Comparative Study on Finance and Business of E-commerce Industry Companies

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Abstract. As an important part of the global economy, e-commerce has taken deep changes over the past two decades. Nowadays, the global e-commerce market has transitioned from the germination and rapid development period to the maturity and diversification stage, featuring wide application of advanced technology and the emergence of innovative business models. Pinduoduo, JD.com, and Alibaba, three giant companies in China's e-commerce industry, represent successful examples in the current market. Considering solvency, profitability, operation, and development capability, they present unique strengths and face certain challenges in financial performance. Their different choices in the business model reflect their market positioning, competitive advantages, and future development trends. The current e-commerce industry faces challenges including increasing market competition and growth in personalized demand. Analyzing successful cases of Pinduoduo, JD.com, and Alibaba provides valuable references for e-commerce market participants. It emphasizes the importance of continuous innovation, optimized financial management, and enhanced core competitiveness in a dynamic market environment.

1 Introduction

E-commerce, standing as a cornerstone of the global economy, has undergone a profound transformation over the past two decades. Driven by advancements in technology and the global proliferation of internet access, e-commerce is reshaping traditional business models and promoting innovations in the industry. While presenting new opportunities for the economy, market participants are also facing increasingly severe challenges including intense market competition, rapid technological iteration, and the growing personalized demands. Pinduoduo, JD.com, and Alibaba, three leading bodies of the Chinese e-commerce economy, occupy pivotal positions in the global e-commerce market and possess robust capabilities. By incorporating distinct financial patterns and building a multifaceted e-commerce ecosystem, their development provides valuable insights into the diverse strategies and financial structures that drive success in the e-commerce market, as well as a better understanding of the dynamics and future trends of the industry.

E-commerce is an industry where products and services are sold on electronic systems, and it has a transformative influence on modern business practices. Given the prevailing state of contemporary technology, Kedah points out that the prosperity of e-commerce becomes

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an efficient approach to support the success of enterprises and has an ongoing influence on the world of business, by enabling them to engage with the worldwide customer base, cutting down operational costs, provide consumers with more accessible channels and ultimately enhance competitiveness [1]. When it comes to its development, Ivanova et al. regard digitalization as one of the key drivers in boosting a country's economic competitiveness, under which the spread of information technology fosters the newly emerging Direct-to-Customer (D2C) model and creates conditions for the innovative orientation of business [2]. Lari et al. also conclude that artificial intelligence exerts a profound effect on the e-commerce industry and is set to introduce new trends in the future. Those key applications of AI in e-commerce offer insights into customer experience improvement, internal business operation optimization, and fraud combating. Enterprises are also expected to invest more in such sectors in the future [3]. When looking into the future, Mohdahar and Shaalan deduce that e-commerce systems solutions present a promising paradigm for providing business solutions and play an essential part in envisioning omnichannel systems [4]. In the context of the newly emerging economy, e-commerce businesses need to consider more factors in financial management. Veronika concludes that most businesses prefer a conservative strategy, which emphasizes a higher level of working capital and liquidity, at the expense of lower profitability, intending to reach stabilization by sample assessment. By contrast, the results from the questionnaire inquiry reveal that most enterprises are primarily oriented towards growth and expansion, so an aggressive strategy is suggested with the opposite focus from the previous one [5]. While e-commerce offers a range of advantages at the consumer, organizational, and societal levels, limitations associated with both technological and non-technological factors also exist, which should be carefully considered when developing an e-commerce strategy. These limitations include the absence of physical product interaction, limited collaboration within the value chain, substantial investments required for the security sector, and technological hurdles due to the need for universal standards, which increases costs and dependency on website functionality [6].

Using the five-point DuPont model, Qureshi and Yadav conclude that both Alibaba and Amazon are highly profitable companies and Alibaba experienced faster growth compared to Amazon. Alibaba did better on net income growth, E.B.T. growth, EBIT growth, and equity leverage factors, while Amazon generated more sales at lower investment and a re-rise of R.O.E. from the year 2018. They also point out that investors prefer business growth and increased return on equity [7]. Regarding Amazon, Lin considers its success to three key strategies, Amazon Marketplace, Prime membership service, and FBA logistics service, which creates a subtle balance between sellers' needs and customer experience by conducting an equilibrium between lower cost structure and lower prices. He also considers the wide-ranging distribution system and standardization of the marketplace as effective approaches to maintaining an increasing company strength and high-ranking industry position [8]. Alibaba, Pai U., and Kumar owe their success in becoming a conglomerate to the right insights with the business model, major businesses, financial status, and social responsibility, which enhance large devotion to research and development, diversified businesses, and company brand building. Of course, it still shows weaknesses in operational performance and dependency on the domestic market [9]. Looking closely at logistics strategy and competitive strategy, Fan et al. point out that Alibaba builds a unique business model that will be hard to copy. Cost-leading strategy leads to a low-cost and high-profit balance for the enterprise, although it still faces risks of lower service quality. The diversification strategy and construction of the business ecosystem which involves comprehensive practices from Taobao to payment systems to cloud computing ensure a continuous expansion of product fields and enhancement of competitiveness [10].

This paper focuses on the current development status of Pinduoduo, JD.com, and Alibaba, three highly representative enterprises in China's e-commerce industry. Through an in-depth analysis of the financial performance and business model of three companies, the paper tends to explore a link between their finance and business, their competitive strategies, and how can these strategies help companies stand out in the intensely competitive e-commerce market, thus seeking the successful passwords of enterprises in the mature and diversified development stage of the industry. Among all those analyses, this paper also aims to explore the development trend and prospects of the industry, providing useful examples and references for other market participants.

2 Development status of the E-commerce industry

2.1 Development history

The development history of the e-commerce industry can be summarized into the following key stages: the germination stage, the rapid development stage, and the maturity and diversification stage.

The germination period covers the period from the 1960s to the 1990s. With the introduction of Internet technology and the emergence of electronic data exchange technology, embryonic e-commerce began to form but wasn't popularized at the time. Given the constraints of technology and costs, e-commerce at this stage primarily focused on the B2B model, with only a few instances of B2C and C2C models emerging, and it was during this period that Alibaba was registered and established in the Cayman Islands, opening a precedent for global B2B e-commerce model. Meanwhile, the development of Internet infrastructure and the online environment were progressively advancing [11].

Entering the 21st century, e-commerce ushered in a period of rapid development. With the rapid development of Internet technology, commercial giants such as Amazon, eBay, Alibaba, and JD.com have risen one after another, and supporting services including electronic payment and logistics distribution have gradually improved. This period viewed the rapid expansion of the e-commerce market, the innovation of various business models, and the continuous growth of user scale, while the competition has become increasingly fiercer.

The maturity and diversification stage refers to recent years, during which e-commerce has penetrated all aspects of people's lives and deeply influenced customers' shopping habits, becoming a crucial component of modern business. The rise of mobile e-commerce and cross-broader e-commerce breaks through geographical limitations, and the continuous application of advanced technologies such as artificial intelligence and big data also drives the level of intelligence and personalization in the industry. During this phase, various e-commerce platforms are accelerating technological and model innovations that drive the digital transformation and upgrading of other industries. The e-commerce industry faces opportunities and challenges as well.

2.2 Current development status

Currently, the overall e-commerce market is experiencing an exponential growth. The current global e-commerce market has already been considered to cover a huge range, and it is also expected to continue growing in the following years. This growth is fueled by several factors, including increased internet penetration, rising consumer confidence in online shopping, and the development of advanced technologies. In the meantime, technological progress is making essential contributions to business model innovation. The applications of advanced technologies including artificial intelligence, big data, blockchain, 5G, and the Internet are improving the intelligence level and service quality of e-commerce, thus stimulating the emergence and prosperity of cross-border e-commerce and sharing e-commerce [12]. Moreover, the e-commerce landscape is becoming highly diverse. While major contributors like China and the United States still leading the advancement of the industry, emerging markets like Latin America and Southeast Asia are also particularly noteworthy, showing promising market potential because of large populations and increasing access to technology [13].

It is undeniable that in recent years, the e-commerce industry is facing both opportunities and challenges. The continuously upgrading market provides a strong driving factor for the economy, but increasing global economic uncertainty also presents challenges. Intense market competition, rising operating costs, cybersecurity problems, and other issues pose pressure on participants in the industry to navigate related challenges to capitalize on the available opportunities.

2.3 Development history of Pinduoduo, JD.com and Alibaba

As powerful e-commerce companies, the development process of Pinduoduo, JD.com, and Alibaba is a microcosm of the e-commerce economy, with models and strategies also reflecting the current and future trends of the industry.

Founded in 2015 and listed on the Nasdaq Stock Exchange in 2018, Pinduoduo quickly attracts users through the way of "group booking" and "social fission". Through preferential policies and supply chain optimization, it focuses on the layout of sinking markets, and now launches "Duoduo grocery", "TEMU" and other businesses, with a solid market position and good financial position, showing strong development potential. JD.com was founded by Qiangdong Liu in Beijing in 1998 and listed on the Nasdaq stock exchange in 2014. It adheres to the self-operated model and builds its own logistics distribution system. Now its business involves major sectors including retailing, logistics and technology, and actively expanding overseas markets [14]. Alibaba was co-founded by Jack Ma and other 17 partners in Hangzhou in 1999 and listed on the New York Stock Exchange in 2014. With the mission of “no hard business in the world”, Alibaba is now a leader in the Chinese e-commerce industry and also an important provider of cloud computing and big data services. It currently operates several businesses including Taobao, Tmall, Alibaba Cloud, and Cainiao Network, forming a diversified business ecosystem.

3 Financial analysis

3.1 Profitability capability

Gross profit margins refer to the profit ratio of the enterprise after deducting direct cost from sales revenue, reflecting the initial profitability capability of the enterprise. Net profit margins are the net profit ratio after all costs and expenses are deducted from sales revenue, which is the indicator of the enterprise's overall operation efficiency.

The data shows that the gross profit margins of Pinduoduo, JD.com, and Alibaba are maintained at a relatively stable level, indicating their good adaptation to the development trend of the industry and relatively high competitive ability in the economy. There are still slight differences between the three companies. While Pinduoduo's gross profit margins remain at a high level, exceeding 60% in four years, JD.com’s remains only about 14%. This may be because Pinduoduo attracts a large number of users through the unique group shopping model, reducing user acquisition costs and establishing a low-cost brand image through effective marketing strategies, enhancing user stickiness and promoting sales growth. However, JD.com's self-operated model brings about challenges in cost control, including huge capital investment, large cost channel construction and more, which results in relatively low gross profit margins. Alibaba's gross profit margin remaining at about 40% benefits from its large business ecosystem, which provides a variety of income sources.

The table also shows a rise in Pinduoduo's net profit margins and a decline in JD.com and Alibaba, and they are expected to optimize their product structure and control costs generated from procurement, logistics and other aspects to reach sustainable development.

Table 1. 2020-2023 Pinduoduo, JD.com and Alibaba's profitability capability indicators [15-17].

Year	Gross Profit Margins			Net Profit Margins		
	Pinduoduo	JD.com	Alibaba	Pinduoduo	JD. com	Alibaba
2020	67.57%	14.63%	44.60%	-12.07%	6.62%	27.54%
2021	65.40%	13.56%	41.28%	8.27%	-0.47%	19.98%
2022	75.90%	14.06%	36.76%	24.16%	0.93%	5.52%
2023	62.96%	14.72%	36.72%	24.24%	2.14%	7.55%

3.2 Debt-paying capability

The current ratio is the ratio of aggregate current assets to aggregate current liabilities and serves as an important indicator of an enterprise's ability to repay short-term debt, especially the ability to realize current assets. The data shows that Pinduoduo's current ratio has experienced an increase, from 1.78 in 2020 to 1.94 in 2023, indicating an improvement in its short-term solvency capability. The current ratio of Alibaba has faced fluctuation but is still maintained at a relatively normal level. JD.com's current ratio has been declining in recent years, presenting challenges to short-term solvency. It can solve the problem by enhancing capital structure by adopting diversified financing methods, such as appropriately reducing the proportion of short-term liabilities and increasing the proportion of long-term debt, and optimizing asset allocation to improve asset liquidity and profitability.

Asset-liability ratio represents the ratio of the enterprise's total liability to total assets and is a comprehensive index to evaluate the debt level of the company. This indicator reflects how much of the total assets are raised through borrowing, and also measures the extent to which companies protect the interests of their creditors. The data shows that Pinduoduo experiences a decline in the asset-liability ratio, maybe because of a sacrifice of market expansion. Meanwhile, JD.com and Alibaba's asset-liability ratio maintains a comparatively stable value, indicating their maturity in capital management ability and market adaptability.

Table 2. 2020-2023 Pinduoduo, JD.com and Alibaba's debt-paying capability indicators [15-17].

Year	Current Ratio			Asset-liability Ratio		
	Pinduoduo	JD.com	Alibaba	Pinduoduo	JD.com	Alibaba
2020	1.78	1.35	1.91	62.13%	47.52%	33.00%
2021	1.72	1.35	1.70	58.55%	50.30%	35.89%

2022	1.85	1.32	1.66	50.33%	53.95%	36.17%
2023	1.93	1.16	1.81	46.21%	52.88%	35.94%

3.3 Development capability

The total growth rate reflects the financial health status and development speed of the enterprise. The data shows that the total assets and operating revenue of the three companies are continuously increasing, but all of them experience a decline in growth rate on the whole. The decline of JD.com and Alibaba is particularly obvious, falling below 10% in 2023. Pinduoduo showed high growth rates above 90% in 2020 and experienced a significant downward trend in the following two years, but it achieved some growth in 2023, indicating its good adjustment ability and development ability, which will add confidence for investors and shareholders.

The overall decline in the growth rate indicates uncertainty and increasing downward pressure on the economic situation. This requires enterprises to pay close attention to cost control and efficiency improvement and adapt suitable strategies to follow up the market environment and maintain competitive advantages as well.

Table 3. 2020-2023 Pinduoduo, JD.com, and Alibaba's development capability indicators [15-17].

Year	Total Assets Growth Rate			Operating Revenue Growth Rate		
	Pinduoduo	**JD. com**	**Alibaba**	**Pinduoduo**	**JD. com**	**Alibaba**
2020	94.48%	62.59%	36.05%	97.37%	29.28%	35.26%
2021	48.68%	17.58%	28.73%	57.92%	27.59%	40.72%
2022	24.71%	19.89%	0.32%	38.97%	9.95%	18.93%
2023	32.89%	5.66%	3.39%	89.68%	3.67%	1.83%

4 Business analysis

Pinduoduo, JD.com, and Alibaba, the three giants of China's e-commerce industry, have shown different characteristics in their businesses. Their distinctive advantages in terms of market positioning, business model, supply chain management, and marketing strategy have promoted them to stand out in the highly competitive e-commerce industry, and they will continue to play an important role in the e-commerce economy in the future, stimulating industry development and innovation.

Pinduoduo has not been established for a long time, but it has rapidly gained a foothold in China's e-commerce industry and become a dark horse. Its success benefits from appropriate market positioning, novel marketing strategies as well a suitable business model. Focusing on sinking markets and residents with relatively low wage incomes, Pinduoduo provides comparatively low-price commodities that successfully meet the needs of the general public and ensure a stable market foundation. Meanwhile, it creatively promotes a group-buying model, which not only provides group discounts but also builds social networks among consumers, catering to the common psychological preference of current society [18]. The C2M business model also plays a vital role in Pinduoduo ' s success by directly connecting customers with manufacturers, thus reducing cumbersome intermediate links and introducing personalized products to consumers [19].

Self-operated mode and self-built logistics system are regarded as core businesses of JD.com, which shows strong competitiveness in many fields including retail, logistics, and finance. On one hand, by providing integrated supply chain services and focusing on the convenience and timeliness of logistics services, JD.com successfully achieves the effect of reducing logistics costs and improving service quality. In particular, the wide applications of intelligent technologies in key links including warehousing, sorting, transporting, and distributing not only improve operational efficiency but also promote the intelligent upgrading of the logistics industry. On the other hand, the self-operation mode is characterized by the full participation and control of JD.com from commodity procurement, storage, and sales to distribution, providing consumers with high-quality goods and services.

As one of the leading companies in the global e-commerce industry, Alibaba is highly spoken of its diversification strategy, which includes category diversification and business diversification. Nowadays, Alibaba’s business covers a variety of fields involving e-commerce, finance, cloud computing, and more, as well as financial brand Ant Financial and logistics brand Cainiao Station, building a round commercial ecosystem. Such an ecosystem not only brings more sources of income for Alibaba and provides it with more comprehensive support, but also expands brand influence and creates a profound market base, contributing to its powerful competitiveness among e-commerce enterprises [10].

It shows that each enterprise has its unique business model and competitive advantages, presenting a variety of business strategies and market adaptability. Among the fierce market competition, enterprises need to constantly innovate and seek differentiated development paths to better meet customer needs and achieve sustainable development.

5 Conclusion

This paper makes an in-depth comparative study of the financial and business conditions of the three giants in China’s e-commerce industry -- Pinduoduo, JD.com, and Alibaba, and reveals their unique financial conditions and business strategies, helping them stand out in the fierce market competition among this maturity and diversification stage of e-commerce industry development.

The study finds that all three companies have demonstrated unique financial strategies and business models to adapt to rapidly changing market conditions throughout their respective development histories. Pindudouo successfully rises rapidly in a short period and occupies a place in the sinking market, taking advantage of innovative usage of “group buying” and “social fission” models. It focuses on cost control and market expansion, provides cost-effective goods to meet the basic needs of consumers, and shows a strong profitability capability and good development trend. JD.com shows strong competitiveness in many fields including retail, logistics, and finance, by its self-built logistics system and self-operate model, but still faces financial fluctuations on profit gains. As a leader in the global e-commerce industry, Alibaba builds an integrated business ecosystem, which brings diversified revenue sources for the company, but also enhances brand influence, though facing some operational performance and market dependence issues. It shows that financial performance serves as a direct indicator of an enterprise’s business strategies, while business model plays an important role in improving a company’s financial condition.

Above all, this study not only deepens understanding of the current development status and future trends of the Chinese e-commerce industry but also provides insights for future market participants. Under the increasingly intense market competition and technology iteration, e-commerce companies are required to continuously innovate and optimize strategies, to better meet consumers' needs and achieve sustainable development.

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