

Big Data Financial Analysis Comparison Between Midea and Gree Based on Power BI Software

Tieping Wang

Department of Economics and Management, Taishan University, Tai'an, China

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Abstract: Big data financial analysis is the application of big data technology to analyze the financial and non-financial related information of enterprises. PowerBI is a very useful computer application software for financial analysis. This paper uses PowerBI software for big data financial analysis, and makes a comparative analysis of Midea and Gree in terms of profitability, solvency, operating ability and growth ability. Gree's commodity profitability is better than Midea, and Midea's capital profitability is better than Gree. Midea and Gree have relatively weak short-term solvency and comparable long-term solvency. Midea's overall operational capability is stronger than Gree. Compared with the same period last year, both Midea and Gree have good growth capabilities.

1 INTRODUCTION

Big data financial analysis is a set of techniques and methods for the collection, preparation, analysis and action of huge financial-related data (including financial data and structured data and a large amount of non-financial data and unstructured data) of the company. It integrates accounting and information systems (Fan, 2014). This paper uses Power BI software for big data financial analysis, and makes a comparative analysis of Midea and Gree in terms of profitability, solvency, operating ability and growth ability.

Power BI is useful business analysis software. Power BI can connect available data sources, simplify the data preparation process, provide specialized analysis, and support the generation of beautiful reports to better meet the needs of accounting information users (Schroeder, 2019). The use of Power BI simplifies the data analysis work of business personnel, and can intuitively present the trend of report data in each period, compare the company's data with other companies in the same industry, locate the company's position in the industry, and determine the company's future development direction (AREAS, 2018). Power BI is very useful computer application software for financial analysis.

Midea and Gree are both well-known home appliance companies. In the industry rankings, Midea and Gree have been competing for industry leaders. Midea's earnings per share, net profit, operating income and assets are better than those of Gree, and Gree's gross profit margin is better than that of Midea. This paper compares and analyzes the profitability, solvency, operating ability and growth ability of Midea and Gree, and evaluates the financial status of Midea and Gree.

2 BASIC SITUATION

Midea's products mainly include HVAC and consumer appliances, as well as robotics and automation. Among them, HVAC revenue accounted for 43.96%, consumer appliances accounted for 37.38%, and robotics and automation was a new business, accounting for 7.24% of revenue. HVAC and consumer appliances occupy an absolute position in Midea's revenue. The revenue of HVAC accounted for 43.96%, the cost accounted for 45.32%, and the profit accounted for only 39.46%, which showed that the cost of HVAC was high. In terms of gross profit margin, HVAC's gross profit margin was 20.85%, lower than 29.6% for consumer appliances and 22.72% for robots.

Gree's product concentration is very high, and 73.8% of the company's revenue is concentrated on air conditioners. Gree also produces household appliances, but its revenue only accounts for 2.43%. In terms of profit indicators, Gree air conditioners' profit ratio reached 92.6%, with 73.8% of the revenue and 67.94% of the cost, generating 92.6% of the profit, indicating that the air conditioner is Gree's ace product, and the cost is very controlled. The gross profit rate of Gree air conditioners is 29.79%, the gross profit rate of household appliances is 32.54%, and the gross profit rate of other products is low. As far as the sales area is concerned, Gree's domestic sales accounted for 63.93% of its revenue, 55.53% of its costs, 90.9% of its profits, and 33.75% of its gross profit margin. Its foreign sales accounted for 13.98% of its revenue and 16.49 of its costs. %, the proportion of 0 profit is only 10%. Gree mainly relies on domestic sales to obtain profits.

Table 1: Midea and Gree.

	Midea	Gree
EPS (yuan)	3.41	2.71
Net assets per share (yuan)	16.97	15.34
Cash flow per share (yuan)	3.994	1.074
Net profit (yuan)	23.460 billion	15.640billion
Total operating income (yuan)	262.90billion	139.50billion
Total assets (yuan)	376.30billion	286.10billion
ROE	19.51%	15.02%
Shareholders' Equity Ratio	34.09%	32.87%
Gross profit margin	23.80%	24.13%
Total share capital (shares)	6.985billion	5.914billion

3 FINANCIAL COMPARATIVE ANALYSIS OF MIDEA AND GREE

3.1 Profitability

This section analyzes Midea's profitability. In the third quarter of 2021, the gross profit margin of Midea's sales was 23.80%, compared with 25.29% in the same period last year, indicating that Midea's main business profitability has been greatly weakened. Midea's current sales net profit margin (9.07%), less than 10.24% last year, indicating a decline in corporate operating efficiency. Midea's net interest rate on total assets in the current period (6.43%), less than 6.80% last year, indicating that Midea's ability to return on total assets declined slightly. Midea's current ROE was 19.51%, less than 20.35% last year, indicating that Midea's ability to return to shareholders has weakened. The profitability indicators of Midea Group have all declined, and Midea's profitability has weakened.

Gree's gross profit margin in the current period was 24.13%, compared with 23.37% last year, indicating that Gree's main business profitability remained stable. Gree's current sales net profit margin was 11.36% is more than 10.96% last year, indicating that the company's operating efficiency has improved. Gree's net interest rate on total assets (5.55%) is more than 4.95% last year, indicating that Gree's ability to return on total assets has improved slightly. Gree's return on net assets (15.02%) is more than 11.74% last year, indicating that Gree's ability to return to shareholders has increased. Compared with the same period last year, Gree's profitability indicators generally increased, indicating that the profitability of the company has improved.

Midea's profitability decreased year-on-year, while Gree's profitability increased year-on-year. Comparing and analyzing the profitability indicators of Midea and Gree, it can be found that Gree's net sales profit margin and sales gross profit margin are higher than those of Midea, but Midea's ROE is higher than that of Gree. Gree's commodity profitability is stronger, and Midea's capital profitability is stronger.

Table 2: Profitability of Midea and Gree.

Subject\Time	Midea's profitability				
	2021-09-30	2021-06-30	2021-03-31	2020-12-31	2020-09-30
Sales margin	9.07%	8.75%	7.96%	9.68%	10.24%
gross profit margin	23.80%	23.23%	23.00%	25.11%	25.29%

ROE	19.51%	12.63%	5.35%	24.95%	20.35%
Gree's profitability					
Subject\Time	2021-09-30	2021-06-30	2021-03-31	2020-12-31	2020-09-30
Sales margin	11.36%	10.42%	10.40%	13.25%	10.96%
Gross profit margin	24.13%	23.74%	24.43%	26.14%	23.37%
ROE	15.02%	8.11%	2.95%	18.88%	11.74%

3.2 Solvency

Solvency can be analyzed in terms of current ratio, quick ratio, equity ratio and asset-liability ratio (Helfert, 2001). In the third quarter of 2021, Midea's quick ratio (0.75) is more than 0.72 last year, indicating that Midea has controllable short-term debt risks. The current ratio of Midea (1.37) is more than 1.33 last year, indicating that Midea's short-term solvency was weak. Midea's asset-liability ratio (65.91%) is more than 65.72% last year, and the company's ratio of liabilities to assets remained stable. Midea's cash ratio (35.55%) is less than 37.35% last year, indicating that the company's ability to pay cash immediately declined. Compared with last year's third quarterly report, Midea's solvency has strengthened.

Gree's quick ratio (0.83) is less than 1.15 last year, indicating that Gree has controllable short-term debt risks. Gree's current ratio (1.18) is more than 1.33 last year, indicating that the company's liquidity was poor and its short-term solvency was weak. Gree's asset-liability ratio (67.13%) is more than 57.57% last year, indicating that the company's financial risks have increased. Gree's cash ratio (66.43%) is less than 85.43% last year, indicating that the company's immediate cash payment ability has declined significantly. Compared with last year, Gree's debt solvency remained stable overall.

Midea's solvency increased year-on-year, while Gree's solvency remained stable. Comparing and analyzing the solvency indicators of Midea and Gree, we can see that the current ratios of both are relatively low, the short-term solvency is weak, and the long-term solvency is comparabl

Table 3: The solvency of Midea and Gree.

Midea's solvency					
Subject\Time	2021-09-30	2021-06-30	2021-03-31	2020-12-31	2020-09-30
Current ratio	1.37	1.32	1.32	1.31	1.33
Quick ratio	0.75	0.72	0.93	0.95	0.72
Equity ratio	2.09	2.27	2.08	2.01	2.04
Asset-liability ratio	65.91%	67.53%	66.31%	65.53%	65.72%
Gree's solvency					
Subject\Time	2021-09-30	2021-06-30	2021-03-31	2020-12-31	2020-09-30
Current ratio	1.18	1.12	1.31	1.35	1.33
Quick ratio	0.83	0.87	1.01	1.05	1.15
Equity ratio	2.08	2.15	1.7	1.41	1.38
Asset-liability ratio	67.13%	67.93%	62.56%	58.14%	57.57%

3.3 Operational Capability

Midea's business cycle and turnover period are all declining, implying that its turnover period is shortened and its turnover capacity is stronger. The operating cycle is the sum of the inventory turnover period and the accounts receivable turnover period (Fabozzi, 2003). In the third quarter of 2021, Midea's business cycle was 68.87 days, down 5.86% from the same period last year, because the

inventory turnover period and accounts receivable turnover period decreased by 7.61% and 2.73% respectively. In terms of days, the inventory turnover period was 43.57 days, down 7.61% over the same period last year, and the accounts receivable turnover period was 25.29 days, down 2.73% over the same period last year. The significant reduction in inventory turnover period is the main reason for the decline in the business cycle of enterprises. Midea's current account receivable turnover rate was 10.68 times, more than 10.39 times last year,

indicating that the company has improved the capital utilization efficiency.

Midea's inventory turnover rate (6.20 times), more than 5.72 times last year, implying that its inventory realization ability has been enhanced. Midea's current asset turnover rate was 1.05 times, more than 0.94 times last year, indicating that the company's current assets have been reasonably utilized. Midea's total asset turnover rate (0.71 times), more than 0.66 times last year, indicating that the company's comprehensive utilization of assets has been optimized. All of Midea's operating capacity indicators are improving, indicating that Midea's operating capacity is stronger than the same period last year.

In the third quarter of 2021, Gree's business cycle was 105.54 days, an increase of 23.06% than last year, mainly due to the longer inventory turnover period. Gree's accounts receivable turnover rate (14.58 times), more than 11.67 times last year, indicating that the company's capital utilization efficiency has been significantly improved. Gree's

inventory turnover rate (3.10 times), less than 4.31 time last year, indicating that Gree's product market competitiveness has weakened. Gree's current asset turnover rate (0.66 times), more than 0.61 times last year, indicating that the company's current assets were reasonably utilized. Gree's total asset turnover rate (0.49 times) is more than 0.45 times last year, indicating that the company has optimized the comprehensive utilization of assets. Compared with last year, Gree's operating capacity remained stable.

Comparing the indicators of Midea and Gree, Midea's business cycle is 68 days, which is much lower than Gree's 105 days. Midea's overall operating capability is stronger than Gree's. The advantage of Midea is that the inventory turnover is fast, and the inventory turnover rate is twice that of Gree. It should be noted that Gree's accounts receivable turnover is faster. In order to optimize their respective operating capabilities, Midea should further speed up account turnover, and Gree should further speed up inventory turnover.

Table 4: Operational Capabilities of Midea and Gree.

Midea's Operational Capability					
Subject\Time	2021-09-30	2021-06-30	2021-03-31	2020-12-31	2020-09-30
Business cycle (days)	68.87	70.41	71.25	80.09	73.16
Inventory turnover rate (times)	6.2	4.07	2.03	6.7	5.73
Inventory turnover days (days)	43.57	44.23	44.32	53.72	47.16
Accounts receivable turnover days (days)	25.29	26.19	26.93	26.37	26
Gree's Operational Capability					
Subject\Time	2021-09-30	2021-06-30	2021-03-31	2020-12-31	2020-09-30
Business cycle (days)	105.54	98.18	136.09	93.76	85.76
Inventory turnover rate (times)	3.1	2.29	0.83	4.78	4.31
Inventory turnover days (days)	87.02	78.55	109.06	75.29	62.63
Accounts receivable turnover days (days)	18.52	19.63	27.02	18.46	23.13

3.4 Growth Ability

This section analyzes Midea's growth ability. In the third quarter of 2021, Midea's operating income growth rate was 20.57%. The operating income turned from loss to profit, compared with -1.88% last year. Midea's operating profit growth rate was 4.64%. The profit growth rate resumed its upward trend compared with -0.89% last year. The net profit growth rate (6.53%) indicates that the company's net profit growth rate has continued to grow, and the

growth potential needs to be strengthened. The growth rate of Midea's total assets (4.43%), far less than 16.06% last year, indicating that the company's scale has slowed down expansion. Compared with the same period last year, Midea's growth ability has been enhanced.

Gree's current operating income growth rate (9.73%) indicates operating income turned from loss to profit. Gree's operating profit growth rate (13.70%) indicates the profit growth rate has entered an upward channel. Gree's net profit growth rate

(14.21%) indicates that the company's growth potential has been restored. The growth rate of Gree's total assets (2.46%) indicates that the company's scale has begun to expand. Compared with the same period last year, Gree's growth ability has been strengthened.

2020 is the year of the outbreak of the COVID-19, and the household appliance industry is generally sluggish due to the impact of the epidemic. In 2021, Midea and Gree perform well, and their growth capabilities are constantly improving.

Table 5: Growth capabilities of Midea and Gree.

Midea 's growth ability					
Subject\Time	2021-09-30	2021-06-30	2021-03-31	2020-12-31	2020-09-30
Net profit (yuan)	23455250000	1.501E+10	6468588000	27222969000	22018301000
Net profit growth rate	6.53%	7.76%	34.45%	12.44%	3.29%
Operating income (yuan)	2.62943E+11	1.748E+11	83017120000	2.8571E+11	2.17753E+11
Revenue growth rate	20.75%	25.14%	42.26%	2.27%	-1.81%
Gree 's growth ability					
Subject\Time	2021-09-30	2021-06-30	2021-03-31	2020-12-31	2020-09-30
Net profit (yuan)	1.564E+10	9.457E+09	3.443E+09	2.218E+10	1.37E+10
Net profit growth rate	14.21%	48.64%	120.98%	-10.21%	-38.06%
Operating income (yuan)	1.395E+11	9.201E+10	3.352E+10	1.705E+11	1.275E+11
Revenue growth rate	9.48%	30.32%	60.30%	-14.97%	-18.64%

4 CONCLUSIONS

Through the big data financial analysis of Midea and Gree carried out by Power BI software, the paper found that: Midea and Gree are both well-known home appliance companies. Based on the above analysis, Gree's commodity profitability is better than Midea, and Midea's capital profitability is better than Gree. Midea and Gree have relatively weak short-term solvency and comparable long-term solvency. Midea's overall operational capability is stronger than Gree. Compared with last year, both Midea and Gree have good growth capabilities.

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