



Analysis of the Development Trend of E-Commerce Based on Network Intelligence Technology: The Case of Jing Dong (JD)

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Abstract. With the continuous development of e-commerce, how to develop e-commerce in the future is the direction for enterprises to consider. This paper takes Jingdong (JD) e-commerce company as an example, and analyzes the development trend of this e-commerce company based on network intelligence technology: analyzes the current situation of JD.com, collects JD's annual balance sheet and profit and loss statement through network intelligence technology, and calculates its relevant financial ratios. Comparative analysis of financial ratios enables us to intuitively understand the economic status of assets, liabilities and shareholders' equity, and use computer technology to conduct Excel modeling analysis to visually view the company's financial trends, providing information for external investors, suppliers, Distributors and other stakeholders provide intuitive data analysis.

Keywords: Network intelligence technology · Development trend · e-commerce · JD

1 Introduction

E-commerce is a business activity centered on information network technology and commodity exchange; as an important industry in the modern service industry, e-commerce is known as “sunrise industry and green industry”, and has “three highs” and “three new”. “specialty [1]. “Three highs” refers to high human capital content, high technology content and high added value; “three new” refers to new technologies, new formats and new methods [2]. The “four flows in one” of people flow, logistics, capital flow and information flow is a generalization of the core value chain of e-commerce. The e-commerce industry has the advantages of market globalization, transaction continuity, low cost, and resource intensification [3]. The development of e-commerce in my country is characterized by a typical block economy. The southeastern coastal areas are relatively developed areas, the northern and central areas are rapidly developing areas, and the western areas are relatively backward [4].

Since 2005, the transaction volume of my country's e-commerce market has grown steadily, and the scale of my country's e-commerce market has become larger and larger.

The scale of my country's e-commerce investment continues to grow, and my country's e-commerce investment market will usher in a new round of development climax [5]. As a relatively large e-commerce company in my country, how to develop JD.com is a problem we need to study at present. To study the business development trend of JD.com, it is necessary to analyze the financial situation of JD.com. Financial analysis is inseparable from the means of computer technology, especially in today's era of rapid development of big data technology and intelligent network technology, the use of network intelligence technology to analyze Jingdong's financial statements is of great significance to Jingdong's future decision-making. Correct financial analysis is inseparable from the analysis of various ratios such as current ratio, velocity ratio, and return on investment. Financial statements are critical to any company and its stakeholders.

2 Literature Review

An extant review of the financial analysis and e-commerce logistics literature has been conducted. This section summarizes some of the key findings from past studies in the domain. The market share and market share of e-commerce and logistics remain very important factors to consider when evaluating their future competition in the e-commerce or logistics industry [6]. The development of the industry is inseparable from the study of financial reports and related financial ratios. When Siwen Liu puts forward the solvency analysis and profitability analysis, he proposed that the level of solvency and profitability will affect the development trend of the company. The stronger the change in the assets of the enterprise, the stronger the short-term solvency, and vice versa [7]. Taking Tencent as an example shows that the current ratio and quick ratio will affect the company's short-term debt solvency. Further, the company's profitability is also impacted by factors such as company profits and marketing expenses. The level of profitability determines the level of future investment risks of the company. The return on investment (ROI) is affected by dividend policy factors. This suggests that investors need to strengthen their understanding of financial statements. There is a need for more research on net profit margins, interest rates, and tax rates to promote a deeper understanding of the industry. Stakeholders from various sectors have positioned the ROI method as one of the key elements to measure performance [8]. ROI is widely used to evaluate the success of the project. This includes the private sector, public sector, and non-profit organizations. The solvency of a company is affected by the size of the company [9]. Current liabilities do occupy a major position in total liabilities, and financial risks are affected by inventory turnover rate and account receivable turnover rate. Hence, it becomes necessary to carefully analyze the major financial ratios. An analysis of financial ratios can help organizations avoid risks to some extent and can assist in future investment decisions [10].

3 Using Network Intelligence Tools to Carry Out Excel Modeling and Analysis

With the rapid development of the e-commerce industry, JD.com is still China's e-commerce giant; the company continues to maintain the development trend of both

e-commerce and logistics. As of May 2020, the net profit of JD.com in the first quarter was 146.2 billion yuan, a year-on-year increase of 20.7%, and the net service income was 16.1 billion yuan, a year-on-year increase of 29.6%. JD.com, a subsidiary of JD.com, completed the A round of financing in the To B market and became the company with the highest valuation. Financing companies also include Sequoia Capital China Fund, CPE and many other institutions. In the field of To B, it has the advantages of high gross profit, high stability, and sustainable realization.

3.1 Monetization Analysis

The data related to the current assets of JD.com from 2017 to 2020 were collected through the network intelligence tool - crawler technology. Liquid assets: Liquid assets in 2020 will be twice as high as in 2017, and the current ratio will be about twice as high as in 2017. As current assets increase, so do liabilities. Jingdong's current liabilities in 2017 were about 110 million, and in 2020, current liabilities were about 170 million. As shown in Table 1:

It can be seen from Table 1 that the current ratio and quick ratio of JD.com are on the rise; this shows that the liquidity of JD.com's assets is increasing and its solvency in the short term is increasing. However, JD.com's current ratio remains at around 1%. This indicates that JD.com's solvency is incomplete, and JD.com may have debt repayment risks. According to China Net Technology, JD.com's cash flow is built on a stable foundation. While JD.com may face debt repayment risk, stable cash flow can reduce the risk. More than 50% of the transactions of JD.com's industrial products are completed through a procurement platform independent of JD.com's main station, which can only ensure the stability of JD.com's cash flow. A round of financing is more optimistic about the future development of JD.com than Sequoia China Fund, CPE and other institutions. This may mean that JD.com's future cash flow scale may increase accordingly. As the total growth of current assets is greater than the total growth of current liabilities, the current ratio eventually rises. In addition, the reason for the increase in the quick ratio also needs to consider the inventory of JD.com. JD.com's product sales and logistics are increasing every year. According to Essence Securities' in-depth report on JD Logistics, as of 2020, the total scale of JD Logistics is 14.9 trillion yuan. JD Logistics has 900 warehouses across the country, ranking first in the country. JD.com has more warehouses than other logistics companies to ensure delivery of goods nearby. The core competitiveness of JD.com - logistics lies in its unrepeatable warehousing and distribution model and a courier team of up to 190,000 people, which brings high-quality and reliable service quality to the company. At the same time, JD.com also achieved a 72-h on-time rate, ensuring fast delivery of logistics and increasing the liquidity of logistics warehouses. In short, the improvement of Jingdong's liquidity is inevitable, and its overall economic scale will show an increasing trend in the future.

3.2 ROI Analysis

JD.com's Return on Shareholders' Equity (ROE), Return on Capital Utilization (ROCU) and Return on Total Assets (ROTA) can reflect the company's return on investment. Table 2 shows that from 2017 to 2020, shareholders' equity has increased, including capital

Table 1. Monetization analysis for JD from 2017 to 2020

Deadline	12/2017	12/2018	12/2019	12/2020
Current ratio (times)	0.97	0.87	0.99	1.35
Quick ratio (times)	0.62	0.5	0.58	1.01

Table 2. Return on investment for JD from 2017 to 2020

Deadline	12/2017	12/2018	12/2019	12/2020
Return on shareholders' equity (%)	-0.29	-4.17	14.88	26.34
Return on capital utilization (%)	-0.02	-2.82	10.18	19.9
Return on total assets (%)	-0.08	-1.19	4.69	11.7

utilization and total assets. First of all, JD.com will experience negative economic growth in 2017 and achieve high returns in 2020, which may be related to shareholders' trust in JD.com. JD.com's return on capital has improved. This may be due to the expansion of shareholders' capital increase and the improvement of Jingdong's operating capabilities. The company's return on investment is trending well, which means JD.com's share price has also risen. Second, a rising stock price means that shareholder returns increase with the stock price. Therefore, shareholders can get more income from JD.com. As shown in Table 2.

3.3 Solvency Ability

The size of a company's solvency is affected by many factors. For example, the turnover rate of fixed assets, the monetary policy of lenders, and economic and political stability. We analyze the solvency of companies from the data in Table 3. For example: gearing ratio, current ratio and quick ratio to analyze the solvency of the company. The current ratio of JD.com from 2017 to 2020 is calculated as 0.97, 0.87, 0.99, 1.35. These values are all lower than the current standard value of 3. The five-year current ratio has an overall upper-body trend, indicating an increase in current assets relative to current liabilities. This shows that JD.com has better overall liquidity. Second, the quick ratio quantifies the ability of a company to meet its current liabilities immediately. The speed ratio of JD.com is calculated to be 0.62, 0.5, 0.58, 1.01, showing an overall upward trend, but its solvency is weak. Among long-term debt equity and total debt equity, long-term debt/shareholder's equity was 20.99, 16.52, 19.03, and 12.15, respectively. Total debt/equity was 45.75, 24.12, 22.93, 16.82, respectively. Showing a downward trend. These findings suggest that JD.com's indebtedness is on a downward trend. In summary, we have noticed that JD.com is facing debt reduction and will develop in a positive direction in the future.

Table 3. Solvency ability for JD from 2017 to 2020

Deadline	12/2017	12/2018	12/2019	12/2020
Long-term debt/shareholders' equity (%)	20.99	16.52	19.03	12.15
Total debt/shareholders' equity (%)	45.75	24.12	22.93	16.82
Total debt/capital utilization (%)	36.18	16.33	15.68	12.71

Table 4. Profitability analysis for JD from 2017 to 2020

Deadline	12/2017	12/2018	12/2019	12/2020
Operating profit margin (%)	−0.23	−0.57	1.56	1.65
Profit before tax (%)	0.03	−0.51	2.37	6.81
Marginal profit rate (%)	−0.04	−0.54	2.11	6.62

3.4 Profitability Ability

We can see from Table 4 that JD's operating profit margin (%) from 2017 to 2020 is −0.23, −0.57, 1.56, and 1.65, respectively. It can be seen that the company was at a loss in 2017 and 2018, while it was profitable from 2019 to 2020. The figures show that the company's operating profit is developing in a positive direction on the whole. In addition, the present study calculated the profit before tax (%) of JD Company from 2017 to 2020, and the results were 0.03, −0.51, 2.37, and 6.81, respectively. These tables suggest that JD Company's profit before tax is increasing year by year. Finally, we get the marginal profit rate (%) respectively −0.04, −0.54, 2.11, 6.62. The marginal profit rate is the marginal income minus the marginal cost. This set of data shows that JD's marginal profit ratio is increasing year by year, and JD's e-commerce and logistics production units are increasing every year. The third quarter of 2021 outnumbered expectation for JD. There are two main reasons. Firstly, the company's turnover exceeded the indicators given by the management, and these incomes mainly came from logistics services, advertising revenue, self-operated live-electricity income and self-operated non-electrical income. Secondly, JD's profitability increased. The gross profit margin of merchandise increased from 5.9% to 7.6%, and the retail segment increased from 2.6% to 4.0%. This can directly show that JD's operating capacity is increasing, and the company's profit is increasing. The company's profitability in the future may exceed management's requirements. Drawing on the above analysis, JD.com's profit tends to rise steadily.

4 Conclusion

This research analyzes JD's financial statements and calculates the current ratio, quick ratio, long-term equity, short-term equity, total equity, ROE, ROCU, ROTA, operating profit margin, profit before tax, and marginal profit rate. These ratios are then used to

analyze the monetization ability, return on investment, solvency ability, and profitability ability. Our analysis and findings show that JD Company has good profitability.

First, current ratio and quick ratio are important indicators to measure monetization ability. Through these two ratios, the cash flow and solvency of the company can be directly reflected. The increase in JD's liquid assets and the decrease in current liabilities resulted in an increase in the company's rapid ratio. This shows that the ability of JD's current assets that can be immediately realized to repay current liabilities is increasing. The steady growth and expansion of JD's scale have resulted in an increase in its total assets and a decrease in liabilities, indicating that the company's operations have stabilized. The company has the cash flow to expand in size.

Secondly, JD realizes the dual mode of e-commerce and logistics, and occupies a strong market in China. JD.com has been positively influenced by festivals such as Double 11 and Double 12. According to data, JD's single-day revenue exceeded 100 billion yuan on Double 11. In terms of service platform merchants, the 4-h transaction volume of over 4,000 computer digital open platform merchants exceeded last year's double 11 full-day transaction volume [10]. JD's capital volume tends to climb. ROE, ROCU, and ROTA also show that JD's assets have increased in size and profitability has increased. JD's annual investment report is increasing year by year, and its debt solvency is increasing. Figure 5 shows that the company has been profitable since 2019.

Finally, the increase of JD's profitability is inseparable from the supervision of internal management and Mr. Liu (CEO) respects employees and JD's excellent corporate culture. An enterprise with an excellent corporate culture can reduce employee dismissal, employee turnover rate, and ensure the stability of internal management. The internal stability of the enterprise can promote the stable operation and development of the enterprise.

In summary, it is observed that after 2019, JD's various interest rate indicators show an optimistic trend. This study however has some limitations. The current research did not delve into other ratios that may have an impact on the future development of the JD company. Drawing on our analysis and findings on JD company's financial ratios, we hope that readers and stakeholders can better understand the company's financial reports and hence generate valuable insights for investment decisions.

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