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Direct and Indirect Implications of the COVID-19 Pandemic on Amazon's Financial Situation

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Abstract: We provide theoretical and empirical insights into the impact of COVID-19 on Amazon's financial position. A longitudinal case study of Amazon's financial situation during the 2016–2020 period, and time-series analysis, ratio analysis, and DuPont analysis, are employed as a quantitative methodology to explore Amazon's financial situation changes before and after the COVID-19 pandemic. As for the robustness of the in-depth analysis, we compare Amazon's financial performance and position with Walmart. The result shows that the COVID-19 pandemic did not have a huge negative impact on the companies' financial performance because of its promotion of their development. However, this study provides an in-depth analysis of the influence of COVID-19 on Amazon's financial situation, which financial aspects are most affected by COVID-19, which are not, and the company's response to COVID-19. Therefore, this study sheds light on the accounting literature to demonstrate the impact of COVID-19 on Internet companies' financial performance and provides some reference values for subsequent academic research.

Keywords: COVID-19; Amazon; financial statement analysis; DuPont analysis



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1. Introduction

The rapid growth of the global economy and electronic technology has greatly stimulated the use of the Internet worldwide. The number of Internet users has doubled in the past few years (Nielsen 2010), which has given rise to a host of related industries and companies, Amazon is one of these most typical companies. Amazon has built a near-perfect platform-based market, which has become more and more popular in recent years (Kapoor and Agarwal 2017). However, during the COVID-19 outbreak in 2019, Amazon's business had been hard hit by the COVID-19 pandemic when it was booming globally. In contrast, Amazon applied a competitively advantageous, low-cost product differentiation strategy to expand their business globally with political and environmental adjustments (Onyusheva and Seenalasataporn 2018). The world is struggling with the greatest public health emergency of its time, generating economic, social, and human crises (Guterres 2020). According to WTO's relevant files published in 2020, global trade in goods would be 32 percent lower than before (Maliszewska et al. 2020). Amazon is no exception; its various businesses have been hit to varying degrees during the COVID-19 pandemic. According to Airports Council International (ACI)'s data, the COVID-19 pandemic has led to a 40% drop in global air traffic, which causes a lot of trouble for Amazon, a company that relies heavily on transportation. Not only the air transportation industry but also a series of links including land transportation, customer pick-up, door-to-door delivery, etc., have been affected by the COVID-19 pandemic response measures (Gray 2020). However, the COVID-19 pandemic has not only had a negative impact on Amazon. Cabrera-Sánchez et al. (2020) demonstrate that the outbreak of the pandemic may greatly stimulate the development of the freight industry, and the e-commerce industry may become the biggest

winner. Furthermore, Amazon has appropriately balanced profit, Corporate Social Responsibilities (CSR), and the implementation of Sustainable Development Goals (SDGs), especially, climate change, environment, carbon emissions, and other natural measures (Yu et al. 2022).

On the whole, the COVID-19 pandemic not only brings challenges to Amazon but also opportunities. Therefore, by applying a trend analysis, ratio analysis, and Dupont analysis, we deeply analyze Amazon's financial situation, various financial indicators, and business systems. Furthermore, through the vertical comparison, we correctly evaluate Amazon's financial situation, various financial capabilities, the changing trends of net interest rate of assets and equities, and find out the general financial changes of Amazon during the COVID-19 pandemic and the reasons behind it. More importantly, as the summary of Amazon's financial situation, we put forward some improvement strategies for the existing problems in order to help the company's survival, development and profitability, and to serve as a reference for other Internet enterprises.

Various prior studies provide evidence that firms with different characteristics react heterogeneously across regions and industrial sectors in response to the COVID-19 pandemic, especially the financial performance and position. For instance, Gore et al. (2021) explore that COVID-19 does not have any significant impact on primary students' academic performance in Australia. Likewise, there is no effect on learning performance, whether the session is online or face-to-face teaching in higher education (Churi et al. 2022). However, the COVID-19 pandemic has negatively disrupted various retail sector industries such as tourism, telecom, and transportation within the Indian economy (Kumar Das and Patnaik 2020). Furthermore, COVID-19 has significant negative influence on stock market return in the Saudi Arabian context (Alzyadat and Asfoura 2021). Therefore, it is essential to examine the association between COVID-19 and retail companies' financial performance as a deep case study research. This study contributes to the emerging literature through the examination of the impact of COVID-19 on online retail companies' financial performance using a case study of Amazon.

This study can add value to the business performance literature in two dimensions. First, as per our best knowledge, this is the first study that empirically explored COVID-19's impact on Amazon's financial performance as a case study research and finalized the results via robustness test with proxy company Walmart's performance and position. Second, this might be one of the few impact case studies within the business performance literature because this study reveals a critical analytical analysis of Amazon and Walmart's strategic changes, technological development, and operational management just before the pandemic and during the pandemic by covering the data from the 2016–2020 period.

The rest of the paper is organized as follows: Section 2 presents the literature review on COVID-19 and Amazons' performance; Section 3 explains the data and methodology, which is followed by a discussion of the research results in Section 4. Section 5 concludes the study.

2. Literature Review

2.1. Amazon's Corporate Profile

Amazon is the largest online e-commerce company in the United States, located in Seattle, Washington. It is one of the earliest companies that started to operate e-commerce on the Internet. Amazon was founded in 1994 as an online book sales business, but now it has expanded to a wide range of other products, such as the brick and motor industry online (Mellahi and Johnson 2000). Initially, the firm's revenues doubled in size every 4 months, and revenues for the first year of operations were USD 5 million. (These revenues are comparable to a large Barnes and Noble superstore.) By August 1996, book sales were growing at 34% a month. During this time, the firm was able to attract USD 8 million from Kleiner, Perkins, Caufield and Byers, a venture-capital firm based in Silicon Valley that has funded well-known firms such as Sun Microsystems and Netscape. Through 31 December 1996, Amazon had sales of more than USD 16 million to approximately 180,000 customer

accounts in over 100 countries. On 24 March 1997, the firm filed an S1 (the registration statement) application with the SEC, and a few weeks later, it went public. Sales for the six months ending in June 1997 were USD 43 million (Kotha 1998). Despite moving upwards and downwards, its founder Jeff Bezos applied three core strategies to revolve customers' demand: the best selection, the lowest prices, and cheap and convenient delivery (Lee 2015).

Amazon has become the online retailer with the largest variety of goods in the world and the second largest Internet company in the world. Amazon and its vendors provide customers with millions of unique brand-new, refurbished, and second-hand goods, such as books, movies, music and games, digital downloads, electronics and computers, household gardening products, toys, baby products, food, clothing, shoes and jewelry, health and personal care products, sports and outdoor products, automobiles, and industrial products. All these enhancements were possible due to continuously engaging in the innovation and expansion of Amazons' logistics infrastructure, increasing its efficiency, and reducing the delivery cost (Kim and Youn 2013). Amazon has shipped several billion packages every year and the delivery cost is nearly 10%–15% of its net sales (Hahn et al. 2018).

2.2. COVID-19 and Business Performance

COVID-19 forces governments to take strict action, and many lockdowns and restrictions in various communities have a negative impact on economic actors (Kuckertz et al. 2020). During the COVID-19 pandemic, as the results of distraction and movement restriction, 64% of companies experienced a shortage of raw materials, about 66% of companies faced the problem of finished-goods delivery, and around 35% of companies sought to diversify their marketing channels and sales into online worldwide ones (Syaifullah et al. 2021). In contrast, while COVID-19 occurs, companies' performance and complexity are determined by company size, indebtedness, profitability, internationalization, number of employees, age, and leverage (Pereira et al. 2021). Likewise, Wanasida et al. (2021) explore how organizational performance is influenced by business analysis capabilities, information and innovation quality, and organizational agility during the COVID-19 pandemic. Additionally, while the world is suffering from COVID-19, entrepreneurial orientation and marketing ability affects organizational performance (Christian et al. 2021). Furthermore, the effect of the COVID-19 pandemic and the competitive business environment has a significant negative influence on a company's financial performance, but such influence could be mitigated by digital marketing. Therefore, re-optimization of digital marketing would be an essential tool to improve business performance during and after the pandemic (Giantari et al. 2022).

Based on the existing background and on an Amazon case study, this research aims to solve the following research questions:

- How did Amazon perform during the COVID-19 pandemic?
- Does the COVID-19 pandemic have any influence on Amazon's financial performance?

3. Analytical Framework

In this study, we apply the case study of Amazon. As such, we analyze the profitability, return of equity, return assets interest rate, statement of financial performance, statement of financial position, and cashflow statement. As the robustness test, DuPont analysis is employed and compares Amazon's financial performance with Walmart as a proxy company.

3.1. Profitability Analysis

The research and exploration of corporate profitability began in the early 20th century. Wang et al. (2021) explores that Wole (1928) first proposed the concept of credit index in his "Research on Credit Barometer", Additionally taking the return on net assets, net sales margin, return on net worth, and other indicators as the core indicators to evaluate corporate profitability. Higgins (1998) puts forward the viewpoint of sustainable growth of enterprises and believes that the profitability of enterprises can be discussed from the

perspective of financial management and that the resource allocation of enterprises can be controlled. After entering the 21st century, scholars continue to study profitability. After analyzing the profitability of 1009 companies, [Deloof \(2003\)](#) believes that the profitability of a company is highly correlated with the level of operation. Its profitability is directly proportional to the turnover speed of corporate assets. [Kasozi \(2018\)](#) concluded through research on retail companies that corporate capital structure is one of the factors.

With the deepening of profitability research, more and more scholars pay attention to the research of profit models. [Finch \(1999\)](#) pointed out in their research that multiple profit factors form a company's profit model according to different combinations. If companies want to improve their own profitability, they must scientifically combine profitability elements. [Magretta \(2003\)](#) proposed that a scientific profit model contains many elements, such as profit points, profit sources, shareholder value, cash flow, etc. Peter [McNamara et al. \(2013\)](#) used quantitative analysis research methods to conduct an in-depth analysis of the relationship between financial indicators and profit models and concluded that the profitability of a company will decline to a certain extent during the process of changing the profit model.

3.2. DuPont Analysis

As early as the beginning of the last century, the concept of financial analysis appeared in the United States. Later, with the increase in productivity, it was gradually discovered that a single indicator was not comprehensive enough for evaluation. Therefore, related scholars explored comprehensive financial analysis methods to scientifically evaluate company performance, and the DuPont financial analysis system came into being. In 1919, American DuPont managers Pierre Pont and Donaldson Brown put forward the DuPont analysis method, which comprehensively uses multiple indicators to evaluate and measure the profitability of enterprises. When the DuPont analysis system researched the return on net asset indexes, three indicators were obtained through subdivision, namely, the net sales profit rate \times total asset turnover rate \times equity multiplier. The research is carried out in a hierarchical manner. The three indicators, respectively, represent the company's sales ability, operating ability, and debt solvency. The comprehensive application of the three indicators can accurately describe the company's performance. Since then, the DuPont model has been extended to other fields, such as the field of equity return analysis, and has played an important role.

[Soliman \(2008\)](#) found that the DuPont analysis is the most common way to analyze profitability through corporate financial statements, especially in analyzing its profitability and solvency. Sometimes, it may also be used in risk analysis. It decomposes the return on net assets into two situations: profit and asset turnover. The authors found that when applying these two kinds of accounting index analyses, it is concluded that two different financial structures in the production and operation of enterprises have different financial and accounting properties. In this way, the indicators in the DuPont analysis system can be obtained, which can express the changing laws of the production and operation of the enterprise. As such, after in-depth research, the business results of a company can be reflected by whether the company can realize its own value. Income is an important foundation for realizing corporate value. The DuPont analysis can effectively study the relationship between shareholder income and business details. Therefore, the effective use of [Vasile and Radu \(2014\)](#) applied Dupont analysis and demonstrated the results as increasing the rate of return; thus, the company's own profitability can be improved. [Ahamed \(2020\)](#) pointed out that DuPont's financial analysis system can play an important role in analyzing corporate profitability. The DuPont analysis method can compare and analyze the historical data and current data of a company, and it can also make effective predictions for the company's operating conditions for a period in the future, which is conducive to the company's adoption of targeted measures to improve its profitability. [Wright \(2017\)](#) believes that the DuPont analysis method is a relatively unique method, and the core of the DuPont analysis method is management decision making. After teaching students to use

these methods, it can enable students to have a deeper understanding of financing, investment, and business decision making. [Wanasida et al. \(2021\)](#) pointed out that a company's sustainable development capability can be reflected by the increase in shareholder income. At the same time, for a company's continuous operation, cash balance is very important. [Bernhardt et al. \(2018\)](#) pointed out that it is difficult for the current common evaluation system to evaluate the financial and operating conditions of modern enterprises accurately and effectively. Therefore, cash flow should be included in the financial indicator system. This method can be used to target the enterprise comprehensively and systematically. An evaluation of the financial situation is conducive to obtaining accurate and objective results. [Manjunatha and Gujjar \(2018\)](#) conducted a study on three companies in the information field. They chose two indicators: return on sales and return on assets when evaluating return on equity and compared and analyzed the differences between the three sample companies. Market investors accurately judge the company's situation and make scientific and reasonable decisions. [Hao and Choi \(2019\)](#) used DuPont analysis to decompose the asset return rate into asset turnover rate and profit rate. A higher asset turnover rate indicates the effective use of assets, while a higher profit rate indicates an effective cost structure. Through a survey of seven Chinese online shopping companies, we found that companies that sell multiple complex products have higher asset turnover rates than companies that sell a single special product. However, the profit rate of a multi-complex company is lower than that of a single special company, and there is no difference in the return on assets of the two.

More interestingly, various earlier scholars applied DuPont Analysis as a “drilling-down” approach to analyze financial performance for a single company as case study research (e.g., Biogen Inc. was analyzed by [Wright 2017](#); the Coca-Cola company was explored by [Gardner et al. 2011](#); Apple Inc. was examined by [Latif et al. 2014](#); Jordanian Arab commercial bank was evaluated by [Almazari 2012](#)). Therefore, we analyzed Amazons' financial performance with the application of Dupont analysis as case study research.

3.3. DuPont Analysis System

The DuPont system is a financial analysis method invented by DuPont in the United States in practice. The main analysis method is to decompose the core indicators of return on net assets, and then calculate and organize the decomposed indicators. In this way, a multi-level analysis of the profitability of the enterprise can be carried out from a more subtle point. The DuPont analysis system comprehensively reflects the profitability of the company's procurement, production, sales, etc., and can also examine the company's management level. Starting from a core indicator, it also analyzes the profitability of the company's products, asset turnover, and financial leverage. Return on net assets is the top indicator in the system, which can directly reflect the return on investment, which is the most concerned aspect of enterprises and related investors. However, in addition to knowing whether the company makes money or not, the company or management wants to know why the company makes money, so the indicators are further decomposed into net asset interest rate and equity multiplier. In this way, if the corporate management wants to understand a certain aspect, they can conduct a more specific and in-depth analysis by consulting the separated data. The following Figure 1 is the logic diagram of the DuPont system.

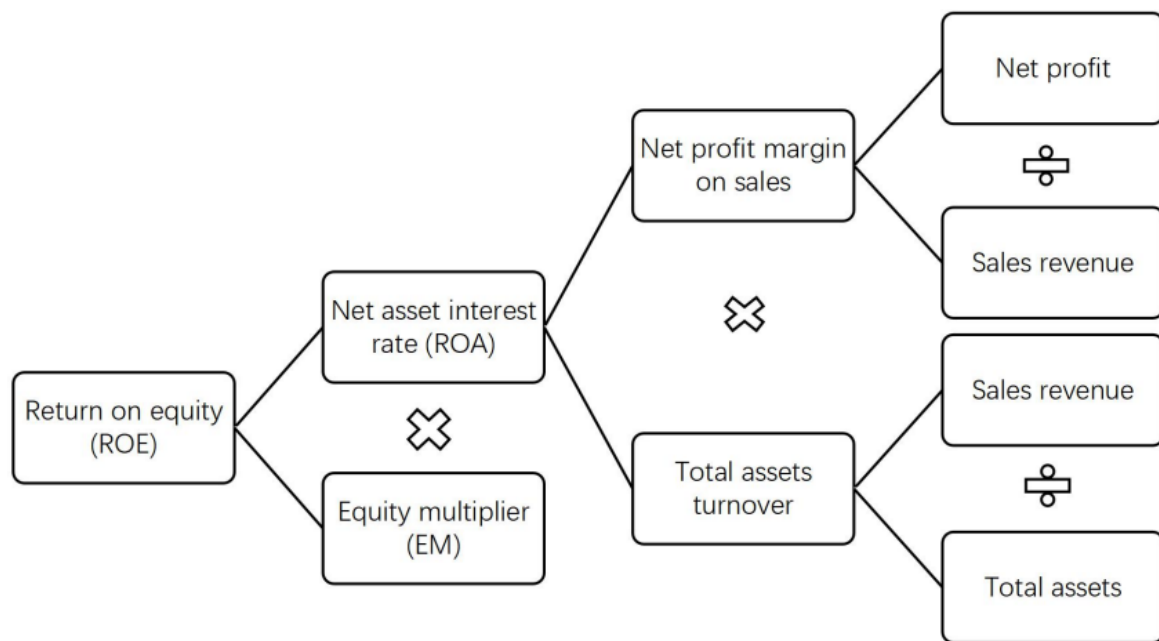


Figure 1. DuPont analysis logic diagram.

3.4. DuPont Analysis System Index

3.4.1. Return on Equity (ROE)

ROE is the most important and comprehensive indicator in this analysis system, which reflects the ability of an enterprise to obtain net profit through its own capital situation. It can be obtained according to the ratio of the total net profit to the shareholders' equity of the enterprise (Hickson et al. 2011). The size of this indicator can directly reflect the company's overall sales revenue level, comprehensive profit level and financial status. This indicator is very comprehensive and will play an important auxiliary role for future management to formulate corporate business strategies and management models. The relevant formula for the return on net assets is as follows: return on net assets = net sales interest rate \times total asset turnover rate \times equity multiplier.

3.4.2. Net Asset Interest Rate (ROA)

This index is a more comprehensive index obtained after the decomposition of the above-mentioned first layer. It is closely related to the two indicators of net sales margin and total asset turnover. Through the vertical and horizontal comparison of ROA values, it is possible to analyze and evaluate a company's development capabilities and operating conditions in the same industry, and then to obtain an analysis of its profitability (Annisa and Hamzah 2020). It is also the main reference data for company managers to judge whether the company can carry out debt management. The main calculation method of ROA is to divide the net profit by the total average assets.

3.4.3. Equity Multiplier (EM)

This indicator has a strong correlation with the asset–liability ratio. It can directly reflect the level of liabilities in the company's daily operations and the level of liabilities that can be assumed, and it is a concrete manifestation of the level of financial leverage. The equity multiplier shows the corporate financing status or corporate debt status (Lizalová and Kozáková 2013). The equity multiplier is a risk indicator. The higher the value of the equity multiplier, the more the company's debt financing assets increase. The higher the company's financial leverage, the greater the capital risk for small and medium shareholders and creditors. A lower equity multiplier indicates that the development of the enterprise is relatively more stable, which is more beneficial to the development of the enterprise. However, the value is not as low as possible. A too low equity multiplier

indicates that the company has a poor grasp of capital utilization efficiency and needs to improve its capital management capabilities. This indicator can be obtained by dividing the total average assets.

3.5. Amazon's Statement of Financial Positions Analysis

The statement of financial position is a statement that reflects the assets, liabilities, and owners' equity of an enterprise in a given period. The purpose of the statement of financial position analysis is to understand the financial situation of enterprises and the quality of accounting information and make a proper evaluation on the solvency and financial flexibility of enterprises. Therefore, the balance sheet is an important carrier for users of accounting information to obtain accounting information. The purpose of the balance sheet analysis is to understand the financial situation of the enterprise and the quality of the accounting information and, accordingly, to make an appropriate evaluation on the solvency and financial resilience of the enterprise (Ramlall 2018). Amazon's annual statement of financial position from 2016 to 2020 are shown below in Table 1.

Table 1. Amazon's annual statement of financial position from 2016–2020.

	31 December 2016	31 December 2017	31 December 2018	31 December 2019	31 December 2020
Current Assets					
Cash and Cash Equivalent	19,334	20,522	31,750	36,092	42,122
Marketable Securities	6647	10,464	9500	18,929	42,274
Inventories	11,461	16,047	17,174	20,497	23,795
Accounts Receivables	8339	13,164	16,677	20,816	24,542
Total Current Assets	45,781	60,197	75,101	96,334	132,733
Property and Equipment	29,114	48,866	61,797	72,705	113,114
Operating Leases				25,141	37,553
Goodwill	3748	13,350	14,548	14,754	15,017
Other Assets	4723	8897	11,202	16,314	22,778
Total Assets	83,402	131,310	162,648	225,248	321,195
Current Liabilities					
Accounts Payables	25,309	34,616	38,192	47,183	72,539
Accrued Expenses	13,739	18,170	23,663	32,439	44,138
Unearned Revenue	4768	5097	6536	8190	9708
Total Current Liabilities	43,816	57,883	68,391	87,812	126,385
Long-term Lease Liabilities			9650	39,791	52,573
Long-term Debt	7694	24,743	23,495	23,414	31,816
Other Long-term Liabilities	12,607	20,975	17,563	12,171	17,017
Treasury stock at cost	(1837)	(1837)	(1837)	(1837)	(1837)
Additional Paid-in Capital	17,186	21,389	26,791	33,658	42,865
Accumulated other comprehensive loss	(985)	(484)	(1035)	(986)	(180)
Retained Earnings	4916	8636	19,625	31,220	52,551
Total Shareholder's Equity	19,825	27,709	43,549	62,060	93,404
Total Liabilities and Shareholders' Equity	83,402	131,310	162,648	225,248	321,195

From the above Table 1, the following can be analyzed:

3.5.1. Analysis on the Changes of Main Items of Assets

From the Table 1, balance sheet of assets and liabilities of Amazon, we can see that the scale of assets of Amazon is constantly expanding, and the total assets are increasing rapidly. Amazon's total assets from 2016 to 2020 are, respectively, USD 83,402 million, USD 131,310 million, USD 162,648 million, USD 225,248 million, and USD 321,195 million. The total increase in assets over the five years is 237,793, the year-on-year growth percentages are, respectively, 57.4%, 23.9%, 38.5%, and 42.6%. In general, the growth rate of Amazon's assets is very large. Although the growth rate declined in the 2017–18 period, Amazon still maintains a very high growth rate. Meanwhile, it can be seen that the outbreak of COVID-19 in 2019 does not seem to have too much impact on the growth of Amazon's total assets, neither positive nor negative. It is worth noting that Amazon's current assets do not show a similar rate of growth to its total assets, the ratio of current assets from 2016

to 2020 are, respectively, 54.9%, 45.8%, 46.17%, 32.3%, and 35.3%, which has experienced a dramatic decline in the past five years. By analyzing the asset structure of Amazon in recent years, we can see that current assets as a share of total assets have fallen almost below the normal ratio range; the liquidity of Amazon is greatly weakened, and the risk of assets becomes greater. The decline in liquidity of the company is unfavorable to enhancing the solvency of the enterprise and meeting the demand of the liquidity of the asset.

Amazon's cash and cash equivalents have been increasing for these years, especially in the 2017–18 period, increasing by 54.7%. This shows that Amazon has abundant capital and strong short-term solvency, but it can also be related to the expansion of enterprise scale. At the same time, too much money is not necessarily a good thing, it keeps more money than daily needs and increases the opportunity cost and capital cost. Amazon should analyze the reasons for the increase in cash funds in recent years and judge whether the cash funds are appropriate or not according to the scale of assets, business income, industry characteristics, and fund-raising ability of enterprises. Amazon's total inventory has also continued to grow in recent years. As an important practical asset of enterprises, with numerous species and huge quantity, inventory is particularly sensitive to the changes in production and business activities of enterprises, so it is necessary to keep the balance between the quantity of inventory and business activities of enterprises. If there is too little inventory, it may lead to the cost of stopping production or shortage of goods, which will affect the normal production and operation of enterprises; if there is too much inventory, it will lead to rising ordering cost, storage cost, opportunity cost, and management cost. Even the excessive increase in the inventory quantity will cause cash precipitation, which will affect the capital turnover rate of enterprises and make it difficult for enterprises to continue their business. According to the growth degree of Amazon's total assets, the authors think that the growth rate of Amazon's inventory amount in other years, except for the 2016–17 period, is reasonable, as the size of the company expands, it is inevitable that the amount of inventory will increase. The authors would have expected the offline sales industry to be hit hard by the global lockdown due to the COVID-19 pandemic, further increasing the demand for online e-commerce shopping, but this is not the case based on Amazon's inventory amount, which did not increase significantly in 2019 and 2020.

3.5.2. Analysis on the Changes of Liabilities and Owners' Equity

Accounts payable increased year by year, especially in 2020, with the amount of accounts payable reaching 72,539, an increase of 53.8 percent year-on-year, equal to the sum of accounts payable in 2017 and 2018. The increase in accounts payable shows that the enterprise has a large scale of production and operation and has a large amount for materials. The accounts payable is formed due to the time inconsistency between the acquisition of materials and the payment of goods, which is exactly the result of the surge in online orders of Amazon caused by the COVID-19 pandemic. Meanwhile, Accounts payable is generally considered as a reduction in enterprise financing funds, which is considered as the most ideal way to occupy the other party's funds free of charge. In recent years, Amazon's accounts payable has increased year by year, which shows that Amazon is more capable of occupying the other party's funds free of charge, greatly saving its own capital cost. Due to the increasing scale of Amazon and the increasing demand for commercial goods, suppliers are willing to sell goods on credit for Amazon and moderately extend their collection period to benefit Amazon. If the Amazon wants to achieve this effect, they must ensure that their own strength is as strong as Amazon's, so that suppliers are willing to provide them with sales removal services, and the payment period is longer than that of other enterprises.

The current liabilities increase rapidly. From 2016 to 2020, the amount of current liabilities tripled, increasing from 43,816 to 126,385. The year with the fastest growth is from 2019 to 2020, increasing by 43.9 percent. Compared with current liabilities, non-current liabilities show a much sharper growth in these years. Total non-current liabilities in 2020 are five times the amount in 2016, from 20,301 to 101,406, the biggest reason being that

Amazon has had long-term lease liabilities since 2018, which is almost equal to the total amount of long-term debt and other long-term debt. Debt is beneficial to enterprises to make use of the financial leverage effect and create more economic benefits for enterprises, but excessive debt will inevitably lead to excessive financial risks. Amazon should make full use of the financial leverage effect brought by liabilities, but at the same time, it should also prevent the increase in financial risks. The structure of liabilities refers to the proportional relationship of various liabilities in enterprise liabilities. Generally speaking, the cost of long-term debt is higher than that of short-term debt financing. At the same time, long-term debt is less flexible than short-term debt financing in the process of capital utilization. In addition, the financial risk of short-term liabilities is greater than that of long-term liabilities. If the current debt ratio is too high, enterprises will face great pressure to pay their debts in a short time. If the debts due cannot be paid on time, enterprises will face huge financial risks. From Amazon's balance sheet, we can see that in recent years, excluding long-term lease liabilities, Amazon's current liabilities are much higher than its non-current liabilities. Generally speaking, the capital cost of short-term current liabilities is lower than the capital cost of non-current liabilities. Therefore, Amazon uses large amounts of current liabilities and small amounts of non-current liabilities to raise funds, which makes the financing cost relatively low. However, it should be noted that the financial risk of current liabilities is very high, and Amazon should be careful that this risk is not too high.

3.5.3. Analysis of the Changes in Financial Performance

An income statement is an accounting statement that reflects the production and operation results of an enterprise in a certain accounting period, which indicates the sales revenue and the corresponding costs and profits in the past period. It comprehensively reveals all kinds of income, expenses, costs, or expenses realized by enterprises in a specific period, as well as the profits or losses realized by enterprises (Lin et al. 2018). Amazon's annual income statements from 2016 to 2020 are shown below, see Table 2.

Table 2. Amazon's annual income statement for the 2016–2020 period.

	31 December 2016	31 December 2017	31 December 2018	31 December 2019	31 December 2020
Net Product Sales	94,665	118,573	141,915	160,408	215,915
Net Service Sales	41,332	59,293	90,972	120,114	170,149
Total Net Sales	135,987	177,866	232,887	280,522	386,064
Operating Expenses					
Cost of Sales	88,265	111,934	139,156	165,536	233,307
Fulfillment	17,619	25,249	34,027	40,232	58,517
Marketing	7233	10,069	13,814	18,878	22,008
Technology and content	16,085	22,620	28,837	35,931	42,470
General and Administrative Expenses	2432	3674	4336	5203	6668
Other Operating Expenses	167	214	296	201	(75)
Total Operating Expenses	131,801	173,760	220,466	265,981	363,165
Operating income	4186	4106	12,421	14,541	22,899
Interest income	100	202	440	832	555
Interest expenses	(484)	(848)	(1417)	(1600)	(1647)
Other income/(expenses)	90	346	(183)	203	2371
Total non-operating income/(expenses)	(294)	(300)	(1160)	(565)	1279
Income before tax	3892	3806	11,261	13,976	24,178
Provision for income tax	(1425)	(769)	(1197)	(2374)	(2863)
Equity-method Investment activity	(96)	(4)	9	(14)	16
Net income	2371	3033	10,073	11,588	22,331
Other comprehensive income/(loss)	(262)	501	(547)	49	806
Comprehensive income	2109	3534	9526	11,637	22,137

Total Profit Growth and Composition Analysis

Overall, from Table 2, Amazon's annual profits from 2016 to 2020 show an upward trend; the annual growth trend of operating income, income before tax, and net income is basically flat without huge differences. In 2017, Amazon's operating income and pre-tax

profit showed a slight decline compared with 2016, down about 2 percent year-on-year. However, as the provision for income taxes in 2017 is only half of the amount in 2016, the final net profits still showed a certain increase, from 2109 to 3534, an increase of 27.89 percent. As for the phenomenon of tax reduction, the author believes that there are two reasons. Before that, we should clear up a concept: a company's tax credits are not determined by the amount of profit on the company's financial statements but calculated by the relevant tax authorities, tax payable as a basis multiplied by a certain amount of tax rate, that is to say, Amazon's real tax base is not the amount on the financial statements, which also gives Amazon reasonable tax avoidance chance to a certain extent. The first reason is that the United States enacted the Tax Cuts and Jobs Act of 2017 ([The Tax Cuts and Jobs Act 2017](#)), which lowers the statutory corporate tax rate from 35 to 21 percent. In addition, Amazon is supposed to have taken advantage of a "loss offset" rule in the US tax code; an enterprise can offset the taxable income of the following years by the amount of losses in the previous years. CNN reported that Amazon has accumulated billions of dollars in losses during its 20-year history. The other reason is Amazon's stock rights grant. For example, in the UK, Amazon pays its employees through the way of shares. There are totally 24,000 Amazon workers in the UK, each full-time employee is given 1000 pounds worth of shares a year, but they cannot cash them out immediately and have to hold them for between one and three years, which means that if Amazon's stock rose during that time, so did the value of those employees' shares. In fact, Amazon's share price has almost doubled during these years, this equates to higher bonuses for employees and is subtracted from turnover as higher company expenses, thus reducing the profits on which tax is calculated. That extra income may not have been taxed. According to the Inland Revenue, employees can receive tax-free shares from their employer worth 3600 pounds a year. This is a win-win for Amazon and its employees, with employees rewarded tax-free, the company able to pay less, and the Inland Revenue is the biggest loser, as shown in the Figure 2.

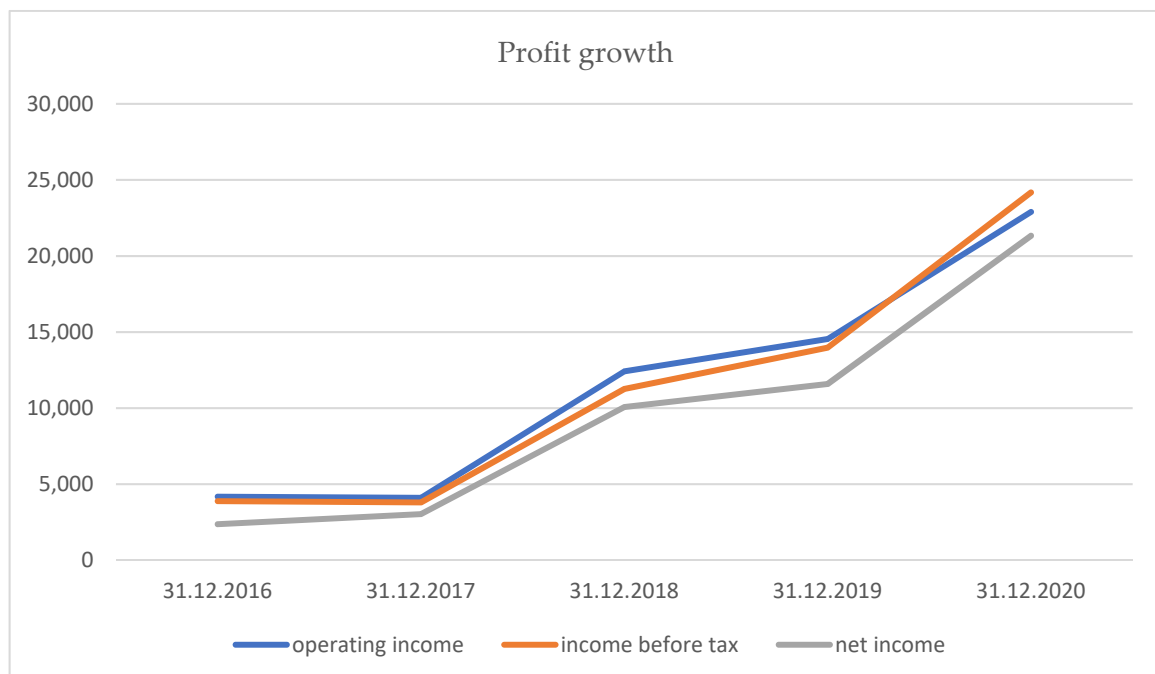


Figure 2. Amazon's profit growth chart.

From 2017 to 2018, Amazon's profit increased sharply, with its operating profit increasing by 8315 year-on-year, up by 202 percent. This is caused by the sequential decrease in operating expenses. From 2017 to 2018 its net sales increased by 55,021 year-on-year, up by 31 percent, while operating expenses only increased by 46,707, a year-on-year growth of 26.8 percent; the difference between the two growth rates leads the company's operating

income increase. From 2018 to 2019, Amazon experienced a slight increase in profit, which is a normal phenomenon. Its operating income maintained a growth rate of 20.6 percent from 0466 to 265,981, and its net profit also increased by 15 percent in the same year. From 2019 to 2020, Amazon's profits doubled compared with the last year, which is thanks to a surge in sales at Amazon. In just one year, Amazon's sales grew by 105,542, increasing by 37.6%. The authors speculate that this is due to online sales caused by COVID-19 and a surge in some medical supplies.

Cost and Expense Analysis

According to Amazon's income statement, the proportion table of Amazon's operating cost, sales cost, management cost, and net profit to operating income can be obtained, see Table 3.

Table 3. Amazon's expense indicator.

Item/Year	2016	2017	2018	2019	2020
Cost of Sales/Total net sales	64.91%	62.93%	59.75%	59.00%	60.43%
Marketing expenses/Total net sales	5.32%	5.66%	5.93%	6.72%	5.60%
Administrative cost/total net sales	13.62%	14.78%	14.24%	14.66%	12.79%
Net income/total net sales	1.74%	1.71%	4.32%	4.13%	5.50%

As can be seen from the table, the proportion of cost of sales decreases from 2016 to 2019, but there is a slight callback in 2020. Meanwhile, the sales expenses gradually increase from 2016 to 2019, which the authors speculate is related to the fierce market competition in recent years, especially the huge impact brought by the price war. Amazon has developed rapidly and invested a lot in promotion during these years. It has increased advertising and promotion for the company, which is consistent with its strategy of accelerating the company's transformation, improving customer experience, and accelerating market shares. Therefore, the increase in Amazon's related costs is the price that the company must pay in the short term to accelerate the transformation in recent years. Most notable is the change in data from 2019 to 2020, all cost and expense indicators show a different trend from previous years. The cost of sales proportion has changed from a slightly downward trend to a proportional increase, the selling expense proportion has changed from an upward trend to a decrease to the level of 2017, and the administrative expense proportion has suddenly dropped from a constant 14% state to 12.79%. All the data changes should be related to the outbreak of the COVID-19 pandemic. Amazon's sales volume increased significantly due to the surge of online sales demand, which increased the proportion of cost of sales, but at the same time, the COVID-19 pandemic severely hit the market, personnel management, and scientific research technology, which led to a downward trend in sales expenses and management expenses. However, the final proportion of net income has not been affected too much, which should be due to the increase in sales and the decline of other expense outputs offsetting each other.

Analysis of the Changes in Cash Flow Statement

Cash flow statements can be used to analyze the ability of enterprises to create cash flow, repay debts, pay dividends, etc. At an extreme point, cash is more important than profit, and enterprises must attach importance to cash, so there is a saying that "cash is king" because it is very necessary to interpret the cash flow statement. The summary of Amazon's cash flow this year is as following Table 4:

As can be seen from the Table 4, the overall net cash flow of operating activities has been on the rise in recent years, increasing from 17,272 in 2016 to 66,064 in 2020. Net cash flow of investment activities has been negative, the overall trend of fluctuations. The amount of net cash flow of financing activities is much smaller than that of the other two activities, and it has been negative in the other four years, except that it once reached 9860

in 2017, and the change range is the largest. It is quite normal for the cash flow of operating activities to always show an increasing trend, which means that Amazon is constantly growing, and its growth rate is similar to that of other data in the balance sheet and the income statement above. From 2019 to 2020, there was a significant increase, from 38,514 to 66,064. With a year-on-year growth of 71 percent, the sales volume surges, the scale of operations expands, and the net income increases significantly, which is also caused by the surge in sales caused by the COVID-19 pandemic, just as analyzed above. As for investment activity, there is a large increase in 2017, then a return to normal levels in 2018, and then surging to -59611 in 2020. It can be clearly seen from Amazon's cash flow statement above that the increase in 2017 is because of the company's acquisition, which may be due to Amazon's acquisition of a company's equity at a high price in order to expand the company's scale or acquire a certain technology. As for the huge increase in 2020, it is easy to explain, mainly because the company purchased a large number of fixed assets and equipment in that year, the amount is up to 40,140, which is three times the investment of 2019.

Table 4. Amazon's cash flow statement.

	31 December 2016	31 December 2017	31 December 2018	31 December 2019	31 December 2020
Cash and cash equivalent, Beginning of the period	15,890	19,334	21,856	32,173	36,410
Operating activities					
Net income	2371	3033	10,073	11,588	21,331
Adjustments to reconcile net income to net cash from operating activities					
Depreciation of Property and equipment	8116	11,478	15,341	21,789	25,251
Stock-based compensation	2975	4215	5418	6864	9208
Other operating expenses	160	202	274	164	(71)
Other expenses/(income)	(20)	(292)	219	(249)	(2582)
Deferred income tax	(246)	(29)	441	796	(554)
Changes in other assets and liabilities					
Inventories	(1426)	(3583)	(1314)	3278	2849
Accounts receivables	(3367)	(4786)	(4615)	(7681)	(8169)
Accounts payable	5030	7175	3263	8193	17,480
Accrued expenses and other	1724	283	472	(1383)	5754
Unearned revenue	1955	738	1151	1711	1265
Net cash provided by (used in) operating activities	17,272	18,434	30,723	38,514	66,064
Investing activities					
Purchase of property and equipment	(7804)	(11,955)	(13,427)	(16,861)	(40,140)
Proceeds from property and equipment incentives	1067	1897	2104	4172	5096
Acquisitions, net of cash acquired	(116)	(13,972)	(2186)	(2461)	(2325)
Sales and maturities of marketable securities	4733	9988	8240	22,681	50,237
Purchase of marketable securities	(7756)	(13,777)	(7100)	(31,812)	(72,479)
Net cash provided by (used in) investing activities	(9876)	(27,819)	(12,369)	(24,281)	(59,611)
Financing activities					
Proceeds from short-terms debts and other			886	1402	6796
Repayments of short-term debts and others			(813)	(1518)	(6177)
Proceeds from long-term debts	618	16,228	182	871	10,525
Repayment of long-terms debts	(327)	(1301)	(155)	(1166)	(1553)
Principals of repayment of finance leases	(147)	(200)	(7449)	(9628)	(10,642)
Principal repayments of financing obligation	(3860)	(4799)	(337)	(27)	(53)
Net cash provided by (used in) financing activities	(3716)	9928	(7686)	(10,066)	(1104)

Although the amount of corporate financing activity is the smallest, the change rate is the largest. It can be seen from the cash flow statement that the cash flow of financing activities is mainly determined by the receipt and payment of liabilities and the repayment of finance leases. In general, debts' total net cash flow can cancel by offsetting proceeds and repayments. With increasing the amount of capital lease in recent years, the company's cash flow net financing should present a reverse trend of growth, but in 2017 and 2020, the trend is different, this is due to the company's long-term debt income suddenly increasing, which may be due to Amazon's long-term debt maturity. It is worth noting that the COVID-19 pandemic appears to have had little impact on cash flows from financing activities, which may be due to most financing activities being of long duration and having fixed interest rates.

Comparative Analysis of Cash Inflow and Outflow Structure

In order to analyze the cash outflow and cash inflow of Amazon's operating activities, investment activities, and financing activities more clearly, the authors made a histogram of Amazon's cash outflow and inflow.

As can be seen from the Figure 3, at the beginning, Amazon's cash flow accounts for the largest proportion of business activities, but the cash flow of investment activities increases year by year and surpasses the amount of business activities in 2019. The cash flow of financing activities has been very small and has little impact on the overall cash flow of the company. The cash flow of investment activities is the biggest change in Amazon in the last five years. In just five years, the company's investment cash outflow increased from 45,676 in 2016 to 114,944 in 2020, with a year-on-year increase of 633 percent. The cash inflow of investment activities also increased from 5800 in 2016 to 55,333 in 2020, an 854 percent year-on-year increase. It can be seen from the cash flow statement that the reason for such a large increase in the cash flow of Amazon's investment activities is that the company has purchased many fixed assets and market securities in recent years. The net cash flow of investment activities in Amazon is negative, which is mainly caused by the expansion of the company and its support for logistics and e-commerce. Functionally, the investment is a necessary stage for the rapid growth of enterprises. These phenomena show the inherent demand of Amazon's expansion and reflect the efforts and attempts of enterprises in expansion. Therefore, for Amazon, although the net investment cash flow is negative, it is beneficial to its future development. Since most of the net cash flow from operating activities is caused by selling goods and providing services, Amazon's cash flow from operating activities is stable and reproducible, which can provide stable cash support for future operation and development.

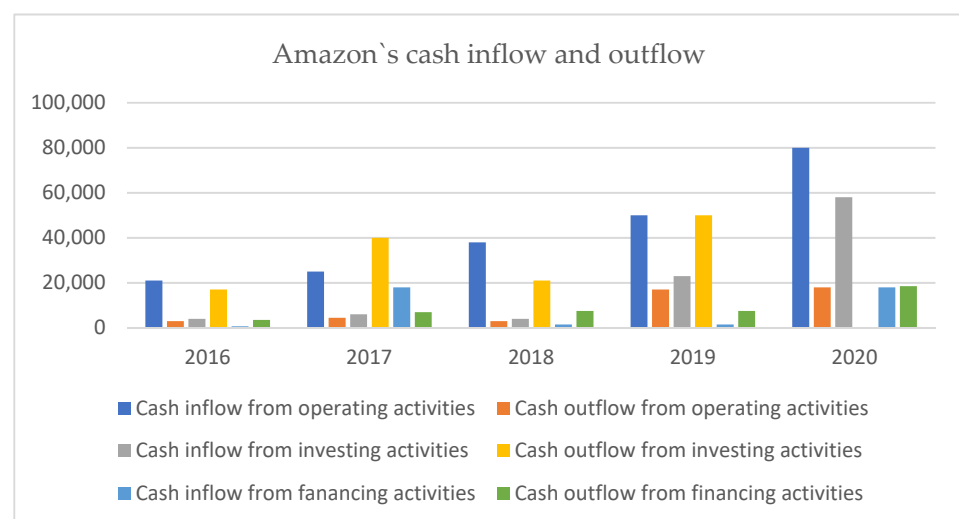


Figure 3. Amazon's cash inflow and outflow.

3.6. Comparison of Financial Performance and Position between Amazon and Walmart

For the further analysis of Amazon's financial performance and position, we employed Walmart Inc as a proxy company because Walmart seems to be the largest retailer in the world operating in 27 countries including US, Canada, Africa, Central America, China, Chile, Mexico, and India as an e-commerce business (Pandey et al. 2021). Established in 1962, Walmart is the world's largest private employer with about 2.2 million employees with over 11,000 business units worldwide (Caraway 2016). Therefore, Walmart is comparable to Amazon's financial performance and position to conclude the COVID-19 effects on both companies' financial performance.

Comparative Analysis of Walmart's Financial Performance and Position

According to the financial summary statistics presented in Table 5, net sales for the companies (Amazon and Walmart) increased during the 2016–2020 period. For instance, Amazon's net sales increased from USD 135,987 m to USD 386,064 m from 2016 to 2020. Likewise, Walmart's net sales improved from USD 478,614 m to USD 519,926 m during the study period. However, operating and net income statistics seem to contradict these results because Amazon's operating income and net incomes increased from USD 4186 m–USD 22,899 and USD 2371 m–USD 21,331, respectively. However, Walmart's figures have declining trends for both operating income and net income from USD 24,105 m–USD 20,568 and USD 14,694 m–USD 14,881 accordingly. More interestingly, all other performance and position figures (e.g., diluted EPS, total assets, and long-term liabilities) increased for both companies during the study period.

Table 5. Comparative data between Amazon and Walmart's financial performance and position statements (2016–2020).

	31 January 2016 (USD m)	31 January 2017 (USD m)	Amazon 31 January 2018 (USD m)	31 January 2019 (USD m)	31 January 2020 (USD m)	Walmart 31 January 2016 (USD m)	31 January 2017 (USD m)	31 January 2018 (USD m)	31 January 2019 (USD m) 31 January 2020 (USD m)
Statements of Operations									
Net Sales	135,987	177,866	232,887	280,522	386,064	478,614	481,317	495,761	510,329 519,926
Operating Income (loss)	4186	4106	12,421	14,541	22,899	24,105	22,764	20,437	21,957 20,568
Net Income/(loss)	2371	3033	10,073	11,588	21,331	14,694	13,643	9862	6670 14,881
Diluted earnings per share	4.90	6.15	20.14	23.01	41.83	4.57	4.38	3.28	2.26 5.19
Balance Sheets									
Total Assets	83,402	131,310	162,648	225,248	321,195	199,581	198,825	204,522	219,295 236,495
Long-term Liabilities	20,301	45,718	50,708	75,376	101,406	44,030	42,018	36,825	50,203 64,192

4. Research Methods and Results Discussion

4.1. Dupont Analysis

The reason and trend of any index change, and the corresponding solutions, can be explained by the DuPont analysis method. This paper tries to take the financial statements of Amazon as an example and illustrates the application of the DuPont analysis department in enterprise financial analysis by combining trend analysis and factor analysis.

4.1.1. Analysis of Return on Equity (ROE)

According to the data of the above financial statements, the DuPont analysis method is used to calculate each specific index, and the results are as following Figure 4:

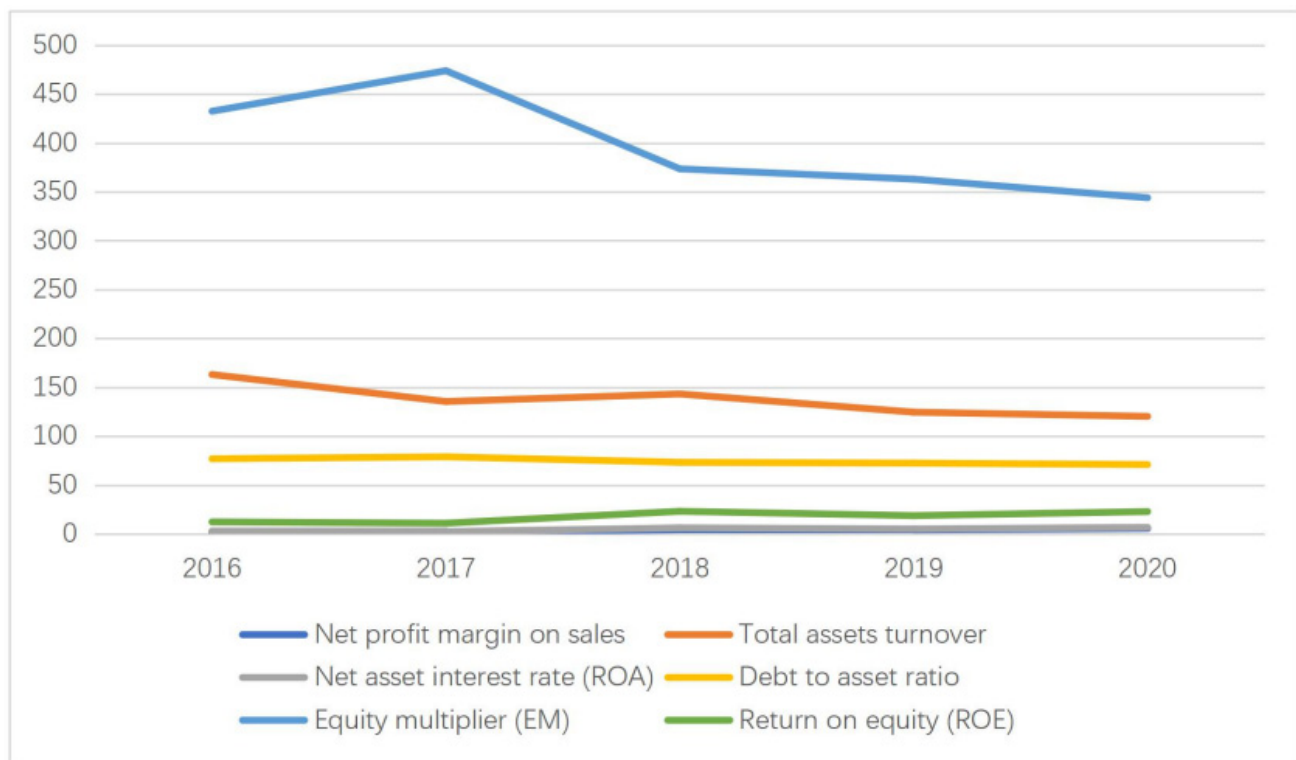


Figure 4. Amazon's indicator line chart.

The rate of return on equity is an index to measure the ability of enterprises to make profits by using assets. The rate of return on equity has fully considered the influence of financing methods on the profitability of enterprises. Therefore, the profitability reflected by it is the result of the comprehensive action of many factors, such as enterprise management ability, financial decision making, and financing methods (Easto and Monahan 2016). To a large extent, investors in enterprises judge whether to invest or transfer shares according to the ROE index, inspection of the performance of managers, and the dividend distribution policy. This index is also very important for the managers of the company.

4.1.2. Two-Factor Analysis of Return on Equity (ROE)

$$\text{ROE} = \text{Net asset interest rate (ROA)} \times \text{Equity multiplier (EM)} \quad (1)$$

The product of net interest rate of assets and equity multiplier can be regarded as the rate of return on shareholders' equity. The ability of a company's total assets to make profits is reflected by the net interest rate of assets and also reflects the utilization effect of total assets. The higher the index of the net interest rate of assets, the better the utilization effect of total assets, the better the management ability, and the higher the operating level of the company (Dai and Piccotti 2020). The authors use factor analysis to calculate the influence of DuPont model indicators on the return on shareholders' equity in 2016, 2017, 2018, 2019, and 2020, respectively.

2016:

$$\text{ROE} = 2.84\% (\text{ROA}) \times 4.325 (\text{EM}) = 12.29\% \text{ ①}$$

$$\text{Replace ROA: ROE} = 2.31\% (\text{ROA 2017}) \times 4.325 (\text{EM 2016}) = 9.99\% \text{ ②}$$

$$\text{Replace EM: ROE} = 2.31\% (\text{ROA 2017}) \times 4.739 (\text{EM 2017}) = 10.95\% \text{ ③}$$

The impact of the decrease in ROA on the return on ROE in 2017 is as follows:

$$\text{②} - \text{①} = 9.99\% - 12.29\% = -2.3\%$$

The impact of the increase in EM on the return on ROE in 2017 is as follows:

$$\text{③} - \text{②} = 10.95\% - 9.99\% = 0.96\%$$

2017:

$$\text{ROE} = 2.31\% (\text{ROA}) \times 4.739 (\text{EM}) = 10.94\% \text{ ①}$$

$$\text{Replace ROA: ROE} = 6.19\% (\text{ROA 2018}) \times 4.739 (\text{EM 2017}) = 29.33\% \text{ ②}$$

$$\text{Replace EM: ROE} = 6.19\% (\text{ROA 2018}) \times 3.735 (\text{EM 2018}) = 23.12\% \text{ ③}$$

The impact of the increase in ROA on the return on ROE in 2018 is as follows:

$$\text{②} - \text{①} = 29.33\% - 10.94\% = 18.39\%$$

The impact of the decrease in EM on the return on ROE in 2018 is as follows:

$$\text{③} - \text{②} = 23.12\% - 29.33\% = -6.21\%$$

2018:

$$\text{ROE} = 6.19\% (\text{ROA}) \times 3.735 (\text{EM}) = 23.13\% \text{ ①}$$

$$\text{Replace ROA: ROE} = 5.14\% (\text{ROA 2019}) \times 3.735 (\text{EM 2018}) = 19.20\% \text{ ②}$$

$$\text{Replace EM: ROE} = 5.14\% (\text{ROA 2019}) \times 3.63 (\text{EM 2019}) = 18.66\% \text{ ③}$$

The impact of the decrease in ROA on the return on ROE in 2019 is as follows:

$$\text{②} - \text{①} = 19.20\% - 23.13\% = -3.93\%$$

The impact of the decrease in EM on the return on ROE in 2019 is as follows:

$$\text{③} - \text{②} = 18.66\% - 19.20\% = -0.54\%$$

2019:

$$\text{ROE} = 5.14\% (\text{ROA}) \times 3.63 (\text{EM}) = 18.67\% \text{ ①}$$

$$\text{Replace ROA: ROE} = 6.64\% (\text{ROA 2020}) \times 3.63 (\text{EM 2019}) = 24.10\% \text{ ②}$$

$$\text{Replace EM: ROE} = 6.64\% (\text{ROA 2020}) \times 4.439 (\text{EM 2020}) = 29.48\% \text{ ③}$$

The impact of the increase in ROA on the return on ROE in 2020 is as follows:

$$\text{②} - \text{①} = 24.10\% - 18.67\% = 5.43\%$$

The impact of the increase in EM on the return on ROE in 2020 is as follows:

$$\text{③} - \text{②} = 29.48\% - 24.1\% = 5.38\%$$

From the above calculations, it can be seen that, on the whole, ROA has shown an upward trend and EM has shown a downward trend in the last five years, and the changing trends of these two factors also determine that ROE has shown an upward trend despite slight fluctuations in these five years. The rise in ROA of Amazon is closely related to the company's vigorous development. The company's asset utilization effect is becoming better and better, and it has achieved good results in increasing revenue and saving capital use. As for EM, which refers to the multiple of total assets equal to shareholders' equity, it can evaluate the debt level of an enterprise. Therefore, EM is closely related to the asset-liability ratio index, which is why the asset-liability ratio appears in the above table. It is not difficult to see that in the past five years, the asset-liability ratio of Amazon has been decreasing, and the EM index has also been decreasing, which shows that the debt level of Amazon has been decreasing, and the protection degree of creditors' rights and interests has been increasing. It is worth noting the change trend in ROA in 2019 and 2020; ROA in 2019 decreased by 17% year-on-year.

According to the report data, the authors found that this was due to the insignificant increase in net profit of Amazon in 2019 and the substantial increase in total assets. As for the stagnation in net profit, according to the authors' analysis in 2019, the company forced all sellers to provide VAT invoices for the purchase price, because in 2019, Amazon's tax payable increased significantly by more than 100%, which led to a decrease in profits. On the other hand, in 2019, the company started operating business leasing and purchased a large number of corporate bonds, which led to the increase in total assets. As for 2020, the ROA value greatly increased, with a year-on-year increase of 29%. The authors speculate that this is caused by the impact of the COVID-19 pandemic. Although the company bought more corporate bonds and fixed assets in 2020, the growth rate of total assets is still far lower than that of net profit. In 2020, Amazon's net profit almost doubled. The main reason is the surge in online sales due to the pandemic. Although the unit cost and unit income may not change much, the surge in number will also increase the total profit.

4.1.3. Three-Factor Analysis of Return on Equity (ROE)

According to the three-factor DuPont model, there are three factors that determine the return rate of shareholders' equity: equity multiplier, net sales interest rate, and total

assets turnover rate. The ratios of equity multiplier, net sales interest rate, and total assets turnover rate, respectively, reflect the debt ratio, profitability ratio, and operational capacity ratio of enterprises. After this decomposition, we can concretize the reasons for the rise and fall of the comprehensive index of the rate of return on shareholders' equity and quantitatively explain the problems existing in enterprise management. We can set the formula as follows:

$$\text{ROE} = \text{Total asset turnover (TAT)} \times \text{Net profit margin on sales (NPMS)} \times \text{Equity multiplier (EM)} \quad (2)$$

Factor analysis method is used to calculate the impact of DuPont model indicators on the ROE in 2016, 2017, 2018, 2019, and 2020.

2016:

$$\text{ROE} = 1.74\% (\text{NPMS 2016}) \times 163.05\% (\text{TAT 2016}) \times 4.325 (\text{EM 2016}) = 12.29\% \text{ ①}$$

$$\text{Replace NPMS: ROE} = 1.70\% (\text{NPMS 2017}) \times 163.05\% (\text{TAT 2016}) \times 4.325 (\text{EM 2016}) = 11.99\% \text{ ②}$$

$$\text{Replace TAT: ROE} = 1.70\% (\text{NPMS 2017}) \times 135.46\% (\text{TAT 2017}) \times 4.325 (\text{EM 2016}) = 9.96\% \text{ ③}$$

$$\text{Replace EM: ROE} = 1.70\% (\text{NPMS 2017}) \times 135.46\% (\text{TAT 2017}) \times 4.739 (\text{EM 2017}) = 10.91\% \text{ ④}$$

The impact of the decrease in NPMS on the return on ROE in 2017 is as follows:

$$\text{②} - \text{①} = 11.99\% - 12.29\% = -0.3\%$$

The impact of the decrease in TAT on the return on ROE in 2017 is as follows:

$$\text{③} - \text{②} = 9.96\% - 11.99\% = -2.03\%$$

The impact of the increase in EM on the return on ROE in 2017 is as follows:

$$\text{④} - \text{③} = 10.91\% - 9.96\% = 0.95\%$$

2017:

$$\text{ROE} = 1.70\% (\text{NPMS 2017}) \times 135.46\% (\text{TAT 2017}) \times 4.739 (\text{EM 2017}) = 10.94\% \text{ ①}$$

$$\text{Replace NPMS: ROE} = 4.32\% (\text{NPMS 2018}) \times 135.46\% (\text{TAT 2017}) \times 4.739 (\text{EM 2017}) = 27.73\% \text{ ②}$$

$$\text{Replace TAT: ROE} = 4.32\% (\text{NPMS 2018}) \times 143.18\% (\text{TAT 2018}) \times 4.739 (\text{EM 2017}) = 29.31\% \text{ ③}$$

$$\text{Replace EM: ROE} = 4.32\% (\text{NPMS 2018}) \times 143.18\% (\text{TAT 2018}) \times 3.735 (\text{EM 2018}) = 23.10\% \text{ ④}$$

The impact of the increase in NPMS on the return on ROE in 2018 is as follows:

$$\text{②} - \text{①} = 27.73\% - 10.94\% = 16.36\%$$

The impact of the increase in TAT on the return on ROE in 2018 is as follows:

$$\text{③} - \text{②} = 29.31\% - 27.73\% = 1.58\%$$

The impact of the decrease in EM on the return on ROE in 2018 is as follows:

$$\text{④} - \text{③} = 23.10\% - 29.31\% = -6.21\%$$

2018:

$$\text{ROE} = 4.32\% (\text{NPMS 2018}) \times 143.18\% (\text{TAT 2018}) \times 3.735 (\text{EM 2018}) = 23.13\% \text{ ①}$$

$$\text{Replace NPMS: ROE} = 4.13\% (\text{NPMS 2019}) \times 143.18\% (\text{TAT 2018}) \times 3.735 (\text{EM 2018}) = 22.09\% \text{ ②}$$

$$\text{Replace TAT: ROE} = 4.13\% (\text{NPMS 2019}) \times 124.54\% (\text{TAT 2019}) \times 3.735 (\text{EM 2018}) = 19.21\% \text{ ③}$$

$$\text{Replace EM: ROE} = 4.13\% (\text{NPMS 2019}) \times 124.54\% (\text{TAT 2019}) \times 3.630 (\text{EM 2019}) = 18.67\% \text{ ④}$$

The impact of the decrease in NPMS on the return on ROE in 2019 is as follows:

$$\text{②} - \text{①} = 22.09\% - 23.13\% = -1.04\%$$

The impact of the decrease in TAT on the return on ROE in 2019 is as follows:

$$\text{③} - \text{②} = 19.21\% - 22.09\% = -2.88\%$$

The impact of the decrease in EM on the return on ROE in 2019 is as follows:

$$\text{④} - \text{③} = 18.67\% - 19.21\% = -0.54\%$$

2019:

$$\text{ROE} = 4.13\% (\text{NPMS 2019}) \times 124.54\% (\text{TAT 2019}) \times 3.630 (\text{EM 2019}) = 18.67\% \text{ ①}$$

$$\text{Replace NPMS: ROE} = 5.52\% (\text{NPMS 2020}) \times 124.54\% (\text{TAT 2019}) \times 3.630 (\text{EM 2019}) = 24.95\% \text{ ②}$$

$$\text{Replace TAT: ROE} = 5.52\% (\text{NPMS 2020}) \times 120.20\% (\text{TAT 2020}) \times 3.630 (\text{EM 2019}) = 24.09\% \text{ ③}$$

$$\text{Replace EM: ROE} = 5.52\% (\text{NPMS 2020}) \times 120.20\% (\text{TAT 2020}) \times 3.439 (\text{EM 2020}) = 22.82\% \text{ ④}$$

The impact of the increase in NPMS on the return on ROE in 2020 is as follows:

$$\text{②} - \text{①} = 24.95\% - 18.67\% = 6.28\%$$

The impact of the decrease in TAT on the return on ROE in 2020 is as follows:

$$\text{③} - \text{②} = 24.09\% - 24.95\% = -0.86\%$$

The impact of the decrease in EM on the return on ROE in 2019 is as follows:

$$\text{④} - \text{③} = 22.82\% - 24.09\% = -1.27\%$$

The changes in EM were analyzed to some extent above, and this part focuses on analyzing the changes in TOT and NPMS. On the whole, TOT has basically maintained a downward trend in the past five years, with a huge decline range, and NPMS has shown a rising trend. The turnover ratio of total assets is the ratio of net sales revenue to average total assets of an enterprise in a certain period, and it is an index to measure the ratio between the scale of asset investment and sales level; the higher the turnover rate of assets, the stronger the sales ability of enterprises and the better the benefit of asset investment (Patin et al. 2020). Within five years, Amazon's total asset turnover ratio decreased by 40%, which is a huge amount, but the authors do not think that this represents a decline in the company's sales capacity. On the contrary, we can see from the above that the company's sales revenue has maintained a very high growth rate every year, but Amazon's asset purchase speed is really too fast, and a large number of fixed assets are purchased every year, especially in 2020; because of COVID-19, the amount of fixed assets bought doubled from the amount in 2019, which shows that Amazon actively develops the company's basic business and actively expands globally, that is the reason why TOT has kept going down in the past 5 years. As for EPMS, it reflects the net profit of each dollar of sales revenue and indicates the income level of sales revenue. The following Figure 5 can show the change trend of Amazon's net sales and operating expenses:

The table above shows the annual growth rate of Amazon's sales revenue and sales cost. According to the above EPMS data, the index suddenly increased by 2.62% in the 2017–2018 period, with a year-on-year increase of 154.1%, and then it entered a floating period in the following years. It can also be seen from the chart that the growth rate of sales revenue from 2017 to 2018 is much higher than the growth rate of sales expenses, which further leads to the sharp increase in operating income and net income, which has tripled compared with 2016. Moreover, such a huge difference in income and expenses only lasted for one year and returned to the normal level in the 2018–19 period. Unfortunately, the authors have not been able to find the specific reason for this so far. According to the data on operating expenses in the company's 2018 financial statements, there is no significant change in any of them, but the overall increase trend has declined, which led to the decrease in the total operating expenses.

The Figure 6 demonstrates the annual growth of Amazon's product and service sales, where the product sales include product sales and related shipping fees, including digital media content. However, the service sales comprehensively covered the third-party sellers' fees, AWS sales, advertising services, Amazon Prime membership fees, and certain digital content subscriptions. According to the figure, North American sales revenue increased by 70.38% in the 2016–2020 period. Likewise, international segment sales revenue jumped up by 137.39%, and AWS revenue sharply increased by 271% from 2016 to 2020.

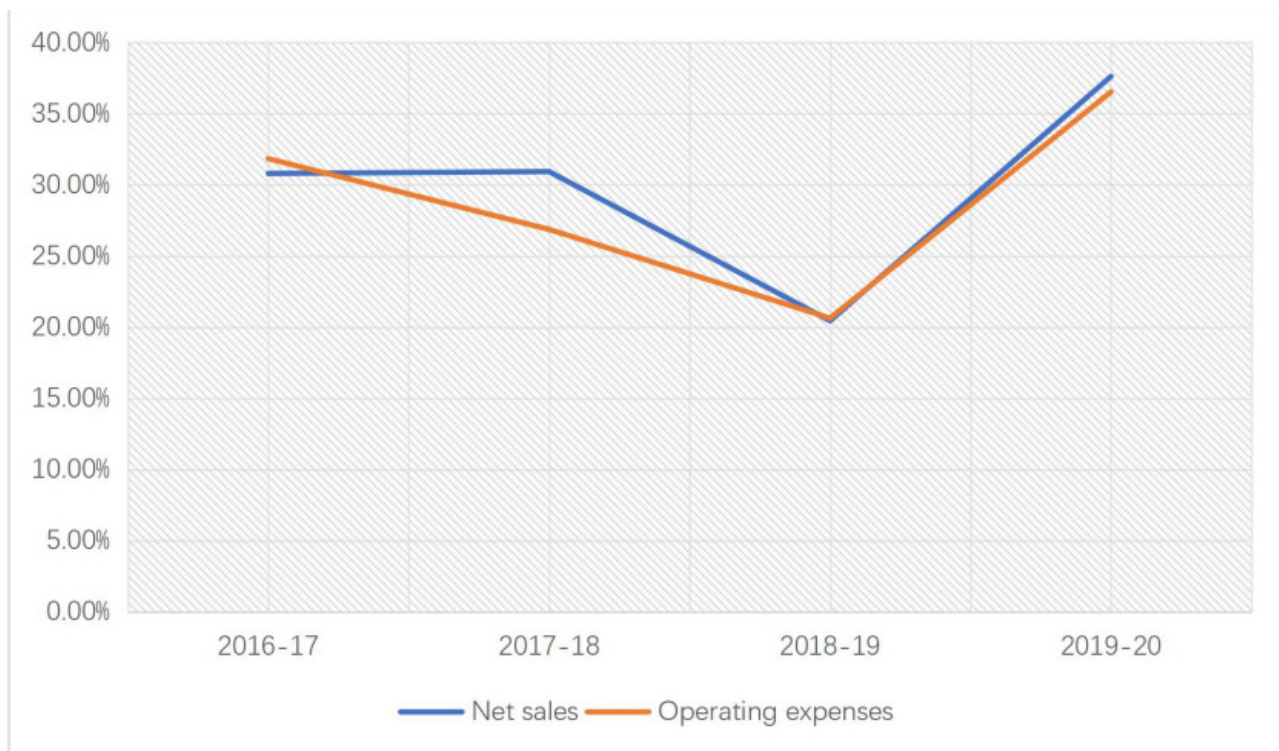


Figure 5. Amazon's net sales % operating sales change trend line.

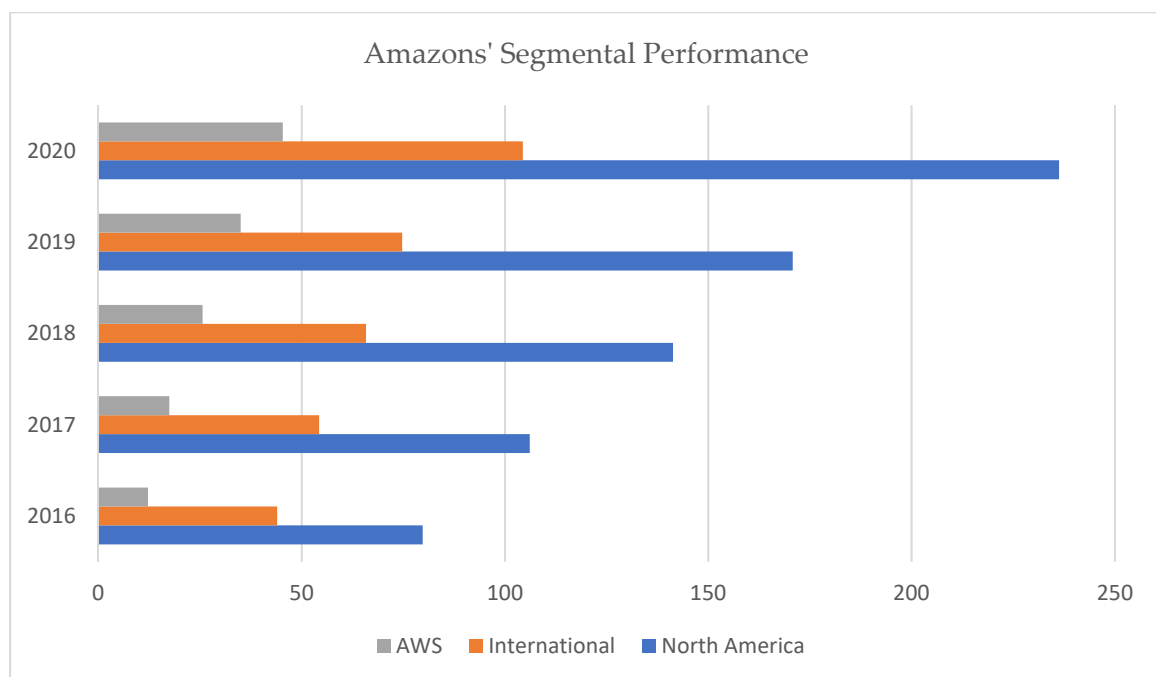


Figure 6. Amazon's performance by segment.

The Figure 7 presents the annual growth of Walmart's products and services worldwide, where Walmart's US segment revenue increased by 3.94% in the 2016–2020 period but, in contrast, Walmart's international segment revenue and Sam's Club segment revenue decreased by 2.43% and 8.55%, respectively. When we compare the segmental financial performance between Amazon and Walmart, Amazon has performed far better than Walmart. This analysis is in line with [Yu et al. \(2022\)](#), who explored how Amazon has sufficient experience to balance profit and CSR, climate change, and human rights activities.

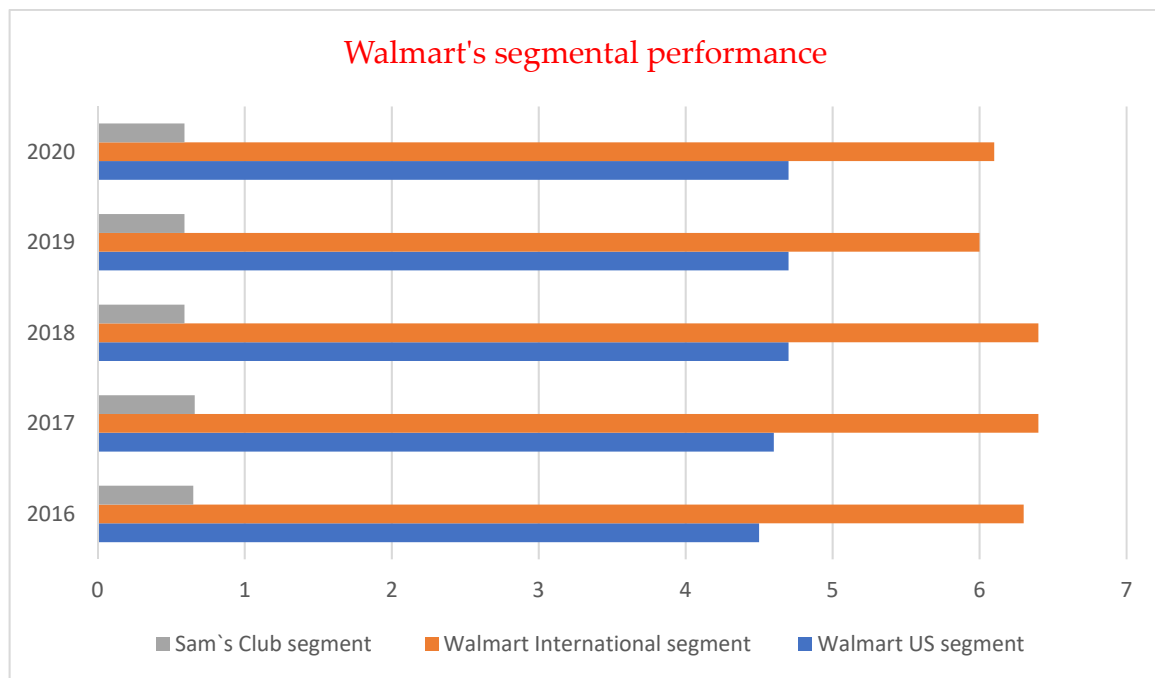


Figure 7. Walmart's performance by segment.

4.2. Comparison of ROA, ROE, and EM between Amazon and Walmart

As the robustness test of Amazon's financial performance analysis, the authors employed a comparative analysis of ROA, ROE, and EM between Amazon and Walmart during the study period of 2016–2020, see Table 6.

Table 6. Comparative data of ROA, ROE, and EM of Amazon and Walmart (2016–2020).

Item/Year	Amazon					Walmart				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
ROA (net profit/Total average assets)	2.84%	2.31%	6.19%	5.14%	7.8%	7.31%	7.22%	5.23%	3.41%	6.72%
ROE (net sales interest rate × total assets turnover rate × equity multiplier)	12.29%	10.94%	23.13%	18.87%	27.09%	17.90%	17.17%	12.53%	8.57%	19.08%
EM (total assets/total shareholders' equity)	4.32	4.73	3.73	3.63	3.82	2.48	2.56	2.63	3.02	3.17

The table above demonstrates that Amazon's ROA increased by 174.65% from 2016 to 2020, but Walmart's ROA declined by 8.07% during the 2016–2020 period. The decreasing statistics of ROA for Walmart are inconsistent with Pandey et al. (2021), where the authors concluded that Walmart did not understand consumers' tastes and preferences before entering the foreign market, and the net profit from their international segment decreased from 2016 to 2020. In addition, even though Walmart provides essential goods that people still buy during the COVID-19 pandemic, e.g., food, beverages, and personal care products, which are profitable with lower risk, their stock price was negatively affected by the COVID-19 outbreak (Guo et al. 2021). The ROEs for both companies have increasing trends during the study period of 2016–2020, however, the raising percentage is different. For instance, Amazon's ROE jumped by 120.26% from 2016 to 2020, but Walmart's ROE only improved by 6.59%. Again, this result is supported by Baud and Durand (2021), where the authors observed steady growth of distributed earnings to shareholders and the ability to reduce the debt equity ratio; in opposition, Amazon is very different, they did not distribute any funds to their shareholders directly, but their shareholders are becoming richer at a very impressive rhythm via equity price. More interestingly, Amazon's EM is in a declining position by 11.5% for the study period. However, Walmart's EM increased by 27.82%.

To summarize, from the overall point of view of the DuPont analysis, the most intuitive indicator (return on equity (ROE)) in the DuPont framework has maintained an upward trend in the past five years for both Amazon and Walmart, which means that both companies have maintained an optimistic development trend as a whole. If ROE is subdivided into EM and ROA, we can see that ROA has been on the rise, which shows that Amazon and Walmart's assets are becoming better and better, and both companies have done a good job in saving money and increasing revenue. At the same time, in the past five years, the EM index has experienced a process of first rising and then falling, which shows that the debt level of Amazon is gradually decreasing, and the rights and interests of creditors are being much better protected. At the same time, the ROA index is obtained by multiplying net profit margin on sales (NPMS) by total asset turnover rate (TAT). From the above data analysis, it can be seen that NPMS has been rising continuously during the past five years, which shows that Amazon's revenue level is rising continuously, and its profit level is guaranteed. At the same time, the turnover rate of total assets is constantly decreasing, which shows that although the company's profitability is constantly improving, the sales capacity is still lacking, and the purchase speed of total assets is too fast, which cannot be used in time and converted into sales.

4.3. Problems and Countermeasures in Financial Management

4.3.1. Poor Cost Control

As mentioned above, Amazon's sales revenue has been growing at a rate of 30 percent a year for the past five years, but corresponding operating costs are also rising year by year, and some years even outpace the growth in operating income, such as 2016 and 2018, with only 2017 seeing a much higher annual increase in operating expenses. Even though Walmart enhanced various developments in various stages, for instance free two-days shipping via Store No 8, e-commerce platform of Flipkart and Myntra in India during 2019, and next-day delivery to more than 75% of the US population in 2020 (Walmart 2020), their operating expenses increased 2.41% from 2019 to 2020. Main business income has increased year by year, but the sales expenses and management expenses have increased by a larger margin, which has led to a decrease in the net profit of enterprises year by year and a slowdown in the growth rate of assets. This shows that Amazon should strictly control the production cost and operating expenses and try their best to reduce various expenses, so as to expand the room for the company's profit growth. The cost of enterprises is an important factor affecting profits and saving the cost is conducive to improving the profitability and competitiveness of enterprises. From the DuPont analysis system, we can analyze whether the cost structure of enterprises is reasonable, so as to find out the problems existing in the cost management of enterprises and provide the basis for strengthening cost management. We can start from the following aspects: strictly control the scope and standard of cost and expense, focus on improving the basic work of cost and expense management, calculate the cost and expense in time, and make the cost and expense plan regularly.

4.3.2. Poor Capital Operation Ability

Because the turnover rate of the company's total assets is too low, which shows poor asset utilization effect, Amazon should take some measures to effectively utilize assets. The company's asset turnover rate is low, and it has been going down for a long time. However, comparing Amazon's asset turnover rate (1.25 times in 2019 and 1.20 times in 2020), Walmart effectively utilizes assets by having a higher asset turnover rate (2.33 time in 2019 and 2.12 times in 2020) and should take measures to improve the utilization efficiency of various assets, dispose of redundant and unused assets, and increase sales revenue, so as to improve asset turnover rate. The essence of the asset utilization effect is to produce as many products as possible and create as much income as possible with as little asset occupation as possible and as short a turnover as possible. The effective use of assets is the key link that affects the financial stability and profitability of enterprises. The asset turnover rate directly affects the profitability of an enterprise. If the asset turnover rate of

an enterprise is slow, it will take up a lot of capital, increase the cost of capital, and reduce the profit of the enterprise. The analysis of asset turnover should not only analyze the total asset turnover rate of enterprises but also analyze the inventory turnover rate and accounts receivable turnover rate of enterprises and combine the turnover rate with capital occupation. From the analysis of the above two aspects, we can find the problems existing in the asset management of enterprises, so as to strengthen control and management and improve the efficiency and effect of asset utilization.

4.3.3. Poor Management Level of Liabilities

In recent years, the EM index of Amazon has been decreasing year by year, and the asset liability ratio also has been decreasing. In a sense, this may be a good thing, but on the other hand, it also shows that the mechanism of the company's debt utilization is not reasonable enough. In contrast, Walmart's EM has a steady growth during the study period. From the above income statement, we can see that although the total liabilities of the company are also increasing year by year, the growth rate is still relatively slow compared with the total assets, especially for long-term liabilities, the amount of which has kept a very slow growth rate in the past five years. The reason why the company's asset-liability ratio does not show a very sharp decline is because Amazon began to carry out long-term lease liabilities in 2017, which greatly increased the company's total long-term liabilities. Likewise, Walmart's long liabilities are an increasing trend, but their cash flow situation is much stronger in 2020. Therefore, Walmart's liability management is more efficient than Amazon. However, long-term lease liabilities cannot really obtain a certain amount of cash flow, which has no influence on the company's foreign investment or internal improvement. Under the background of the COVID-19 pandemic, it may be a major blow to other industries such as manufacturing and service industries, but it is really a golden age for e-commerce companies such as Amazon, where the number of orders has surged and sales have doubled, which means that Amazon is at the center of the development of the times. Under such favorable conditions, why can Amazon not be more radical, continue to increase its amount of debt, introduce a large amount of cash flow, and expand substantially to seize the opportunity of the times?

4.3.4. Lack of Core Competitiveness

Amazon lacks core enterprise competitiveness. With the advent of the Internet age, more and more e-commerce companies are entering the market, such as Taobao and Suning in China. Obviously, Amazon has not shown as strong dominance in China as in the world. When it comes to Taobao, people's first impression is that it is cheap and good. When it comes to Suning, people think of household appliances. Amazon lacks this first impression, therefore, cultivating the core competitiveness of enterprises is the fundamental way to improve business performance, and it is also the objective requirement for the sustainable development of enterprises. Within a similar vein, Walmart is facing similar problems to enter foreign countries, mainly Argentina, Brazil, Indonesia, China, and Japan, because Walmart's products fail to meet customers' tastes and lag behind compared with other brands (Pandey et al. 2021). Amazon should constantly strengthen technological innovation and management innovation, improve the quality of products and services, shape a unique corporate culture, and change the past extensive management mode, so as to be invincible in the complicated market economy environment and make a difference in such a big market as China. Likewise, Walmart should launch consumer surveys about their tastes and preferences for products before entering new countries.

5. Conclusions

From the analysis results of the above financial statements, Amazon and Walmart both have shown good development states in recent years, no matter assets, sales, profits, or cash flow being in a steady upward state. Especially since the outbreak of the COVID-19 pandemic in 2019, the company has shown a completely different operating state from most

industries, with a substantial increase in sales and faster expansion of the company, which is unexpected. Although the DuPont analysis shows that the company has some problems in financial management, such as high operating cost and high turnover rate of total assets, the development of Amazon is still remarkable. On one hand, Amazon continues to seize the double-edged sword of the COVID-19 pandemic, continues to expand sales, apply a unique innovative corporate style, and lay a good foundation of business organization. However, on the other hand, Amazon appropriately tackled challenges of globalization and adjusted its sustainable development strategy within the required time.

Next, the authors conclude that the company should continue to seize the double-edged sword of the COVID-19 pandemic, continue to expand sales, create its unique corporate style and mode, and lay a good foundation for the next business operation. The scale effect of the e-commerce retail industry is very important. The larger the scale, the easier it is for enterprises to survive and develop. Therefore, Amazon should work on high-speed expansion, specifically, it is to use diversified, large-scale, low-cost, and high-efficiency development strategies, quickly replicated in the whole world with the chain development model, and expand with low cost and high efficiency through the application of various management technologies to create the best chain network service brand in the world. At the same time, Amazon should change its development mode and promote strategic transformation from focusing on growth quantity to quality, from low added value to high added value, and from extensive management to fine management.

As for the limitations of this study, the authors explored two points which can be further studied and improved in the future. The first point is that this case study is based on Amazon and Walmart only because the research theme of this paper is about the impact of the COVID-19 pandemic on Amazon, which is mapped to the whole Internet industry. However, because the COVID-19 pandemic officially broke out in 2019, further studies could be expanded through cross-sectional and longitudinal data bases. The second problem is that this paper only analyzes the companies' financial data from the perspective of Amazon's consolidated financial statements and Walmart's financial consolidated financial statements as a whole and does not think about the problem from the perspective of a single Amazon subsidiary or Walmart subsidiary in different countries or regions. This is a big deficiency because different countries and regions have different policies to deal with the COVID-19 pandemic, such as China's tough policies to deal with the pandemic or the coexistence policies of Denmark and other countries; different subsidiaries will show different development trends. Therefore, future research can start from this angle, specifically analyzing the different financial situations of different subsidiaries affected by different policies and studying the different impacts of different countries' COVID-19 preventive policies on Internet companies.

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