

Study of Alibaba's Profit Model from the Perspective of Supply Chain Integration based on Information Technology and Financial Big Data analysis

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Abstract. Supply chain management profitability model mainly refers to enhancing the profitability of enterprises by improving the market profit margin of products, and reducing production cost and distribution cost. Taking Alibaba Group as an example, using information technology, this paper analyzes how to use information technology to integrate Alibaba's supply chain system to form an integrated supply chain management model. Then, with the help of big data technology, this paper also analyzes its profit model from aspects of the operating income, profitability and operating capacity based on financial big data in recent three years, and draws the conclusion that though Alibaba's operating income increases in recent years, the profitability and operating capacity have weakened. According to the analysis of the Alibaba's profit model from the perspective of supply chain management, two recommendations are put forward. One is that Alibaba should distribute its staff according to the market so as to save costs and improve the level of information technology services and customer service efficiency of the enterprise. The other is that Alibaba needs to integrate supply chain management system to establish an alliance utilizing various information technologies.

Keywords: supply chain integration; profit model; information technology; financial big data

1 Introduction

Founded by Yun Ma in Hangzhou, Zhejiang Province in 1999, Alibaba is a well-known brand in the e-commerce industry in China that currently operates B2B businesses around the world, and is the largest and most active online marketplace for international trade and online community for international businessmen to exchange business. Alibaba, as the leading domestic e-commerce platform, has formed Alibaba's unique intelligent supply chain system, which can provide different supply chain management solutions for different merchants according to the different characteristics they possess, and various departments strengthen cooperation through synergy to achieve end-to-end supply chain services.

The upstream of Alibaba's entire supply chain system is closely related to the decision-making level of Alibaba's business, including modules for marketing products, prices, marketing

campaigns, marketing strategies and Alibaba's supply chain planning. The upstream passes the results of its processing to the downstream modules in the supply chain system. This includes order status, inventory management, inventory replenishment operations, etc. Together, the upstream and downstream form the structure of the entire supply chain system.

2 Literature Review

Lee and Joly (2000) conducted an in-depth study on the correct management and utilization of information in the supply chain, suggested that enterprises and society in various countries should pay great attention to the correct management and utilization of information in various parts of the supply chain. [1] Kleijnen (2009) conducted an in-depth study on the management of the joint inventory production model of multiple nodes in the enterprise supply chain management system [2]. Zhao Wendan, and Wang Dingwei (2010) established a three-level enterprise supply chain strategy model mainly based on matlab/simulink environment [3]. Liao Dongsheng and Liang Benguang (2017) also conducted an in-depth study on Wal-Mart's just-in-time system of inventory management model [4]. Michael Rappa (2001) argues that the position of profitability in the firm's supply chain determines whether the firm can be profitable or not. [5]. Chen Xinxu and Liu Shengqiang (2018) state that the profitability model includes two dimensions, the strategic dimension and the tactical dimension [6]. Bing Liu (2018) states that the e-commerce profitability model is a system that combines the production and operational activities of the Internet with traditional businesses and distributes the benefits to the relevant participants [7].

3 Alibaba's supply chain integration model based on information technology

With the help of information technology, Alibaba has gradually formed an efficient and collaborative enterprise supply chain management system. The new retail supply chain platform built by Ali - "Smart Supply Chain" has made great changes to the supply chain in terms of its business processes, output products and participating transaction subjects, which can effectively help enterprises to quickly complete big data analysis, upgrade services, supply and demand docking and replenishment, optimization of distribution management paths, diversified marketing and other aspects, effectively improving the efficiency of distribution.

Ali's intelligent logistics network, the Cainiao network, whose main business is to provide "data navigation" for other logistics and express delivery companies. Cainiao network allows "Alibaba" in the field of intelligent logistics services to further make up for their shortcomings: in the Alibaba platform, its Alibaba intelligent logistics network can be connected to more than 1000 districts and counties across the country, providing same-day and next-day fast delivery services. In addition, T-mall has also taken the lead in the field of seafood delivery by setting up fast logistics for 1-hour delivery. Alibaba not only provides massive amounts of data about suppliers' supply chains and distribution terminals, but also intelligently collects and analyzes data about the flow and distribution of goods using many kinds of information technology, so as to help enterprise make the most effective decision.

4 Alibaba profit model Analysis based on financial big data

4.1 Analysis of operating income

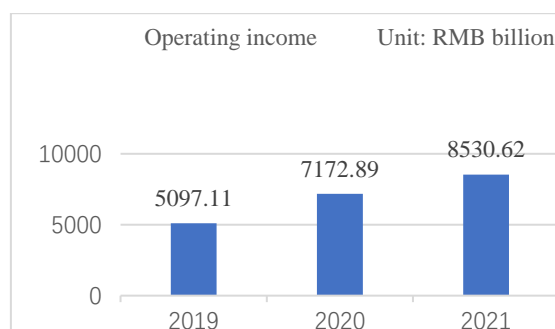


Fig. 1. Diagram of operating revenue growth in 2019-2021
Source: Based on data compiled by Flush

In 2019, the operating revenue is 509.711 billion yuan: in 2020, the operating revenue is 717.289 billion yuan, and in 2021, the operating revenue is 853.062 billion yuan. Alibaba's 2019-2021 operating revenue growth diagram is shown in Fig.1.

In 2019, the China Commercial segment accounted for 69.05% of the Company's revenue, with the proportion rising to 69.94% in 2020, amounting to RMB 214.02 billion, or 69.48% in 2020, reflecting the continued excellent performance of Alibaba's core business and further demonstrating the positive momentum of rapid new business development, which is expected to provide more Alibaba customers as well as partners to bring long-term sustainable growth and value, expanding Alibaba's total target market.

The cloud computing business will account for 7.91% in 2019, 8.44% in 2020 and 8.74% in 2021. For the third consecutive year, Alibaba's cloud computing revenue showed relatively high levels, driven by several factors such as an increase in the number of customers paying for it and an improved revenue mix for the company due to value-added product launches. Ali cloud computing is not limited to driving big data within Ali, but has also helped other companies to better learn and leverage big data. In the future, data will be not only drive the product sales and service or marketing phases, but also the product phase, supply chain phase, warehouse logistics and production phase.

Digital media and entertainment will account for 5.71%, 4.35%, and 3.78% of total revenue in 2019, 2020, and 2021, respectively. Alibaba has laid a solid foundation for its digital growth by investing in managing technology, talent and entertainment activities. Ali currently bridges the relationship between merchants, celebrities, agencies, broadcast platforms and consumers through big data analysis of annual active consumer segments to understand consumer interests as well as preferences in order to mutually help seize opportunities and identify needs for eventual sustainable entertainment commercialization.

Innovation Strategy and Other as a percentage of revenue in 2019-2021 are 0.50%, 0.32%, and 0.33%, respectively. Alibaba has gained a lot by continuously increasing its investments in

science and technology, new retail and globalization. The rapid growth in performance provides Alibaba with significant growth potential to better understand the growth in consumption in emerging markets.

The growth in Alibaba's operating income is mainly because of that Alibaba has successfully invested in a series of projects with long-term growth potential and development potential in the past. One example is the increased investment in IT development, cloud computing, logistics, digital entertainment and local lifestyle information services while pursuing a new retail development strategy. Through this series of investments, Alibaba's e-commerce platform has further developed into a leading player in China's retail industry, contributing to the rapid growth of consumption in emerging markets.

Alibaba's operating revenue and structure for 2019-2021 are shown in Table 1.

Table 1 Alibaba 2019-2021 Operating Revenue Structure Unit: 100 million yuan

Projects	2019		2020		2021	
	Amount	Percentage of	Amount	Percentage of	Amount	Percentage of
China Business	3519.77	69.05%	5016.83	69.94%	5927.05	69.48%
International Business	339.17	6.65%	488.51	6.81%	610.78	7.16%
Local Life Services	296.6	5.82%	354.42	4.94%	434.91	5.10%
Debutante	222.33	4.36%	372.58	5.19%	461.07	5.40%
Cloud Computing	403.01	7.91%	605.58	8.44%	745.68	8.74%
Digital Media & Entertainment	290.94	5.71%	311.86	4.35%	322.72	3.78%
Innovation strategy and other	25.29	0.50%	23.11	0.32%	28.41	0.33%

Source: Based on data compiled by Flush

4.2 Profitability Analysis

The net asset margin reflects the relationship between a company's invested assets and its return on investment, and how well a company manages its staff.

As shown in Table 2, Alibaba's net asset margin declined from 7.84% in FY19 to 6.41% in FY20 and then to 2.29% in FY21, implying that Alibaba's profitability is less stable, its profitability is relatively weaker, and it is likely that it does not have enough capacity to maintain and improve its operating and debt-servicing capabilities by accumulating sufficient capital. Net asset margin will be an important factor in how Alibaba attracts significant investment.

Table 2 Alibaba Group Profitability Indicators Analysis 2019-2021

Indicators	2019	2020	2021
Net Profit	140.350 billion	1432.84 billion	47,079 million
Net Asset Margin	7.84%	6.41%	2.29%
Operating Margin	18.1%	12.5%	11.1%

Source: Based on data compiled by Flush

The decline in operating margin, which has been decreasing from 18.1% in 2019 to 11.1% in 2021, indicates that the company's cost expenses are high or have increased significantly, a situation that may be due to factors such as increased operating costs for Alibaba to develop new products, high operating costs or reduced investment returns during this period. Ali needs to broaden its own sales channels and further strengthen its operational management level.

4.3 Operating Capacity Analysis

Table 3 Analysis of Alibaba Inc. operating capacity indicators, 2019-2021

Indicators	2019	2020	2021
Accounts receivable turnover ratio (times)	29.7	31.6	28.9
Current asset turnover ratio (times)	1.23	1.12	1.10
Fixed asset turnover (times)	0.6	0.7	0.8
Total assets turnover (times)	0.44	0.49	0.51

Source: Based on data compiled by Flush

As shown in Table 3, Alibaba's accounts receivable turnover ratio decreased from 29.7 in 2019 to 28.9 in 2021, the current asset turnover ratio decreased from 1.23 in 2019 to 1.10 in 2021, fixed asset turnover ratio increased from 0.6 in 2019 to 0.8 year by year, and Alibaba's total asset turnover ratio slowly increases from 2019 to 2021, but remains at 0.5 or below, a situation that will lead to adverse effects such as reduced profitability of enterprises and lower production motivation of laborers. In response to this Alibaba should enhance its corporate dynamics by operating with thin margins, improving production capacity, opening up new sales channels, and allocating and utilize fixed assets rationally.

5 Conclusions and recommendations

Though the operating income of Alibaba's increases, but its profitability and operating capacity have weakened in recent years, which meaning that operating managers are required to work harder to be effective. Relative to the same type of company, operating capacity is lower and productivity can be lower too. Overall, the further growth of a company depends in large part on the interplay between its profitability and operating capacity.

Over the past few years, Ali has been actively pursuing new retail strategies, establishing traditional offline retail structures and investing in some well-known retailers, demonstrating that Alibaba's investment in new retail structures is to some extent effective and the development path is sound.

Supply chain competition is an important part of business competition. In order to better enable Alibaba Group to continue to survive and grow, it must continue to improve the core competitiveness of Alibaba Group by establishing and improving its existing supply chain management model. By studying Alibaba's profitability model from the perspective of supply chain management based on financial big data, the following insights can be drawn.

(1) Alibaba should distribute enterprise staff according to the market, which can save costs and at the same time effectively improve the level of information technology services and customer service efficiency of the enterprise.

(2) In order to effectively connect, communicate and cooperate among companies, Alibaba needs to integrate supply chain management system to establish an alliance utilizing various information technologies.

Alibaba will not stop exploring and innovating for "new retail", and will have more opportunities to integrate more high-quality platforms and resources in China to build and create a revolutionary "future retail" with the help of information technology.

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