The Investment Analysis of Microsoft, Apple and Amazon Based on Multi-indexes Evaluation

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***Abstract*—With the rapid development of Internet technology and the increase of the market value of Internet companies, investing in Internet giants has become the first choice of investors. In order to give an agreeable investment choice for potential investors, this paper analyzes and discusses the stocks of the Microsoft, Apple and Amazon financial based on their performance and stock price trend, respectively. The paper extracts the data of three companies from the financial statements, and calculates several financial ratios through formulas as well as compares different values. Based on the analysis, the investment styles of these three companies are demonstrated and the way to pick one stock from these three companies for different investors is stated. According to sufficient analysis and calculations, the paper finds that Amazon is better for long-term investors who care more about value investing, while Apple is suitable for risk-loving investors who aim to gain high return in short time. Microsoft is in the middle in all aspects of comparison and analysis and its investment strategy is flatter and safer, catering to investors who are risk-neutral. Although the stock performances of the three companies are different, they are all worth-investing companies, which is universally recognized. Besides, whatever company is chosen, the investors are expected to gain satisfactory returns, despite the risk still exists in all situations. These results shed light on the stock selections of these three companies (Microsoft, Apple and Amazon) and also offer supportive analysis for predicting the stock price trends of these three companies in the future years.**

***Index Terms*—Microsoft, Apple, Amazon, stock price, investment, ratio analysis, multi-indexes.**

I. Introduction

Microsoft, Apple and Amazon are three well-known high-technology Internet company, and it is necessary to investigate the investment value among the three giant companies [1]-[4]. In terms of the performance and the price of the stock, this paper analyzes the advantages and disadvantages of these three companies. To complete the research, the paper extracts the data of three companies from the financial statements, collates and revises the data separately and then draws the respective curves of three companies. Based on comparison, the paper analyzes and compares the curves in the unit of one chart and then come to different outcomes. In order to have a more systematic understanding of the operating conditions and profitability of the three companies, the paper discusses the financial situations of the three companies nowadays, which points out their advantages and disadvantages as well as provides investment advice for professional institutional investors and individual investors.

In fact, there have been many impressive and interesting studies by scholars and institutions on these three companies' stocks [5]-[10]. For example, Goldman Sachs, one of the world's leading investment banks, recommended selling Microsoft shares because there were important questions about Microsoft's main businesses right now. In Goldman's view, most of Microsoft's current business moves could be pushing itself in a downward direction [11]. However, in the later years, Microsoft behaved well and some experts thought it was advisable to but its stocks: Last week, Microsoft made history by becoming only the second publicly traded American company after Apple to reach the $2 trillion mark. Microsoft has outperformed Apple and Amazon this year and is thriving under CHIEF Executive Satya Nadella, who has reinvented the company as the largest seller of cloud computing software [12]. Therefore, In the world of the Internet, nothing is immutable and the stock price may change dramatically overnight. It is urgent and necessary to analyze and predict the stock price of Internet companies.

Meanwhile, the world of the Internet is full of fierce competition as well. S&P 500 companies are jockeying for the title of the next $2 trillion company, and the race is about to get even more exciting. After rising 12% this year, Microsoft is now the second most valuable company in the S&P 500 after Apple (AAPL) and is aiming to hit the $2 trillion market next [13]. A company that fails to accurately and timely analyze the direction of its stock and fail to apply helpful and constructive advice is not forward-looking. Weizhi Wang, a scholar from China, showed high interest in the research of Amazon. Amazon's stock price has soared in recent days, pushing the company's market value to $676.8 billion, briefly surpassing it Microsoft. Amazon's share price has since fallen slightly, but that was enough to prove that investors are optimistic about its prospects, i.e., Amazon is no longer just an e-commerce giant [14].

After sufficient analysis and calculations, the paper finds that Amazon is better for long-term investors who care more about value investing, while Apple is suitable for short-term investors who are not averse to risk or risk-loving. Microsoft is in the middle in all aspects of comparison and analysis and its investment strategy is flatter and safer, catering to investors who are risk-neutral.

The rest part of the paper is organized as following. The Section II will introduce the data and processing methods for ration/indexes calculations. The Section III will demonstrate the results with visualizing tools. The Section IV will give explanations for the results based on discussion and comparison. Eventually, a brief summary will be given in Section V.

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II. DATA AND METHODS

The data comes from public financial statements from websites. Based on data from 2016 to 2020 from excels and financial statements, firstly, the paper calculates the sales or the revenues of three companies. Subsequently, several important ratios are calculated, which can reflect the ability of profitability, liquidity and dividend payout of three companies, e.g., EPS ratio, net margin, GP/A ratio, dividend per share, etc. In terms of these different ratios, the paper then analyzes and compares three companies' financial situations. By analyzing the changes of the ratio values with the years, combined with the changes of the stock price of the three companies in recent years, the paper identifies the respective characteristics of each company and offer differentiated advice to investors of different styles. Table I lists the name of the ratios/indexes as well as corresponding calculation formulae.

TABLE I: THE ARRANGEMENT OF CHANNELS

Names	**Calculation**	**Meaning**
P/E ratio	Price divided by earnings per share	the lower the better
GP/A ratio	Gross Profit/Assets	reflect the company's profitability
Dividend per share	Dividend divided by shares outstanding	The higher the dividend per share is , the better the company's profitability is.
Net margin	Net income/sales	reflect the profitability of the company
EPS ratio	Earnings per share	reflect the ability of creating profits per share
Change in EBITDA	EBITDA in T+1 minus EBITDA in T	positive value means that the company has an increasing cash flow

III. RESULTS

A. SALES

As shown in Fig. 1, Microsoft historically had high and steady growth rates in sales. In fact, all three companies experienced positive growth rates in sales or revenues. There is a huge possibility that the sales growth rate would remain high and positive in the future years.

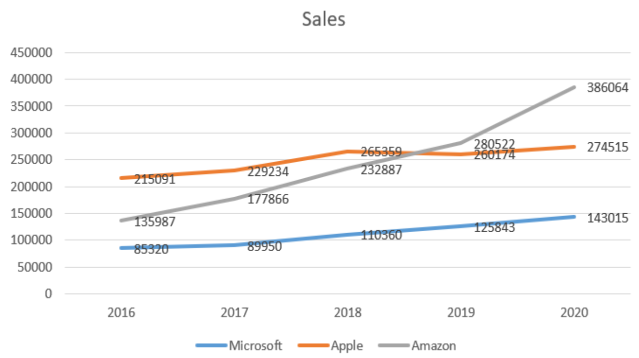

Fig. 1. Sales curves of three companies represented in one chart.

B. Dividend Per Share

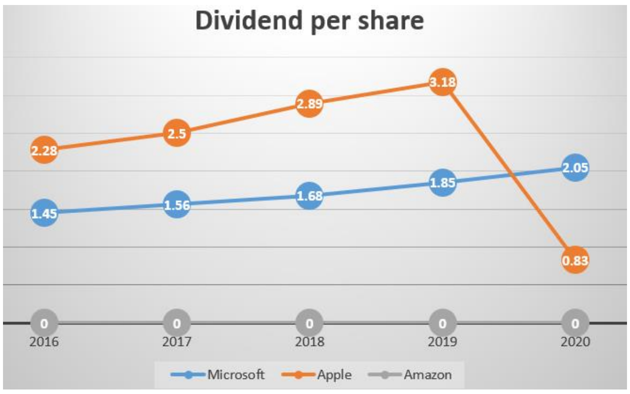

Fig. 2. Dividend per share of three companies in one chart.

Seen from Fig. 2, there was a steady and sustainable growth in dividend per share during this time period for Microsoft. Nevertheless, Amazon's dividend per share remained to be zero from 2016 to 2020 which is not a satisfactory outcome. Besides, the Apple's dividend per share increased before 2019 and then declined a lot in 2020 to only 0.83.

C. EBITDA

As depicted in Fig. 3, Microsoft and Amazon have never experienced a decline in the change in EBITDA, while the Apple decreased a little in 2019 to 76477.

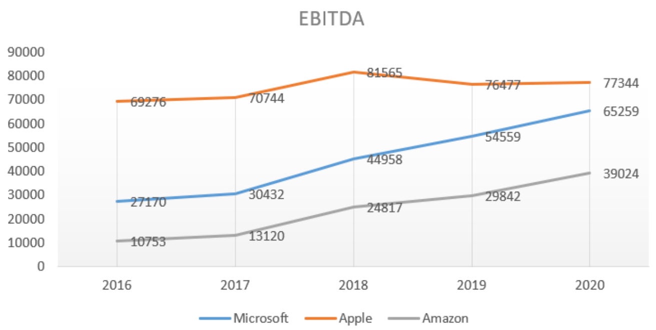

Fig. 3. The EBITDA values of three companies in one chart.

D. EPS

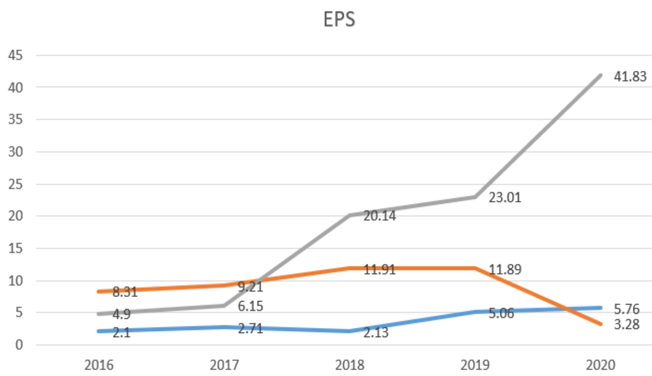

Fig. 4. EPS curves of three companies in one chart.

As illustrated in Fig. 4, Microsoft's EPS ratio declined from 2017 to 2018, but it soon increased dramatically and increased more than twice in 2019 and remained to grow in 2020.The performance of Amazon was impressive as it remained to increase by a large margin from 4.9 to 41.83 during this time period.

E. GP/A Ratio

It is apparent that the fluctuations of GP/A ratio of Microsoft and Apple almost seem to be the same (shown in Fig. 5). It is obvious that Amazon's GP/A ratio was much higher than both Microsoft and Apple.

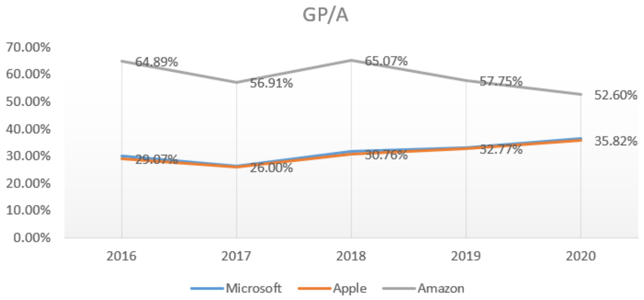

Fig. 5. GP/A ratio curves of three companies in one chart.

F. Net Margin

Net margin equals net income divided by sales. The Amazon's net margin performed least (seen from Fig. 6). Although Microsoft fluctuated a lot but it performed better than Apple in terms of statistics.

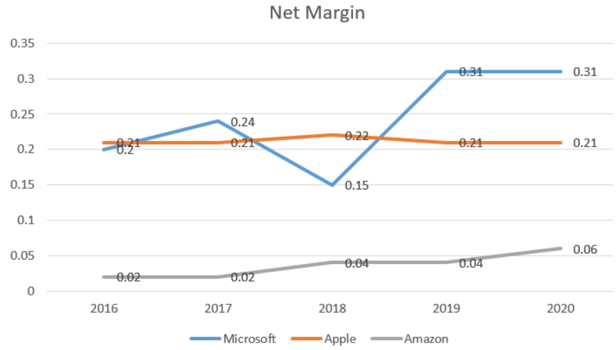

Fig. 6. Net margin curves of three companies in one chart.

G. Revenue

As listed in Table II and exhibited in Figs. 7-9, Microsoft's and Amazon's stock prices have experienced tremendous growth from 2016 to 2020. Apple's stock price decreased a lot in 2020. While Amazon's stock price was much higher.

TABLE II: THE CHANGES IN STOCK PRICE OF THREE COMPANIES

	Stock Prices				
	2016	2017	2018	2019	2020
Microsoft	51.17	68.93	98.61	133.96	203.51
Apple	113.05	154.12	225.74	223.97	115.81
Amazon	749.87	1169.74	1501.94	1847.84	3256.93

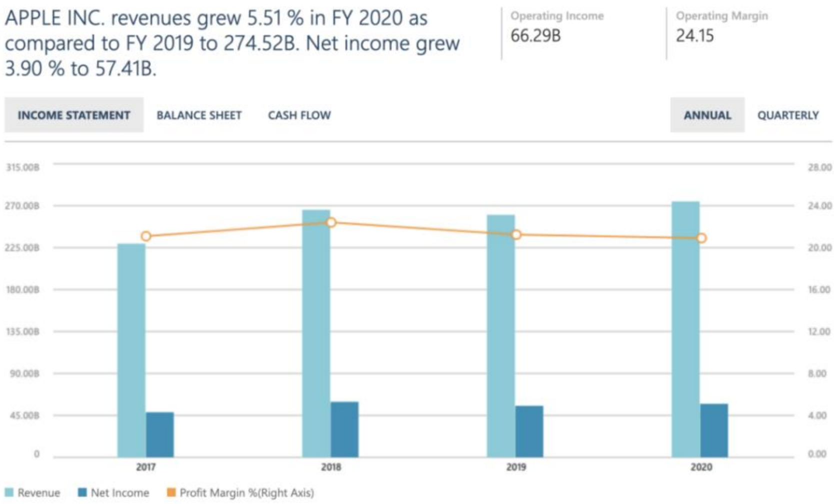

Fig. 7. Net margin curves of three companies in one chart [15].

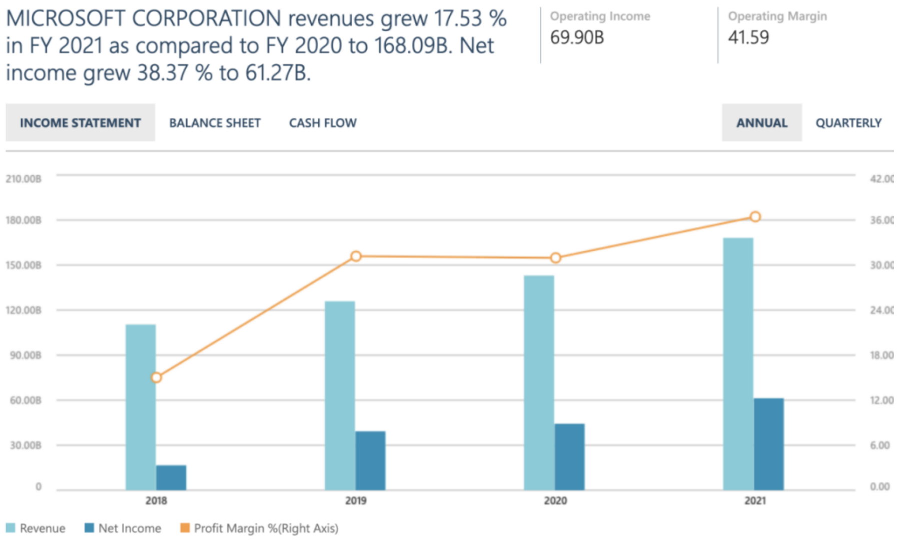

Fig. 8. Microsoft's income statement from 2018 to 2021 [16].

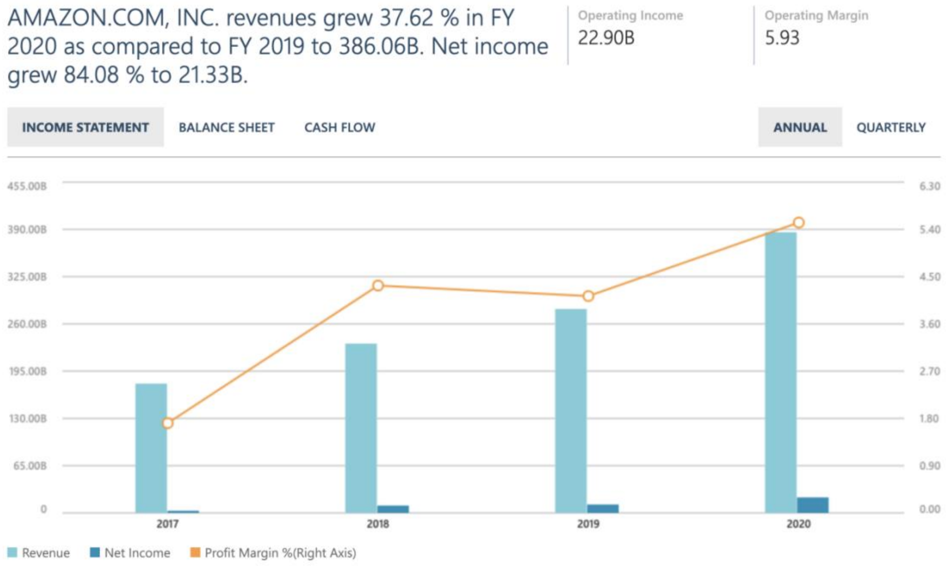

Fig. 9. Amazon's income statement from 2017 to 2020 [17].

IV. Discussion and Comparison

A. The Characteristics of Three Companies

As shown in Table II, it is apparent that Microsoft's stock price remained to increase from $51.17 per share in 2016 to $203.51 per share in 2020 and Amazon's stock price remained to grow from $749.87 per share to $3256.93 per share during the same time period. Both have done very well in their stock prices and both have experienced tremendous growth, which is very good and attractive for investors. Rapid increase in stock price means high and enormous increase in personal wealth. According to data in 2020, Amazon CEO Jeff Bezos' net worth stood at $202 billion, up more than $5 billion from previous estimates and up nearly $90 billion from this time last year. CNN attributed this to Amazon's soaring stock price, which soared a whopping 86% in 2020. Jeff Bezos' personal wealth has surpassed Nike, McDonald's and Costco. U.S. stocks are technically entering the bears fast, and the bulls are also fast and this is related to the large-cap technology stocks or technology leadership stocks in the U.S. stock market. Since the low point of this plunge, Amazon has risen 51.35%, and its market value is as high as $1.2 trillion, which is already the market value of Ali and Tencent combined [18]. What's interesting is that even if Amazon's stock price is very high, there are still a large number of investors buying. Amazon's stock price has soared because the company's main subscription services and network services departments have established a loyal customer base. The stock price of technology stocks has a higher premium than other stocks in the market, but many investors think this is reasonable. In addition, as illustrated in Fig. 2, Amazon has a poor performance on dividends payout, having not paid anything in recent years. Microsoft's dividend payout has increased every year, while Apple's has been more volatile and unstable. As depicted in Fig. 5, GP/A ratio is an important indicator of the realization of assets and measures the ability of enterprises to create profits. Amazon gained the highest score in terms of this indicator. Overall, Amazon is better for long-term investors because of its good stock analysis and asset value, and even though it hasn't paid dividend in several years, it's bound to pay off handily in the end.

According to Table II, Apple's stock price increased before 2019 but decreased a lot from $223,97 in 2019 to $115.81in 2020. This is undoubtedly a worrying thing for investors. As the core representative of global technology stocks, Apple's stock price plummeted again, and its total market value plummeted from more than one trillion US dollars at the peak to 674.7 billion US dollars today [19]. As it known to all, Buffett is a large holder of Apple stocks. The decline in Apple stocks not only brought losses to his wealth, but also affected his reputation to a certain extent. It is worth mentioning that Buffett stated that he does not like technology stocks. The main reason is that there are many uncertain factors in technology stocks. Meanwhile, the life span and competitive advantage of technology companies appear to be relatively limited, and the potential risks of investing in technology stocks are relatively high. However, it is undeniable that even though Apple has repeatedly created miracles in the past few years, after the rapid development of technology giants, there will inevitably be a development bottleneck, which is why companies need to maintain a sense of crisis. Judging from the feelings of many Apple fans, Apple's product innovation and R&D capabilities seem to have declined over the years. From the perspective of product performance and use functions, it seems that it has not been able to meet the real needs of enthusiasts [19]. However, investors don't have to be too pessimistic. For Apple, although it has suffered a series of negative shocks in recent years, it still has a relatively large advantage in cash and cash equivalents and securities [19]. Sustained and healthy cash flow is very important for large companies. Under the current situation of rapid expansion, Apple has always maintained a stable and large amount of cash flow which can also be concluded from Fig. 7. This is its advantage and its "moat". Therefore, from this perspective, it is not difficult to understand why Buffett loves Apple, and it also reveals Apple's appeal to investors. Besides, as shown in Figure 2, it is obvious that Apple performed best in terms of dividend per share. It paid more dividend than Microsoft and Amazon, which means investors could gain more returns if they have invested in Apple's stocks. However, in the year of 2020, Apple's dividend per share declined from $3,18 per share to only $0.83 per share. It fluctuated a lot and was full uncertainties. Therefore, investing in Apple stocks could not guarantee that investors can get high returns as they wish, because they must bear a certain amount of risk, and the risk may be higher than that of its competitors. After all, the life cycle of a company is similar to that of a person, and it will continue to change with age [20]. Apple is suitable for risk-loving short-term investors or bold and ambitious speculators. Obviously, it is not suitable for pursuing a sound investment strategy.

Microsoft has mediocre performance in all aspects of comparisons and analysis, it is not the best in any aspect, but every aspect is very stable. As shown in Fig. 8, Microsoft remained to grow steadily in terms of all aspects such as revenue, net income and profit margin. However, a slightly unexpected situation is that Microsoft fluctuated a lot in the performance of net margin from the year of 2016 to 2020 which is shown in Fig. 6. From Fig. 2, it can be seen that Microsoft insisted to pay dividend every year and the amount of dividend remained to increase from 2016 to 2020. In Fig.3, the case is the same that Microsoft had positive increase in the change of EBITDA which indicates that Microsoft's profitability was steady and fabulous. Its degree of risk was low and maintained good and steady continuous growth in sales during the time period and is likely to continue this trend. Therefore, Microsoft's investment strategy is flatter and safer, giving investors steady returns from year to year without taking on too much risk, but the returns are relatively less attractive.

B. *Limitations of the Study*

The volume of research data is relatively small, which only contains data from the year of 2016 to 2020. Data from earlier and after 2020 are not presented and calculated. Moreover, the types of underlying asset are also limited, which leaves space for further study. Besides, the paper only considers several ratios and indicators and ignores some other important and meaningful reference indexes. There are much room for improvement and upgrade. In addition, the stock price changes of our research companies are investigated in the unit of year and the stock price changes of different months in a year are not involved. Therefore, the data analysis may be insufficient in terms of completeness and preciseness.

V. CONCLUSION

In summary, based on calculating various financial indicators and stock price changes of different companies, the research collates and compares them, so as to systematically analyze the operating conditions and financial performance of the three companies in recent years. After analysis and comparison, the paper summarizes and acquires the respective investment style and investment strategy of three companies, thus offering different investment advice to different individual or institutional investors.

The three companies are all excellent companies enjoying worldwide fame and reputation. Although their financial performances and styles are different, they are all worth investing. Apple has not lost its advantages, but is maturing. Microsoft has proven that middle-aged technology stocks can also make great progress. Meanwhile, thanks to the epidemic, Amazon's stock price has soared, becoming the world's e-commerce giant, and its founder has also become the world's richest man. No matter which company the investors determine to invest, they are expected to get satisfactory returns in the future years.

This research helps to make a clear distinction about the investment strategy of Microsoft, Apple and Amazon and points out that three companies are suitable for investors with different investment personalities. The analyzed data reflects the financial performance of three companies during the given time period. According to the analysis and evaluation, investors can get advice about how to make a choice from these three companies and find one which matches their investment style and investment strategy best to get satisfactory return in the future.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

I am independent first author and I completed my paper without any group members. So all the tasks and work were done by myself.

REFERENCES

[1] U. Dolata, "Apple, Amazon, Google, Facebook, Microsoft: Market concentration-competition-innovation strategies," SOI Discussion Paper, vol. 2017, no. 01, 2017.

[2] M. Moore and T. Damian, *Digital Dominance: The Power of Google, Amazon, Facebook, and Apple*, Oxford University Press, 2018.

[3] C. Koser and K. Juergen, *Microsoft, Amazon and Google-A Correlation Analysis: Evidence from a DCC-GARCH Model*, 2020.

[4] A. Hong, B. Debadutta, and G. George, "The role of M&A in market convergence: Amazon, Apple, Google and Microsoft," in *Proc. 18th International Business Research Conference*, 2012.

[5] Z. Jiang, S. Jiyao, and W. Ke, "The application of PEST analysis and POCD framework to Skydio's venture capital investment," in *Proc. 2021 International Conference on Financial Management and Economic Transition (FMET 2021)*, 2021.

[6] U. A. Khan, N. A. Mohammd, and A. Shabbir, "A critical analysis of internal and external environment of Apple Inc.," *International Journal of Economics, Commerce and Management*, vol. 3, no. 6, pp. 955-961, 2015.

[7] N. Grigan, "Strategic analysis of Huawei in Russia: Swot and pest analysis," *Norwegian Journal of Development of the International Science*, vol. 66, pp. 3-17, 2021.

[8] Amazon. com, Inc. "Player, retailing giant to high-tech," in *Strategic Management and Business Policy*, 2014.

[9] H. M. Alshmrani, "An analytical view of Amazon success in the worldwide," *Life Science Journal*, vol. 18, no. 6, 2021.

[10] J. Li, "Differentiation, diversification and acquisition from an online bookstore: Multidimensional assessment of Amazon's strategic management," *SSRN*, p. 3683474, 2020.

[11] S. Li. (2015). Goldman Sachs says: Sell your Microsoft shares. *Interface News*. [Online]. Available: https://www.jiemian.com/article/256231.html

[12] Investing.com. $2 trillion later: Microsoft shares hit record high, is it too late to get in? *YingWei Finance*. [Online]. Available: https://cn.investing.com/analysis/article-200465323?__cf_chl_jschl_tk__=pmd_6eOLuf1UgePzjgDvOyYQELgaDmTKW3p9X0KUUQaN_co-1634050602-0-gqNtZGzNAmWjcnBszQzl

[13] Tencent's stock. (2021). Microsoft VS Amazon! Who will be the next $2 trillion company? *Tencent's News*. [Online]. Available: https://new.qq.com/omn/20210407/20210407A00C4W00.html

[14] W. Wang, "Amazon is worth more than Microsoft What has it done over the years?" *View Special Column*.

[15] Apple Inc. (2021). AAPPLE INC. revenues grew 33.26% in FY 2021 compared to FY 2020 to 36,581.70cr. Net income grew 64.92% to 9,468.00cr. *MSN Money*. [Online]. Available: https://www.msn.com/en-in/money/stockdetails/financials/fi-a1mou2

[16] MSFT. (2021). Financial Reports for Microsoft Corporation. *MSN Money*. [Online]. Available: https://www.msn.com/en-us/money/stockdetails/financials/fi-a1xzim
[17] Amazon.com Inc. (2021). Amazon.com, Inc. revenues grew 37.62% in FY 2020 compared to FY 2019 to 386.06bn. Net income grew 84.08% to 21.33bn. *MSN Money*. [Online]. Available: https://www.msn.com/en-us/money/stockdetails/financials/fi-a1nhlh
[18] G. Li, "Amazon shares hit a new height," *Financial Weekly*, 2020.
[19] S. Guo, "Apple's stock price plummeted & U.S. stock market's fundamentals shaken," *Financial Investment News*, 2019.
[20] NetEase smart. "Microsoft is resurrected. Compared with Apple, Google, and Amazon, who do you prefer?" *NetEase Technology*. [Online]. Available: https://www.163.com/tech/article/DJRPS7A300098IEO.html

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