	.	Enter

a. Dependent Variable: Total asset turnover rate

b. All requested variables entered

This part of the result illustrates that the method used in regression analysis of the model is all into the method ENTER.

Table 3: Model Summary^b

Model1	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	.454 ^a	.206	.187	.3873861	1.817

a. Predictors: (Constant), The size of the company, the growth rate of operating income, the amount of research and development, the growth rate of GDP, the number of boards, income tax expenses, business income, number of employees

b. Dependent Variable: Total asset turnover rate

This part of the result is a common statistic, the correlation coefficient $r = 0.454$, the determination coefficient $R^2 = 0.206$, the adjustment determination coefficient $R^2 = 0.187$, the regression estimation should be adjusted by the regression error $S = 0.3873861$. The interpretation of R^2 is predictive variables: the number of business income, the number of employees, the growth rate of the business income, the number of research and development, the number of boards, the growth rate of the GDP, the income tax cost can explain the total asset turnover rate of 20.6%, it is Acceptable.

Table 4: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	312.818	8	1.602	54.677	.000b
	Residual	9.372	329	.150		
	Total	322.190	337			

This form is the variance analysis table, from this part of the result, statistic $f = 54.677$, the value of the significant level is 0, indicating that the linear relationship between variables and independent variables is obvious. The Sum of Squares column respectively represents the regression sum of 312.818, the residual sum of 9.372 and the total sum of 322.190.

Table 5: Coefficients^a

Model 1	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	3.157	.453		6.968	.000		
Enterprise scale	-.129	.021	-.440	-6.275	.000	.490	2.041
Operation revenue	1.258E-11	.000	.193	1.899	.005	.233	4.284
Number of staff	2.821E-5	.000	.276	2.603	.010	.215	4.661
The growth rate of business income	.001	.001	-.015	-.298	.000	.965	1.037
Number of directors	-.016	.012	-.070	-1.316	.009	.842	1.187
The amount of research and development	4.000E-12	.000	.091	1.845	.006	.987	1.013
Year-on-year GDP growth rate	.033	.011	.155	2.987	.003	.899	1.112
Income tax expense	1.247E-10	.000	-.047	-.709	.039	.554	1.804

a. Dependent Variable: Total asset turnover rate

This form is a regression coefficient analysis, where Unstandardized Coefficient is a non-standard coefficient, and Standardized Coefficient is a standardized coefficient, and T is the regression coefficient inspection statistic, SIG. is the associated probability value.

Table 6: Collinearity Diagnostics^a

Dimension	Eigenvalue	Condition Index	(Constant)	Income tax expense	Year-on-year GDP growth rate%	R&D investment amount	Board of directors	Operating income growth rate	Number of staff	Operating income	Corporate scale
1	5.047	1.000	0.000	0.008	0.002	0.000	0.002	0.000	0.004	0.003	0.000
2	1.409	1.893	0.000	0.045	0.005	0.008	0.002	0.004	0.023	0.046	0.000
3	1.005	2.241	0.000	0.005	0.000	0.191	0.000	0.750	0.000	0.000	0.000
4	0.989	2.259	0.000	0.003	0.000	0.787	0.000	0.180	0.000	0.000	0.000
5	0.360	3.742	0.000	0.841	0.000	0.000	0.000	0.048	0.059	0.061	0.000
6	0.105	6.947	0.000	0.009	0.001	0.000	0.000	0.000	0.759	0.872	0.000
7	0.058	9.289	0.001	0.000	0.690	0.008	0.216	0.011	0.015	0.003	0.001
8	0.026	13.944	0.017	0.002	0.192	0.002	0.780	0.001	0.020	0.008	0.020
9	0.001	67.000	0.982	0.088	0.110	0.003	0.001	0.006	0.120	0.006	0.978

Table 7: Residuals Statistics^a

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.04223	1.62419	.59737	.195026	338
Residual	-.869153	3.538076	.000000	.382760	338
Std. Predicted Value	-2.846	5.265	.000	1.000	338
Std. Residual	-2.244	9.133	.000	.988	338

a. Dependent Variable: Total asset turnover rate

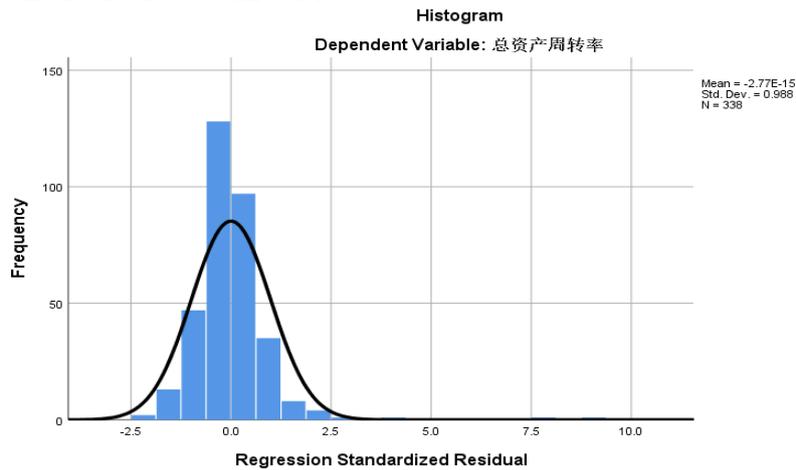


Figure 1: regression standardized residual

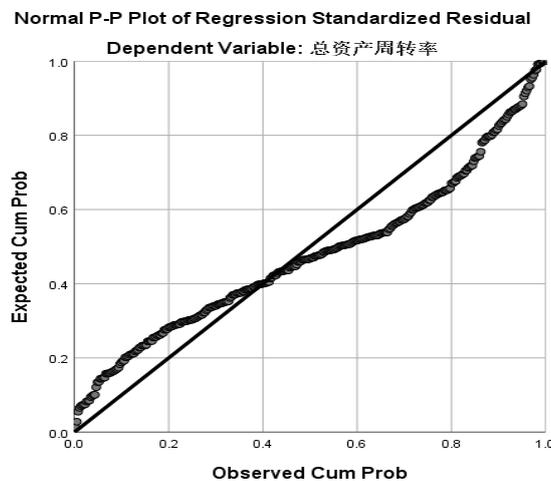


Figure 2: Normal P-P in regression of standardized residuals

4.2 Measurement Economics Test

4.2.1 Sample independence test (D-W test)

As shown in Table 3, the value of Durbin-Watson is 1.817, from about 2.0, indicating that 29 medical enterprises samples are independent, and the sample has independent.

4.2.2 Multi-collinear test

As shown in Table 5, the VIF value of the enterprise scale, operating income, and employee, etc., the VIF value of the employee is less than 5, indicating that there is no multiple common linearity between the variables, which does not have a strong relationship.

4.2.3 Residual normal distribution test

As shown in Table 3, $R^2 = 0.206$, indicating that the size of the variable enterprise, the number of business income, and the number of employees can only explain 20.6% of the turnover rate of total variables, and nearly 80% is not explained, it indicates that there is a residual, reasons may be due to the relatively small number of variables, and some important independent variables are missing, so they have an abnormality, but it is also normal. As shown in Figure 2, all points do not surround the progressive line distribution, that is, the residual is not obedient from a normal distribution.

4.3 Economic significance test.

According to Table 5, the SIG. (P value) of the large-variable enterprise scale is $= 0.000 < 0.05$, indicating that the scale of the enterprise significantly affects the total asset turnover rate. Due to the influence coefficient $= -0.129$, it shows that the enterprise size negatively affects the total asset turnover that is, the larger scale, the slower the total asset turnover rate; The SIG. (P value) of the variable business income is $= 0.005 < 0.05$, indicating business income significantly affected the total asset turnover rate. Due to the influence coefficient $= 1.258E-11$, it shows that the enterprise's operating income positively affects the total asset turnover, the higher the business income, the faster the total asset turnover rate; The SIG. (P value) of the number of staff $= 0.010 < 0.05$, indicating that the number of employees of the company significantly affects the total asset turnover rate. Due to the influence factor $= 2.821E-5$, it shows that the number of enterprise employees is positive to affect the total assets turnover, the more the number of employees of the company, the faster the total asset turnover rate. Thereby, it is assumed that 1 is established.

SIG. (P value) of the operating income growth rate of the variable is $= 0.000 < 0.05$, indicating that the operating income growth rate significantly affects the total asset turnover rate. Due to the influence coefficient $= 0.001$, it shows that the growth rate of operating income positively affects the turnover of total assets, the greater the growth rate of operating income, the faster the total asset turnover rate. Thus, assuming 2 is established; SIG. (P value) of the number of people from the variable board $= 0.009 < 0.05$, indicating that the number of boards significantly affects the total asset turnover rate. Due to the influence coefficient $= -0.016$, it shows that the number of directors has a negative impact on the total asset turnover, that is, the more the number of directors, the slower the total asset turnover. Sig. (P value) of R&D investment amount $= 0.006 < 0.05$, indicating that R&D investment significantly affects the turnover of total assets. Due to the influence coefficient $= 4.000E-12$, it shows that the R&D investment has a positive impact on the total asset turnover, the more the R & D investment is, the faster the total asset turnover rate. Thereby, it is assumed that 3 is established.

SIG. (P value) of the variable income tax expenses $= 0.039 < 0.05$, indicating that the income tax expense significantly affects the total asset turnover rate. Due to the influence coefficient $= 1.247E-10$, it shows that income tax expense positively affects the turnover of total assets, the higher the income tax expense of the payment, the faster the total asset turnover rate; the SIG (P value) of the variable GDP is co-growth rate (p value) $= 0.003 < 0.05$, indicating that the GDP has a significant growth rate of total assets. Due to the influence coefficient $= 0.033$, it shows that the year-on-year growth rate of GDP positively affects the turnover of total assets, which is the faster growth rate of GDP, the faster the total asset turnover rate. Thereby, it is assumed that 4 is established.

5. Conclusion and revelation

5.1 Conclusion

Taking listed medical manufacturing enterprises in Guangdong Province from 2009 to 2020 as research samples, this paper makes an empirical analysis on the influencing factors of total asset turnover by using multiple linear regression model. It is found that total asset turnover is negatively correlated with enterprise size, and positively correlated with operating income and number of employees. Total asset turnover is negatively correlated with the number of board members and positively correlated with R&D investment and growth rate of operating income. The macro-economic environment, especially the year-on-year GDP growth rate, also has a significant impact on the total asset turnover of medical manufacturing enterprises in Guangdong Province. The total asset turnover is significantly positively correlated with the year-on-year GDP growth rate and positively correlated with income tax expenses.

5.2 Revelation

Based on the above research conclusions, this article puts forward relevant suggestions for the development of medical manufacturing enterprises in Guangdong Province: Enterprises can increase the turnover rate of total assets by reducing the size of the enterprise and reasonably controlling the operating income and the number of employees. When sales decline, we can build a high-quality sales talent team and adopt a diversified sales approach to achieve sales growth and increase the turnover rate of total assets. Enterprises can increase the level of scientific research by increasing the amount of research and development investment, increase the output of scientific research results, and effectively increase the profits of the enterprise. Reducing the number of board members is also one of the effective ways for companies to increase the turnover rate of total assets. Under the premise of a good macroeconomic environment, companies need to scientifically control macroeconomic trends, grasp the direction of relevant policies, etc., to stimulate and enhance the vitality of market entities, continue to optimize the business environment, improve sales levels, and improve business performance, thereby speeding up the turnover rate of total assets and improving the level of business operations.

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