



YING LI-KANKAANPÄÄ

Valuation of Activision Blizzard as A Stock Investment

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Author Li-Kankaanpää, Ying	Bachelor's thesis	Date 05/2023
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<p>This research was conducted to help establish a fundamental understanding of stock investment by interpreting the case of Activision Blizzard. Secondly, this research aimed to predict the intrinsic value of stocks, which laid a foundation for exploring profitable or valuable stocks and provide some feasible suggestions and examples for people who are interested in stock investment, especially for these new learners in the stock field. All these objectives have been achieved via the analysis and comparison among the three companies.</p> <p>In addition, it first introduced the overall background of the stock valuation and the information about the three companies, laying a foundation for further exploration on the stock valuation of three companies. Furthermore, it reviewed the related literature and then it identified three indicators, including revenue and revenue growth, EBITDA and EBITDA growth, and Net income, P/E ratio, and net income growth to interpret and compare the operation of three companies, following the estimation of implied equity value and enterprise value. All of these elements contributed to getting the conclusion that the stock of Activision Blizzard is recommended to be invested in the medium and long term as a result. the researcher has taken advantage of corresponding data of the revenue growth, net income, EBITDA growing rate, and P/E ratio of Activision Blizzard from 2017 to 2021 to help judge the stock developing trend, generating a more accurate recommendation for the investors. Besides, in order to have a deeper understanding of the game industry, another two peer companies, Rovio and Electronic Arts are also being used in this research to make a comparison to increase the reliability and validity of the conclusion. The symmetric data within the same period being used in the process of analysis can guarantee the effectiveness of the contrast. Besides, about the share value, the stock price of Activision Blizzard is between that of Electronic Arts and Rovio.</p> <p>To conclude, the data and graphs presented in the research showed that the overall trend of Activision Blizzard's revenue status is becoming better in recent years. Several approaches were adopted to improve the valuation of Activision Blizzard since multiple factors influence the valuation. Activision Blizzard has seen exciting growth in various aspects compared to another two companies. However, the company still needs to maintain its advantages and improve its value as a stock investment. Having basic knowledge about the methodology, the discussions and findings are based on that, which contributed to the conclusion that the stock of Activision Blizzard was worth investing in. Additionally, this project was conducted to provide feasible suggestions for the stock learns via the analysis of the three companies. Thus hoping this research can help people who are interested in stock investment learn something about stock and the operation of companies.</p>		

Keywords

Activision Blizzard; investing; revenue; EBITDA; net income; stock valuation.

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1 INTRODUCTION

As an increasing number of people exude enthusiasm for stock investments recently, the analysis of the valuation of the target stock being invested is of immense importance before making an investment determination. With the help of the valuation analysis of the stock in advance, investors are allowed to have more chances to make correct decisions to reduce the risk (Bustos & Pomares-Quimbaya, 2020). Therefore, the return from the investment can be maximized through a solid fundamental analysis as a result. In this research, the researcher will take advantage of three major game stocks to demonstrate the application of the stock analysis to provide a more accurate investment recommendation, which is respectively Activision Blizzard, Electronic Arts, and Rovio. Furthermore, the financial data in the past five years from 2017 to 2021 will be utilized in this research to ensure the credibility and accuracy of the results.

Stock is the share certificate that is marketable security issued by an enterprise to raise money from shareholders as proof and get profits and dividends from the company's development. Each share of stock represents the holder's fractional ownership of the company (Barro, 1989). This kind of ownership is not equivalent to the right of use, such as allowing the holder to participate in the general meeting of shareholders, participate in crucial company decisions, enjoy dividends or share profits. Stocks are one of the components of corporate capital. It can be transferred and traded in the stock market according to the price. It is one of the important credit tools in the capital market, but once the stock is purchased, the enterprise cannot be required to return the capital.

Value investing is a system first formed by Benjamin Graham in the 1980s and 90s. One of the most famous representatives is Warren Edward Buffett who is always ranked at the top one in the richest list. There are three essential principles about value investing. First, stocks are not just securities that can be bought and sold, they represent a certificate of ownership of a company, which is the fractional ownership of the company (Piotroski, 2000). That is the fundament of value investment as investing in stocks is investing in a

company. With the growth of GDP, the value itself will be constantly created when the market economy continues to grow. Under these circumstances, it's natural for a shareholder to receive dividends or bonuses as the fractional owners. The value of our holdings grows with the value of the company.

Second, the essence of investment is to predict the future, and the results cannot be 100% accurate. Thus, when investors make judgments, they must reserve a lot of space for avoiding the greater loss. So the purchase price must be significantly lower than the intrinsic value of the company. This principle is the most imperative concept in value investing. For example, the investor has 80%, 90% certainty for a specific company that it can obtain more profit. However, the investor won't lose too much when the risk possibility of 10% and 20% appears (Piotroski, 2000).

Third, value investing is based on the market. The market exists only to serve investors, which provides ample opportunities for investors and allows investors to purchase ownership. All the market tells us what the price is, not the real value of the company. Investors should not use the market as a shortcut to profit, but as a tool that can be exploited.

Valuing a stock gives investors a basic understanding of what a stock is worth and whether it is priced reasonably. Thereby it can guide investors to when it's time to sell and obtain more profit.

Calculation of comparable companies is a common way for stock analysis. The key part of comparable companies' analysis is to compare financial metrics with similar companies in the same industry. Then you need to determine the valuation metrics to use, usually it's revenue growth, EBITDA, net income, and so on. Next, calculate the valuation ratio or multiples and then adjust the price ratio of the sample to the price ratio of the target company. Eventually, calculate implied share price to estimate the implied value of the target company by using corresponding ratio or multiples.

2 RESEARCH SETTING AND COCEPTUAL FRAMEWORK

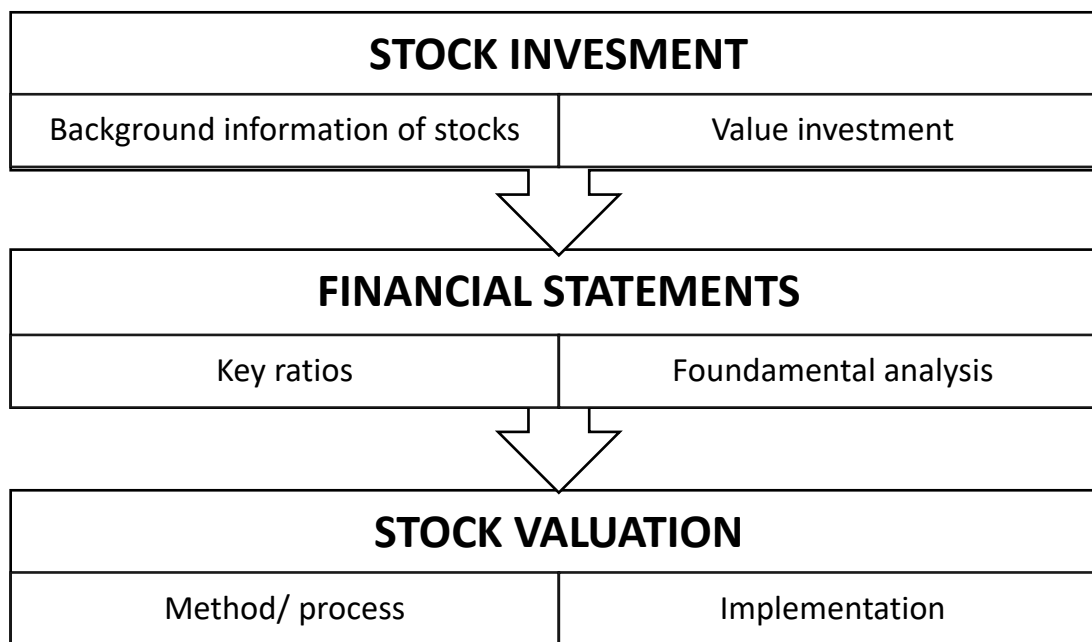
2.1 Research Objective and purpose of the thesis

This project aims to help establish a basic understanding of stock investment such as growth investment, shares, property, defensive investment, cash, and fixed interest. It tries to predict the implied value of stocks and lay a foundation for finding profitable or valuable stocks. Meanwhile, it makes some examples such as Activision Blizzard and compared companies such as Electronic Arts Inc. and Rovio. and provides some thoughtful suggestions for people who are very interested in stock investments. The research question aims to investigate whether the stock of Activision Blizzard is worth investing in or not.

What are the research questions that need to be answered?

- What is stock valuation?
- What information is needed for stock valuation?
- What are the key ratios of financial statements?
- How to use key rations for stock valuation?
- How to value a stock?

2.2 Conceptual framework



This conceptual framework has three main components: stock investment, financial statements, and stock valuation. The first section, stock investment, provides background information on stocks and emphasizes the value investment strategy. This section should cover the basics of what stocks are and how they work, as well as the principles of value investing, which involve seeking out undervalued stocks with strong fundamentals.

The second component, financial statements, introduces key ratios and fundamental analysis. This part should explain the various financial statements that companies produce, such as balance sheets, income statements, and so forth, and how investors can use them to gain insights into a company's financial health. It should also cover key ratios such as price-to-earnings ratio, EBITDA, etc., and explain how they can be used to evaluate stocks.

The third part, stock valuation, outlines a specific method or process for valuing stocks. This section covers the method of relative stock evaluation, and explainns the steps involved in applying the chosen method. It should also provide examples and illustrations of how to implement the process so that investors can better understand how to value stocks by themselves.

This conceptual framework provides a comprehensive approach to stocks investing which covers the key aspects of understanding stocks, analysing financial statements, and valuing stocks. It is beneficial for both novice and experienced investors who are interested to develop a structured approach for investing in stocks.

2.3 Research Companies

In this section, it is going to introduce the portfolio companies that have been identified for this research, laying the foundation for further analysis of these companies. These companies are well-known players in the video game industry, and they were selected based on their market capitalization, revenue, and influence in the market. They are Activision Blizzard, Electronic Arts Inc. (EA), and Rovio Entertainment Ltd.

The first company on the list is Activision Blizzard. Founded in 1979, Activision Blizzard is one of the largest game developers and publishers in the world. It is headquartered in Santa Monica, California, and was listed on the Nasdaq Stock Exchange in 1993 (REUTERS, 2022). Since its establishment, Activision Blizzard has dedicated itself to the gaming industry, and its primary businesses include mobile, PC, and console games. Activision Blizzard is also involved in the creation, marketing, and sales of all forms of entertainment content. Activision Blizzard owns popular franchises such as Call of Duty, World of Warcraft, and Overwatch (REUTERS, 2022). The company has a proven track record of producing high-quality games that resonate with gamers worldwide and has continued to expand its reach through acquisitions and strategic partnerships.

Activision Blizzard is structured into three main departments: Activision, Blizzard, and King, each specializing in different areas of the gaming market. First of all, the Activision department is focused on console and PC games and is known for popular shooting games such as Call of Duty. In 2019, Call of Duty was released on the mobile terminal, creating an enormous accretion of its MAU. MAU is a critical indicator used to evaluate the stickiness of social game users (Robinson & Cook, 2018). Secondly, the Blizzard department is primarily focused on PC games, with a wide range of game products including MMOs, shooting games, and card games. Blizzard's StarCraft and WarCraft have been popular with young people since their official release in 1988. The major operation

model of Blizzard is through launching new versions of the game to accrete revenue for the company. The main business of King is mobile games, focusing on leisure and puzzle games. Its Candy Crush Legend has always been one of the most popular leisure games in the United States, generating continuous revenue for the company since it was launched.

The second company on the list is Electronic Arts Inc. (EA). EA is a globally well-known company whose brand focuses on interactive entertainment software. Its headquarter is located in Redwood City, California, U.S. EA is initially established by Trip Hawkins in May 1982. He believes that games can help people connect with society. EA's services mainly cover the development of video games, internet games, mobile games, and other sales and publishing activities. There are mainly four sectors in EA, including EA Games, EA Sports, EA Maxis, EA All Play (EA, 2022). These sectors have individual distribution teams driven by customers. EA Games, run by Frank Gibeau, are mainly responsible for developing traditional games related to adventures, role-playing, cycle racing, and so on. Meanwhile, EA Games also organizes large-scale internet games and publishes other licensed games. EA Sports is responsible for the flagship collection of EA, including Tiger Woods PGA Tour, Madden NFL, and NHL® Hockey (EA, 2022). EA Maxis is responsible for simulation games developed for non-traditional gamers such as The Sims 4, and SimCity. EA All Play offers online gaming services and franchises with partners such as the World poker series, Triple Tetris, and Simpsons. In 1989, EA gained capital from the initial stocks offering, which was used to enter into the video games industry. In 2000, The Sims 4 created by EA became the most popular computer game series.

Ultimately, the last one is Rovio Entertainment Ltd.. It is established in Finland, in 2003. Its main services focus on developing mobile games. Then, Rovio expanded to other new commercial fields such as media, and publications. At first, their games mainly cover aspects of survival, strategy, and RPGs games (ROVIO, 2022). Then, in 2005, Rovio developed two large-scale video games called Darkest Fear War and Diary: Burma. These two games received high satisfaction from customers because of their novel design. Rovio also expanded its services for mobile game outsourcing. In 2006, Rovio helped EA with producing Burnout. In 2008, Rovio developed a game called Bounce Boing Voyage released on N-Gage platform of Nokia. In 2009, Rovio successfully invented a very popular mobile game called Angry Birds. In 2012, Rovio developed a puzzle-type game called Tiny

Thief (ROVIO, 2022). The CEO of Rovio is Mikael Hed who turns games workshops into mobile game pioneers. Their famous games include Angry Birds, Angry Birds Space, and Angry Birds Star Wars. In addition, it published cartoon works such as Angry birds toons. The values of Rovio are bold, embracing innovation, and acting with integrity.

These three companies were chosen as they represent a diverse range of game genres, business models, and target markets, and they have established themselves as key players in the industry. By analyzing these companies, people can gain valuable insights into the trends, challenges, and opportunities in the video game industry, as well as identify potential investment opportunities.

3 INVESTMENT ALTERNATIVES AND ANALYSIS

3.1 Growth Investment

Growth investment refers to a strategy in which investors choose stocks with great potential to invest. Growth investment refers to buying in the belief that the future value of an enterprise will increase rapidly, and selling after the future price rises sharply, so as to make a profit. Investors pay attention to the future value of an enterprise and do not have deliberate requirements for valuation. Even if it is overvalued at present, it can become an investment target as long as its growth is clear enough (Damodaran, 2012). In conclusion, growth investors focus on the fact whether the expected rate of return can exceed the growth rate of the overall market. In addition, growth stocks can be measured by other factors, such as customer loyalty and the value of a brand.

Companies with the potential to outperform the market tend to be startups or young companies that are expanding in emerging industries that have a long and spacious road ahead of them. These companies reinvest the proceeds into their own businesses in search of rapid expansion, and therefore generally do not pay dividends as normal public companies do. Thus from the perspective of risk, the uncertainty of growth investing will

increase correspondingly, so growth investing is regarded as an “offensive” investment (Damodaran, 2012).

Growth investing divides the companies into three main types. First, cyclical growth companies, that is, an industry has a cyclical nature, and investors who want to capture the industry can move up the ladder of the company. Second, high-quality growth companies, which are outstanding leading companies in all walks, with relatively certain long-term growth prospects and stable competitive advantages. Third, emerging growth companies. In the early stage of development, the industry has a high but small ceiling, but it has a long growth story and strict logic (Damodaran, 2012).

3.1.1 Shares

Shares are a part of the capital of a joint-stock limited company, presenting their value in the form of the prices of stocks, and also the units in which shareholders’ rights to participate in the distribution of earnings, profits or assets of the company are divided. Shares are categorized as ordinary shares, preferred shares and incomplete redeemed shares (Eliodor & Ovidiu, 2014). Shares have four following characteristics. First, shares can be measured in monetary terms. They are vehicles of a certain value, with each share representing the same amount of money. Second, each share of the same class has the same rights. Third, each share cannot be divided anymore. Four, shares may be transferred between shareholders in accordance with relevant law (Eliodor & Ovidiu, 2014).

Therefore, stock, share and equity are related to each other but also different. Equity is “shareholder’s equity”, which refers to the right to obtain economic benefits from the company as a shareholder and participate in the company’s operation and management. The content of equity mainly has two aspects: earnings right and voting right, including but not limited to bonus right, voting right and right to know. Stock is the basic, equal and smallest constituent unit of the capital of a joint-stock company. Stock is a form of shares, similar to a certificate. It used to be a paper certificate issued by a corporation to its shareholders to prove the number of shares it holds, but it is rarely used now. Now it has realized the paperless record of stockholder account of securities registration and clearing

institution. Thus in general, the scope of equity is greater than shares, and stock is the form of shares (Eliodor & Ovidiu, 2014).

3.1.2 Property

Property refers to the material wealth with monetary value, such as money, houses, land, and goods, which are protected by law and can be owned. There are three main types of property: personal property, real property and intellectual property (Shriver, 2019). With the development of social economy, science and technology and the change of people's opinions, people's understanding of property is constantly deepened, and the scope of property is also broadened accordingly. Therefore, the property can also be divided into the tangible property and intangible property. Tangible property is mainly money, materials and so on mentioned above. Intangible property includes intellectual property, virtual property, etc. (Shriver, 2019). Property has the following three characteristics. First, the property is exclusive. This nature protects the income of the asset from its owner, which encourages the owner to continuously invest in the asset in order to increase its value. Second, the property can be transferred between owners. Third, the property is also protected by law, which is conducive to the investment of asset specificity (Shriver, 2019).

In addition, the property of enterprises also includes all files, records, equipment and so on (Shriver, 2019). It is of great significance to establish a sound property evaluation system for enterprise investment planning.

3.1.3 Defensive Investment

Defensive investing is an investment method that investors are more likely to use to increase or maintain their assets during times of economic recession or stock market weakness (Peters & Egan, 2001). It is less risky and more stable. Although it cannot protect against high inflation, it can make more profits for investors while protecting them from the threat of financial crisis.

Defensive investments include investing in gold, defensive stock, bond, cash, and so on (Peters & Egan, 2001). It is worth mentioning that although defensive stocks are included

in the category of defensive investments, most stocks are not, as most stocks' growth depends on the growth of the overall market economy and tends to fluctuate with the overall market. Moreover, combined with the growth investment mentioned above, to invest growth stocks is not a bad strategy of defense.

If taking defensive investment into consideration, it is important to evaluate whether the stocks of a company are of low risk and stable return.

3.1.4 Cash

Cash is a legal medium of exchange that can be immediately put into circulation within a certain range. It is mobile currency. Cash is widely accepted and can be used to buy goods, pay debts and so on. Cash in a narrow sense only refers to cash on hand, including paper money and coins that people often touch. Broadly defined cash also includes bank deposits and other monetary funds (Riutort & Dardati, 2011). Cash flow by its name is the record of cash flow in and out (Riutort & Dardati, 2011). It is an important predictor of investment and an effective indicator of investment opportunities. In addition to this, people also look at a company's assets in another direction: a forecast of future cash flows.

In the short term, cash flow is a matter of life and death, as short-term survival is all that matters to a company trying to gain a foothold in a rapidly changing market. Resulted from that, establishing a sound management system of cash flow is an important security lock to ensure the survival and development of enterprises and improve their market competitiveness. What's more, cash flow is also used to measure the business condition of enterprises and whether there are enough assets to discharge the debt of a significant indicator.

3.1.5 Fixed Interest

A fixed-rate loan or investment is one in which the interest rate of the activity does not fluctuate with the market or other factors over the life of the activity, so the loan or investment is relatively low risk and the payout or return is constant (Hens & Rieger, 2013). In a stable financial environment, a fixed interest rate facilitates economic transactions and

accounting between lenders and borrowers, but it will cause certain damage to the interests of lenders if there is serious inflation.

Predictability is important to many companies because unpredictability is often associated with risk, and entering unpredictable territory in financial investment is a gamble. Especially for traditional financial institutions, if they want to make large loans or deposits, but the outcome is unpredictable, this may become an important factor hindering their entry of them.

Fixed interest rates help enterprises lock in long-term funds, avoid the impact of rising market interest rates on costs, and facilitate enterprises to estimate future operating costs. While fixed rates have advantages, there may be higher payments in the future, or a sudden drop in the overnight rate that has no upward impact on the fixed interest rate (Hens & Rieger, 2013).

3.2 Value Investment

3.2.1 Background Information

In recent years, the performance of the value stocks and growth stocks presented distinction. Take the U.S. as an example. The return rate of stock value growth was 12.5% in the past twenty years while it reached 13.7% in 2021 (Arshanapalli et al., 1998). Additionally, the performance of value stocks was better than growth stocks even during the rebalancing period of the annual portfolio and at various investment domains. Thus, more companies are engaging in making strategies in managing different types of stocks to obtain more profits. As a basic strategy on investment, value investing was preferred by investors to grasp opportunities and gain benefits.

Value refers to a phenomenon that appeared when cheap securities performed better than those expensive ones. The returns achieved by purchasing cheaper assets and selling expensive assets were called the value premium (Asness et al., 2015). These factors were crucial for investment.

As the founder of Graham Newman's investment company in New York, Benjamin Graham created two “bibles” for investors. The investment was defined by Graham and Dodd (2009) in Security analysis as behavior that aims at obtaining satisfactory returns through detained analysis and research. Another book *The intelligent investor* was originally published to provide suggestions for the non-professional investor while it was later praised by people from various fields. Graham and Dodd pointed out that those behaviors that do not satisfy the conditions are called speculation. Graham thought that a real investment must be ensured by a safety margin which could be proved by data, persuasive deduction, and practical experience. Graham stated that the risks brought by facts-based investment and news-based investment were different (Graham & Dodd, 2009). These concepts contributed to the philosophical basis of the value investment theory.

Investment value is a fundamental investment strategy. Investors usually look for undervalued securities to trade at a discount. The trading price is lower than the intrinsic value of stocks (Graham & Dodd, 2009). Companies on cheap valuation indicators are a common medium to achieve the goal.

3.2.2 Advantages

Everyone could benefit from value investment regardless of income and educational background. Anyone who would like to spend time and patience on exploring value investment might become a successful investor. Investors would benefit from long-term returns by passing through short-term fluctuation (WE, 2022). The biggest contradiction of value investing is time. It was by personal decision-making that reasonable returns would be obtained reasonable returns over a long period. This kind of investment is neither short-term wealth nor band operation. This kind of investment was to buy the equity of high-quality companies at a reasonable price. In essence, value investing is a business. When doing business, you can't expect to get rich, but hope that the business investment will continue to improve, operate steadily.

If the stock was assessed properly, the return rate and risk of the value stock would be favorable. The undervalued securities price in trade were cheaper than their value and the

related risks were minimized. If the return of a stock is favorable for an investor, profitable benefits would be obtained (Capital.com News, 2021). This operation induces massive financial operation and was against ordinary logic, which guaranteed the reverse operation of a few people against the majority. Many profits would be obtained.

Based on avoiding risks of loss, the value investment strategy provided a margin of safety. There is no stop loss in theory and there is room for profit for every purchase. Value investing took full advantage of the ability of compound. The investment would see a substantial increase on the condition that the returns and dividends were reinvested. More benefits would be obtained from interests as time passed (Capital.com News, 2021). Value investors often were unaware of the volatility, which was not a favorable investing approach. The low fluctuation of portfolio management helps achieve investment portfolios at low volatility. This approach added value to trustees who were interested in funds pursuing a value investment philosophy, offering superior performance. Such investors as investors seek for reaching marketing purposes and those investors from agencies would be attracted. The sum may even eventually bring greater returns to fund managers themselves because it can attract larger asset management scales (Pek, 2022).

3.2.3 Disadvantages

One obvious disadvantage of value investment was that it was not a theory of transaction, but a theory of value evaluation. The professional speculation theory was based on empirical analysis and theoretical analysis of trading. The details of dynamic prices and fluctuations could not be determined. Thus, the true value could be presented. The distinction of estimating the intrinsic value varies greatly for diverse assets. It is easier to estimate the intrinsic value of a bond than its corresponding stock. Growth and the flow of cash are stable while a stock has more variables. Tangible assets could be analyzed by financial statements, however, the technologies, brands, research and development, management, and competitive edge could not be reflected. This is the reason why there is a distinction and why the true value could not be presented. Both tangible variables and intangible variables were affecting the calculation of intrinsic value. As the uncertainty of intrinsic value integrated with the margin of safety, the risks increased. Measures taken to cope with risks would result in a high price of stocks (Faulkenberry, 2019).

The initiatives and flexibility of value investors were improved by rebalancing the strategy. From bull markets to bear markets, the rate of yield would exceed the so-called operation of full position. The bigger the market fluctuates, the more effective the strategy performs. This operation was a contrarian investment that was difficult to manage and was inhumane. It requires investors to respect laws in case of the occurrence of financial cheating. Besides, investors make their decisions, they have to bear the unpredictable results. They would miss opportunities even though they were not willing to. The opportunity was difficult to predict. Investors need to be prepared for uncertainties (WE, 2022).

3.3 Key Ratios and Fundamental Analysis of Companies

3.3.1 Economic and Market Analysis

Taking Activision Blizzard as an example, this paper mainly analyzes the investment value of the game industry and forecast calculation data are used to analyze the future development trend of the industry. Based on the market environment and economic analysis of Activision Blizzard, it is found that Activision Blizzard's profits will steadily increase in the future. Therefore, this paper concludes that Activision Blizzard is a game industry worth investing in (Ravan, 2017).

By studying the practices of some American game industry in economic activities, this paper finds that the roles of these game companies in their industry are different. A common way to compare prices in these industries is to acquire small game companies (Cruz, 2019). This article focuses on the biggest value of a game company like Activision, which also merged with Blizzard Entertainment at the time to develop the world of War craft game, which was the biggest hit of the time. The merger has been a huge financial success for the company, which is the only game company to make the Fortune's Next 50 list and has a market cap and revenue enough to be considered one of the world's biggest game companies (Cruz, 2019).

The company relies on third-party channels to generate most of its revenue, which results in the company not being able to fully control the revenue, but also being affected by the

operation of other platforms (Cruz, 2019). In addition, the company's main revenue relies on the popularity of a few core games developed in the past, which means that once these games are no longer popular, the company's revenue and performance will be greatly damaged, which is not conducive to the long-term development of the company's revenue and economy, and also makes the company's revenue ratio seriously out of proportion.

Activision, was the second largest third-party video game publisher in the world, renamed Activision Blizzard after its merging with Vivendi Games. Activision Blizzard has a number of advantages in the market that have allowed it to thrive and become the largest gaming company in Europe and the Americas. It is uniquely positioned to dominate the market with 500 million monthly active users (Zhang, 2020). As a gaming company, its scale is huge and its products are available on multiple platforms, making it very easy for users to log in.

In addition, more and more pirated games comparable to Activision Storm are prevalent among users (Zhang, 2020). These online games without Activision Storm's authorization will draw away part of the user base and revenue, which will not be conducive to the growth of Activision Blizzard's commercial value. And the rapid pace of updates in the interactive entertainment market means that Activision Blizzard will struggle to gain a foothold in the gaming market if it doesn't come up with a hit title in time. Changes in consumer preferences also have a serious impact on the company's operations and revenues. In addition, facing more and more and more powerful competitors, Activision Blizzard is faced with many risks and great pressure to operate in the fierce competition.

3.3.2 Financial Statements

In analyzing the financial health and performance of an enterprise, financial statements are critical components that provide a brief overview of its financial activities over a specific period. A financial ratio is a kind of data used to reveal the current situation of an enterprise's financial statement including operating conditions, development trends, etc. It is one of the most imperative analytical instruments for analyzing the financial situation (Petric & Beke, 2019).

Meanwhile, it is essential to describe the income statement and balance sheet in order to have a brief overview of financial statements. The financial statement known as the income statement or profit and loss statement shows the revenue earned by a company during a specific period (Pepple & Ejiogu, 2021). By deducting expenses from revenues to get a net income, it helps to ascertain the profitability of the business. In contrast, The balance sheet provides information about a company's financial status on a specific date by presenting its assets, liabilities, and shareholders' equity (Pepple & Ejiogu, 2021). It is beneficial to assess the company's liquidity, financial stability, etc..

Companies also create other financial statements, such as the statement of cash flows, which summarizes the cash inflows and outflows during a given period, in addition to the income statement and balance sheet. It aids in figuring out the company's cash condition and capacity to pay its debts.

Besides, investors and companies can have a better understanding of the current financial situation through a series of key ratios. Profitability is one of the important bases for the market to predict the profitability of enterprises. Enterprises can only create profits for investors on the premise of having a continuous income, thereby further expanding investment and promoting the development of the company. Fundamental analysis is to predict the intrinsic value of the market through economic, political, environmental, and other related fundamental factors, and to conduct directional transactions by judging the intrinsic value and current market prices. What's more, the fundamental factors also include company profitability, future market growth rate, management, corporate culture, competitors which seem less important than other fundamental factors.

All things considered, studying a company's financial statements can serve to shed light on its financial performance and health, and it can help investors, stakeholders, and analysts decide how the company will fare financially.

3.3.3 Analysis of Financial Statements

This paper is about the financial statement analysis of Activision Blizzard Games. Based on detailed technical and fundamental analysis of ATVI (Activision Blizzard), as well as some recent stock information and investor documents, Activision Blizzard was valued using key methods, including transaction comparability, transaction analysis and discounted cash flow, and based on the company's business development, to estimate its growth prospects and make recommendations. The financial statement of a company is of great importance for that it provides reliable and broad interpretation of the financial position of the company. For the purpose of getting a clear situation of ATVI's effectiveness in the course of operation, it is crucial to calculate and analyze the financial ratios including its ROE and ROA (Wittmann, 2014).

$$\text{ROA} = \text{Net Income} / \text{Average Total Assets}$$

$$\text{ROE} = \text{Net Income} / \text{Average Shareholders' Equity}$$

$$\text{Gross Profit Margin (\%)} = \text{Gross Profit} / \text{Revenue}$$

$$\text{Net Profit Margin (\%)} = \text{Net Income} / \text{Revenue}$$

Compared to ATVI's competitors such as EA (Electronic Arts), ATVI's ROA is much higher than EA, which is the evidence that ATVI is effectively managed in 2012 (Wittmann, 2014). Investigate its reason, it is not hard to find, the competitor company's ROA is not high, because they are limited by the amount of software restrictions and a good business reputation, while the ROA of AVTI is higher because that its core games still keep heat, and AVTI had also released a new game recently. The gaming industry is constrained by the popularity of its games releases, when a company releases a hit game, its net income could be high, otherwise, it could be low. Through the same comparison method, it is found that the ROE of ATVI is also much higher than that of its competitors, which means that ATVI can bring more returns to equity investors (Wittmann, 2014).

Net Operating Profit After Taxes (NOPAT) of ATVI has gained a great improvement in the past 6 years from 2007 to 2012 (Wittmann, 2014). During those years, The NOPAT of Activision Blizzard grew steadily until it jumped after the acquisition in 2008, and then grew even more dramatically as the company released new games (Wittmann, 2014). Net

operating assets (NOA) is more relevant to analyzing a company's performance, because liabilities and operating assets are very important for the company. This number is a more objective and direct way to evaluate a company's value. Net operating assets of Activision Blizzard have had a similar rise to NOPAT's over the past six years, but at a very different pace (Wittmann, 2014). Combined with the NOA and NOPAT metrics of Activision Blizzard, it can measure the return on net operating assets (RNOA) during this period, which determines how much net profit can one dollar of net assets make (Wittmann, 2014). RNOA maintained a steady growth from 2006 to 2007, with the largest increase only in 2008, before the merger, and a decline immediately after the merger in 2008, even falling into negative territory. However, NOPAT grew steadily over the following years, peaking in 2011 (Wittmann, 2014).

Net Operating Profit After Taxes (NOPAT) = Operating Profit x (1 – Tax Rate)

Net Operating Assets (NOA) = Operating Assets – Operating Liabilities

Return on net Operating Assets (RNOA) = Net Income / Operating Assets

Activision Blizzard, Inc. as a leading developer and publisher within the global game industry. ATVI has significant operations in countries around the world. Based on historical averages and ATVI management's recent statements, this paper creates a new model to study Activision Blizzard's value drivers and prospects, taking into account Activision Blizzard's product development and marketing strategies and cost of sales. In addition, ATVI's management is so good that it can convince people that it will continue to generate steadily growing earnings for the company and return higher value to shareholders (Cruz, 2019). It can be said that ATVI has found its position in the market very accurately in the field of games, and plays a decisive leading role in the market.

3.4 Stock Valuation Method

3.4.1 Relative Stock Valuation

A relative valuation model evaluated a company's stock value by comparing its value horizontally with its competitors (Pantzalis & Park, 2009). This model evaluated a company's stock value by comparing its value horizontally with its competitors (Pantzalis

& Park, 2009). It is helpful to analyze whether the company's stock price in the past five years can catch up with its competitors by comparing with the competitors. In this model, the price-earnings ratio (P/E Ratio) is the most important measure for analyzing a company's stock price. Therefore, the study will refer to and learn from how the company's price-earnings ratio has changed in the past five years, so as to evaluate whether the change in stock price is reasonable and profitable.

$$\text{P/E Ratio} = \text{Market Price per Share} / \text{Earnings per Share}$$

Comparable Companies Analysis is a method that is the value of enterprises against other similar business metrics in the same industry. Through the analysis of this literature, research provided useful information to estimate a company's stock price and value (Yu et al., 2007). Under this circumstance, it is conducive for apprising the stock price in the past five years because it provides a rough estimate for the enterprise stock price. During this analysis, the research took into account the overall operating level of the companies being compared (Yu et al., 2007). Therefore, the concentration of study will be on selecting similar companies in terms of size, growth rate, and profitability. On this basis, the comparative analysis between the two will be more informative in terms of changes in stock valuations.

In addition, after identifying companies for comparison, the study will focus on comparing financial information between companies, especially data from the past five years. For the collection of financial information, this study looks at how various company metrics, including earnings before interest, tax, depreciation, and amortization (EBITDA) and earnings per share (EPS), have changed. On the other hand, the multiples of comparable companies were obtained by calculating the comparable ratios obtained in this literature (Yu et al., 2007). Under this circumstance, the study estimates how the company's equity value has changed by comparing the company's average price-to-earnings ratio. Through the analysis of comparable companies, it is helpful to analyze whether the stock value of the researched company is in a leading position.

$$\text{EBITDA} = \text{Operating Profit} + \text{Depreciation} + \text{Amortization}$$

$$\text{EPS} = \text{Net Income} / \text{Total Number of Shares Outstanding}$$

4 RESEARCH DESIGN AND METHODOLOGY

4.1 Data collection and analysis

4.1.1 Comparable Company Analysis

The main method used in this study is comparable company analysis. This analysis method is a commonly used method to evaluate a company. It mainly uses the indicators of other similar companies in the same industry to evaluate the target company when the value of the target company is uncertain (Meitner, 2006). The application of comparable company analysis begins with the establishment of a basic understanding that such similar public companies can provide a strong reference for the target enterprises to be evaluated. These selected enterprises should be similar in key business, financial characteristics, performance drivers, and potential risks so that the valuation parameters can be set within a reasonable range. Corresponding valuation parameters can be set through the relative positioning of the target company in comparable companies to achieve a relatively accurate valuation of the company.

The core of this analysis is to select a series of comparable companies based on the target company and use the multipliers of each company as a measurement standard. If the multiplier of the target company is higher than that of comparable companies, then the target company is overvalued. On the contrary, if the multiplier of the target company is lower than that of comparable companies, it means that this company is undervalued.

4.1.2 Advantages of Comparable Company Analysis

Comparative company analysis belongs to a kind of relative valuation method, which is easier to understand and calculate than the absolute valuation method. The comparable company analysis ignores the free cash flow in the evaluation process. This analysis method does not evaluate the value of the company according to the free cash flow, which is a more appropriate valuation method compared with other absolute valuation methods that need to calculate the cash flow. Also, comparable company analysis is more adaptable because

different companies and departments or industries can be evaluated through a variety of key data, major ratios, and multiples (Fajasy, 2022).

In addition, the comparable company analysis method has strong market relevance, which can best reflect the company's current market value. As a relative valuation method, comparable company analysis has another advantage, which is the data obtained during the analysis are current. Market data are updated daily to avoid the rater bias caused by multiples and ratios of stock prices based solely on documents of the target company. Information of each company is based on the current stock price and enterprise data, so it is relatively easy to obtain the overall data used for analysis. In addition, it is easier to communicate with a variety of market participants in the course of comparable company analysis and to establish a baseline value for the multiples to be used in the valuation of the target company (Street of Walls, 2013).

In general, the valuation of target companies contains market assumptions about the underlying characteristics, and comparable company analysis provides a useful set of methods for evaluating this assumption.

4.1.3 Steps of Comparable Company Analysis

There are several key steps in applying comparable company analysis. The first step is to select a series of comparable companies. When selecting these companies, the key characteristics of the company are taken into full consideration, mainly from the two aspects of business overview and financial overview. The factors to be considered in business are as follows: the financial factors to consider in terms of industry sector, products and services, customers and markets, sales channels, and geographic location. Financial considerations include company size, profitability, growth profile, investment performance, and credit profile (Meitner, 2006). Based on the above considerations, a preliminary list of companies can be drawn up, and then the preliminary list can be filtered based on reference dimensions such as equity, enterprise value, revenue, EBITDA, main business, etc., to select companies that can be compared.

After selecting the list of comparable companies, it is required to summarize the indicators, multiples, and other financial information of the selected companies, which can be obtained from their public financial statements, earnings announcements, investor briefings, stock research reports, market expectations, news reports, etc. The third step is to create tables that calculate key figures, ratios, and trade multipliers for the selected companies. The last two steps are to benchmark the calculated data against comparable companies and estimate implied equity value and enterprise value of the target company.

The evaluation process of this study was carried out according to the above steps. The main dimensions for selecting and comparing comparable companies in this study were revenue, EBITDA, net income, and P/E ratio. Combined with the key factors mentioned above, two comparable companies were selected for Activision Blizzard: Electronic Arts and Rovio. These two companies and Activision Blizzard belong to electronic entertainment companies, and they are similar in both scale and industry positioning, which provide a reference value for the valuation of the target enterprise in this study. After selecting Electronic Arts and Rovio as the comparable companies of Activision Blizzard, what need to be done was to collect the revenue, EBITDA, net income, and P/E ratio of these three companies in the recent five years from 2017 to 2021. Then the growth rate of revenue, EBITDA, and net income of the three companies in the recent two years was calculated. Then the estimated implied equity and enterprise value of the three companies was calculated according to the formula analysis. Finally, a conclusion was drawn by analyzing the data in the above steps.

4.2 Reliability and validity

In this study, the comparable company analysis method was applied to evaluate the financial performance of Activision Blizzard by comparing it with two other companies in the same industry. To ensure the reliability and validity of the results, several measures were taken. Firstly, the selection of comparable companies was based on several criteria, including key business and financial characteristics. This ensured that the companies selected were truly similar to Activision Blizzard and provided a reliable reference for the target enterprise's evaluation. Secondly, the data collected on revenue, EBITDA, net

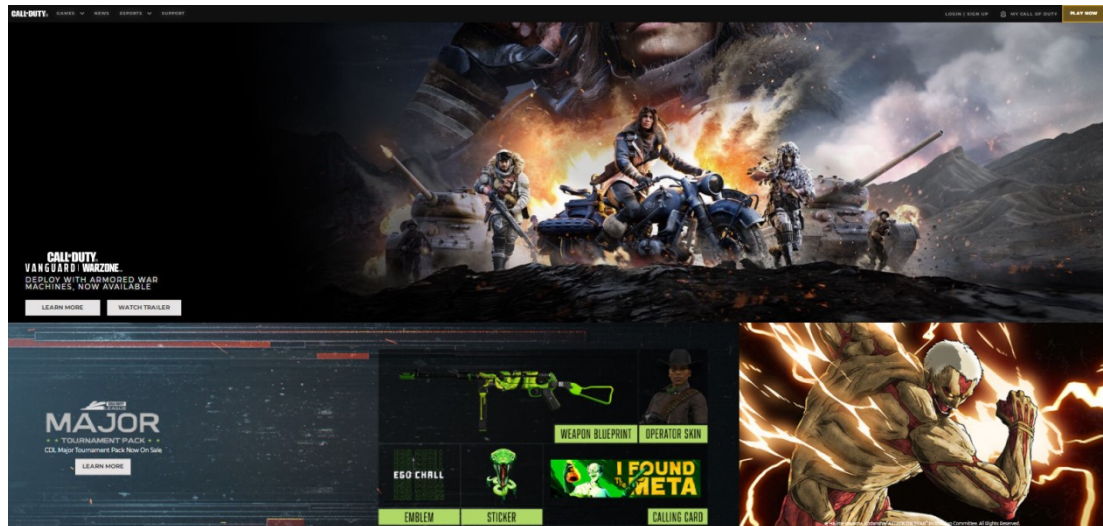
income, and P/E ratio of the three companies for the past years were obtained from reliable sources such as financial reports and databases. This ensured that the data used in the analysis was consistent. Thirdly, the growth rates of revenue, EBITDA, and net income were calculated based on the data collected for the latest periods. This ensured that the analysis reflected the most recent financial performance of the companies. Fourthly, the estimated implied equity and enterprise value were calculated using well-established formulas. This ensured that the analysis was based on sound financial principles and was not subject to biases.

However, there are also some limitations and risks associated with this study. One limitation is that the comparable company analysis method is based on the assumption that the selected comparable companies are truly similar to the target company. Any differences or variations between the companies could affect the accuracy of the results. Another risk is that the financial performance of the companies could be influenced by external factors such as changes in the economy, regulations, or industry trends. These factors were not taken into account in this study, and their impact on the results cannot be determined. Further research could be done to address these limitations and risks. For instance, a sensitivity analysis could be conducted to test the impact of variations in key assumptions or parameters on the results. In addition, a broader range of comparable companies could be considered to increase the robustness of the analysis.

5 RESULTS OF THE RESEARCH

5.1 Activision Blizzard

Through the accumulation and development in the past years, Activision Blizzard has mainly been divided into three independent departments nowadays: Activision, Blizzard, and King. The game published by Activision Blizzard is prominent, absorbing the youth across the world. Its well-known works, such as "*StarCraft*" and "*WarCraft*", are enduring in the history of the game.



Picture 1: Call of Duty War Zone 2.0. (Activision Publishing, 2022).

As a leading game company in the United States, Activision Blizzard has ranked first among US stock game companies in terms of revenue since 2009 (Sotamaa & Nieborg, 2021, p.180). However, since 2011, due to the undesirable performance of the one-time sales products, which were also the main products of the company, Activision Blizzard's revenue has been stagnant for the failure to create long-term increments and less product launches. After the company acquired King in 2016, it began to transform to the field of mobile games and the performance of Activision Blizzard began to resurge. Additionally, after the company has made certain achievements in *Call of Duty*, it has clearly decided to develop another series of mobile games like *Call of Duty*. Therefore, the operation and the marketing performance of Activision Blizzard are anticipated to be stable in the following years.

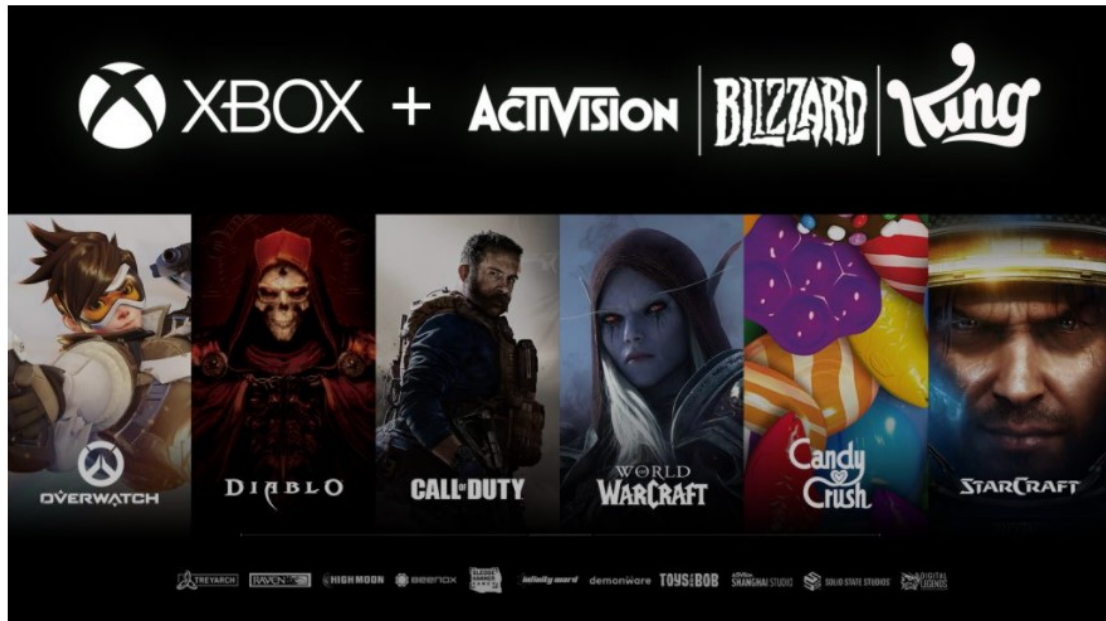
Activision Blizzard's business is mainly concentrated in the Americas, accounting for nearly 60% of its revenue (BusinessQuant, 2021). Its second-largest market is in Europe, the Middle East, and Africa, which generate nearly one-third of the company's revenue (BusinessQuant, 2021). The last is the Asia Pacific region, which accounts for 11% of total revenue (BusinessQuant, 2021). After the successful transformation of the company to the mobile game in 2019, the financial indicators of the company also showed strong momentum. The company's profits in the first and second quarters of 2020 increased by 7.4% and 122.9% year-on-year, and those of 2021 increased by 29.9% and 28% respectively (Activision Blizzard, 2022). Besides, the company's non-GAAP net profit in

the second quarter of 2021 set a new historical record since the establishment of the company, reaching the US \$951 million, which has been significantly improved compared with that before the transformation and gradually tends to be stable (Activision Blizzard, 2022).



Figure 1. Market share of Activision Blizzard from 2010 to 2022. (Macrotrends, 2022).

In January 2022, Microsoft announced its acquisition of Activision Blizzard at a relatively high price of \$68.7 billion. After the acquisition, Activision Blizzard's share price experienced a sharp rise of more than 30%, up to \$86.6 per share (Activision Blizzard, 2022). However, Microsoft's acquisition of Activision also attracted the attention of the U.S. antitrust bureau, leading to an unabiding decline in the stock price of Activision Blizzard. After being acquired by Microsoft, Activision Blizzard undoubtedly has acquired more opportunities to access capital and advanced technology. Therefore, the development of Activision Blizzard seems to be anticipated a brighter future among the investors.



Picture 2. Acquisition of Activision Blizzard by Microsoft. (Microsoft News Center, 2022).

For Activision Blizzard, if the researcher wanted to conduct a comparative analysis of the company with EA and Rovio, it needed to determine the corresponding indicators and multiples to be applied to these three companies. Therefore, if the researcher wanted to compare the stocks of the three electronic companies for valuation, it needed to find out the corresponding rate of the revenue growth, EBITDA growing rate, net income growth, and P/E ratio in the annual statements of each company from 2017 to 2021, and then carry out the next step for Enterprise Value, which is a measure of a business's total value. Enterprise Value is often used for multiples such as EV/EBITDA for comparable analysis. In the process of stock valuation, the research needed to understand the revenue of the target company and the trend of the company or enterprise about the growth of revenue in recent years to predict the revenue of the company or enterprise in the next few years. Understanding the future revenue forecast of the company and enterprises can effectively help the research analyze and predict the expected revenue of the company. As an important part of securities analysis, income growth and forecast analysis can help investors explore the future value of the stock of their company or enterprise (Chandra & Ro, 2008).

$$\text{Enterprise Value} = \text{Market Cap} + \text{Debt} - \text{Cash and Equivalents}$$

As one of the important factors in this analysis, EBITDA can provide investors with short-term operational efficiency information of the target company and enterprise (Sui, 2017). EBITDA not only excessively analyzed or discussed the impact of the non-operating factors of the target companies on its shares, yet through the calculation of the profit margin in EBITDA, it also can better reflect the current operating conditions of the target company or the profitability of its business. After deducting the capital expenditure of the target company based on EBITDA, it can provide effective information for the value estimation of the company to analyze the overall situation and relationship of profitability between the target company and the whole industry. In addition, the information about the net income of the target company can help investors evaluate the profitability of the company or enterprise. Based on the significant impact of profitability on the stock price of companies, net income was often an important indicator to evaluate the profitability of companies (Chandra et al., 1998). Net income often appears in the profit and loss statement of the target company. After deducting all deductions and taxes, the net income can let investors know how much profit the target company can make after paying all expenses. After knowing the profits, investors can estimate the general situation of the amount that the target company can use to pay dividends, reinvest its business and repurchase its shares. As a popular ratio, the P/E ratio can let investors understand the relationship between the valuation of the target company and EPS so that the investment value of the target company can be more clearly and comprehensively displayed. After all, through the P/E ratio, the research can show the expectation of the current market stock and the current or future price of the stock of the company (Ramcharran, 2002). In other words, after knowing the P/E ratio of the target company, investors can learn about the earnings of the stock and its company or enterprise. If the P/E ratio was at a very high level, it indicated that the stock price was overvalued for the earnings of the company. On the contrary, if the P/E ratio was at a low level, the stock price was likely to be undervalued.

According to the annual report of Activision Blizzard from 2017 to 2021, the net revenue of Activision Blizzard in 2017 was 7,017 million dollars; In the aspect of the revenue in 2018, the company was \$7,500 million; the revenue of Activision Blizzard in 2019 was \$6,489 million, the revenue of Activision Blizzard in 2020 was \$8,086 million, while the revenue of Activision Blizzard in 2021 was \$8,803 million (Activision Blizzard, 2022).

Therefore, the revenue growth of the company for the past four years is respectively 6.88%, -13.48%, 24.61% and 8.87%.

Table 1. Revenue growth of Activision Blizzard. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
Net revenue	7,017	7,500	6,489	8,086	8,803
Revenue growth		6.88%	-13.48%	24.61%	8.87%

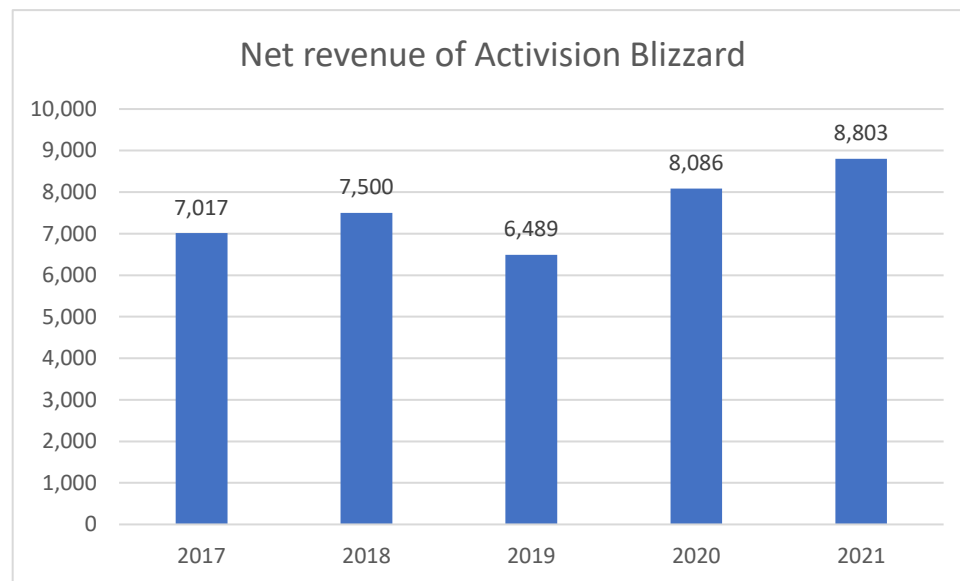


Figure 2. The Net Revenue of Activision Blizzard 2017-2021. (Dybek, 2021).

According to the annual report from 2017 to 2021, the EBITDA of the company in 2017 was 2,508 million dollars; The EBITDA of Activision Blizzard in 2018 was 2,986 million dollars; The EBITDA of Activision Blizzard in 2019 was \$2,160 million, the EBITDA of Activision Blizzard in 2020 was 3,180 million dollars, while the EBITDA of Activision Blizzard in 2021 was 3,699. (Activision Blizzard, 2022). Therefore, the EBITDA growth of the company in 2018, 2019 and 2020 are respectively 19.06%, -27.66%, 47.22% and 16.32%.

Table 2. EBITDA growth of Activision Blizzard. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
EBITDA	2,508	2,986	2,160	3,180	3,699
EBITDA growth		19.06%	-27.66%	47.22%	16.32%

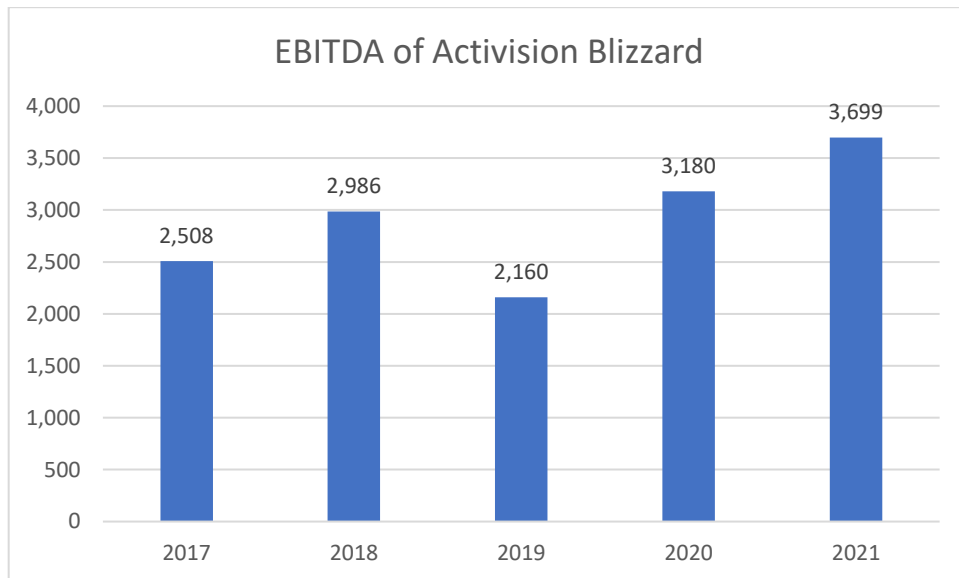


Figure 3. The EBITDA Growth of Activision Blizzard 2017-2021

For net income, it can be seen from the annual report from 2017 to 2021 that the net income of Activision Blizzard in 2017 was 273 million dollars; The net income of Activision Blizzard in 2018 was \$1,848 million; The net income of Activision Blizzard in 2019 was \$1,503 million, the net income of Activision Blizzard in 2020 was \$2,197 million, while Activision Blizzard annual net income in 2021 was \$2,699 (Activision Blizzard, 2022). Therefore, the net income growth of the company for these years are 576.92%, -18.67%, 46.17% and 22.85%.

Table 3. Net income growth of Activision Blizzard. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
Net income	273	1,848	1,503	2,197	2,699
Net income growth		576.92%	-18.67%	46.17%	22.85%

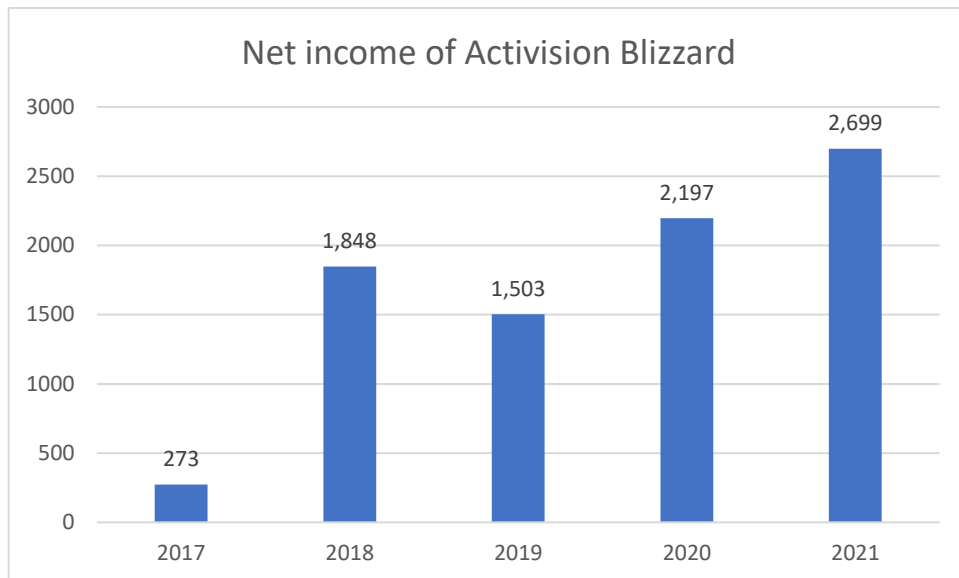


Figure 4. The Net Income Growth of Activision Blizzard 2017-2021

For P/E ratio, according to the annual report from 2017 to 2021, the share price of Activision Blizzard in 2017 was the \$74.13 and EPS was the \$0.36; In 2018, the share price of the company was \$46.57 and EPS was \$2.40; In 2019, the share price of the company was \$58.48 and EPS was \$1.95; In 2020, the share price of the company was \$91.00 and EPS was \$2.82. In 2021, the share price of the company was \$66.05 and EPS was \$3.44 (Activision Blizzard, 2022). Therefore, the P/E ratio of Activision Blizzard in the four years should be calculated by the share price divided by EPS, which are 205.92, 19.40, 29.99, 32.27 and 19.2.

Table 4. P/E ratio of Activision Blizzard. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
Market Share Price	74.13	46.57	58.48	91.00	66,05
Earnings Per Share	0.36	2.40	1.95	2.82	3.44
P/E ratio	205.92	19.40	29.99	32.27	19.2

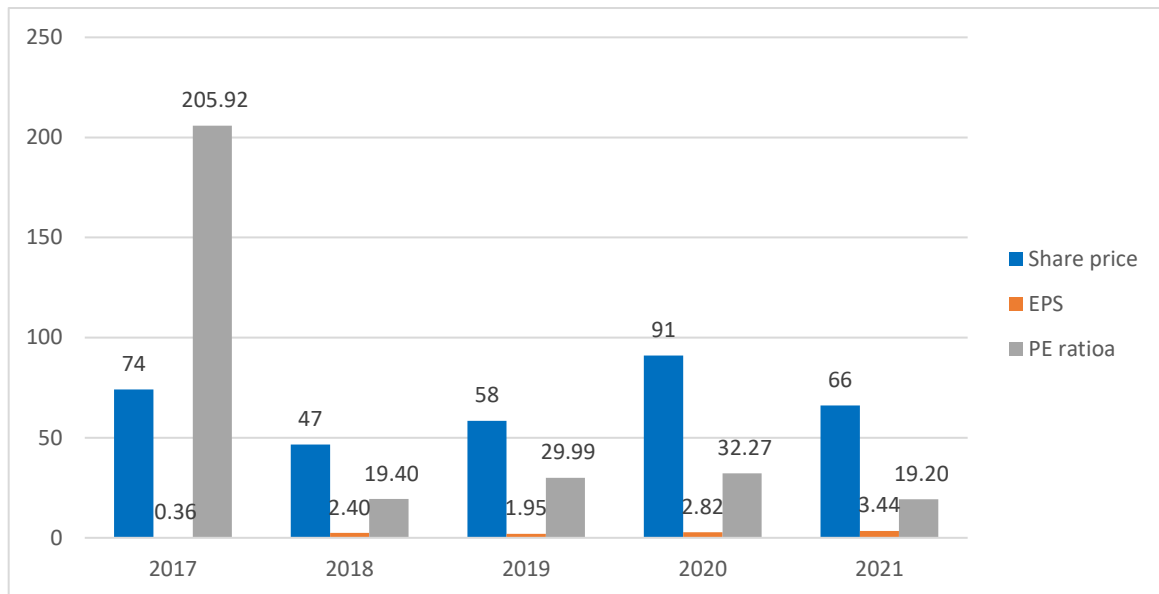


Figure 5. The P/E ratio of Activision Blizzard 2017-2021

Valuation multiples are common used in comparable company analysis. EBITDA multiple is the Enterprise Value/EBITDA ratio; it might be the average EV/EBITDA multiple from similar companies in the industry. You can find the EBITDA multiple from internet easily. Based on this, Activision Blizzard's enterprise value calculated by EBITDA of the Activision Blizzard multiplied by the median EV/EBITDA multiples in 2017-2021, that was, 3,180 million US dollars multiplied by 18.7, which was 59.47 billion US dollars as enterprise value.

$$\text{Enterprise Value} = \text{EBITDA} * \text{EBITDA-Multiple}$$

Table 5. Financial performance of Activision Blizzard. (Author of the thesis, 2023).

	Net revenue	Growth rate	EBITDA	Growth rate	Net income	Growth rate	Share price	EPS	PE ratio
2017	7 017		2 508		273		74	0.36	205.92
2018	7 500	6.88%	2 986	19.06%	1 848	576.92%	47	2.40	19.4
2019	6 489	-13.48%	2 160	-27.66%	1 503	-18.67%	58	1.95	29.99
2020	8 086	24.61%	3 180	47.22%	2 197	46.17%	91	2.82	32.27
2021	8 803	8.87%	3 699	16.32%	2 699	22.85%	66	3.44	19.2

5.2 Electronic Arts

According to Nasdaq, the current stock price of EA is \$127.93 and the volume is 1,709,984. Then, the 52-week range is \$ from 117.58 to \$148.93 (CNBC, 2022). The market capital is 35.967 billion. The share outstanding is 281.22 million. Institutional ownership is 93.23%. There is no last stock split. In addition, 18 analysts suggest that it is a suitable time to buy stock of EA. 7 analysts recommend that people should buy stocks strongly and another 7 analysts recommend that people should hold this stock. EA's earnings are 56.74, which is higher than the industry average and sector average which are 30.49 and 34.31. The top shareholders are institutions with 1462 holders. Next are mutual funds with 2651 holders. North America occupies 64.4% of regional holdings. Europe accounts for 17.8 % of regional holdings. Asia accounts for 0.9 % of regional holdings. The main competitors of EA contain Activision Blizzard Inc, Roblox Corp, Spotify Technology Sa, and Zynga Inc (CNBC, 2022). Especially, Activision Blizzard Inc's stock price (\$79.3) today is lower than EA and market capitalization is \$61.4 billion, which is higher than EA.

According to annual reports of Electronic Arts from 2017 to 2021 (Electronic Arts, 2017), the company had revenue of \$4,845 million in 2017. The revenue in 2018 was \$5,150 million, and in 2019 it was \$4,950 million. In 2020, the revenue of Electronic Arts was up to \$5,537 million, and in 2021, it had a net revenue of \$5,629 million. It is clear that the revenue of Electronic Arts increased significantly from 2019 to 2020. By calculating, the revenue of Electronic Arts grew by 6.30% in 2018, -3.88% in 2019, 11.86% in 2020, and 1.66% in 2021.

Table 6. Revenue growth of Electronic Arts. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
Net Revenue	4,845	5,150	4,950	5,537	5,629
Revenue growth		6.30%	-3.88%	11.86%	1.66%

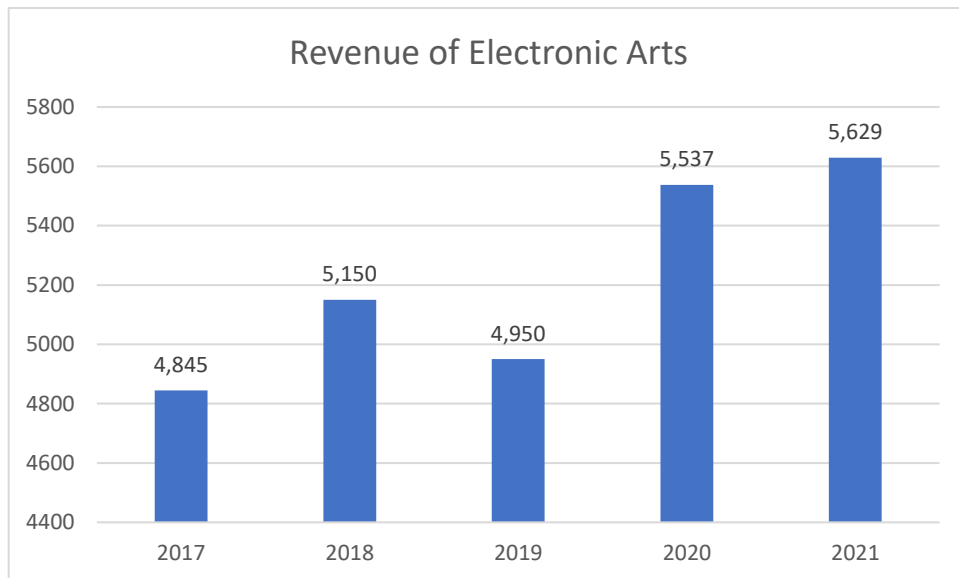


Figure 6. 2017-2021 Revenue of Electronic Arts. (Macrotrends,2022).

EBITDA of Electronic Arts from 2017 to 2021 is also available in the company's annual report (Electronic Arts, 2018). According to annual reports, the EBITDA of Electronic Arts for the last five years is seen, it was \$1396 million in 2017, and this figure in 2018 and 2019 were \$1,570 million and \$1,141 million respectively. In 2020 EBITDA of Electronic Arts was \$1,595 million and in 2021 it was \$1,227 million. EBITDA was the lowest in 2019, and as with revenue, the EBITDA of Electronic Arts grew significantly in 2020 and declined in 2021. The company's EBITDA growth rate from 2018 to 2021 are respectively 12.46%, -27.32%, 39.79%, and -23.07%.

Table 7. EBITDA growth of Electronic Arts. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
EBITDA	1,396	1,570	1,141	1,595	1,227
EBITDA growth		12.46%	-27.32%	39.79%	-23.07%

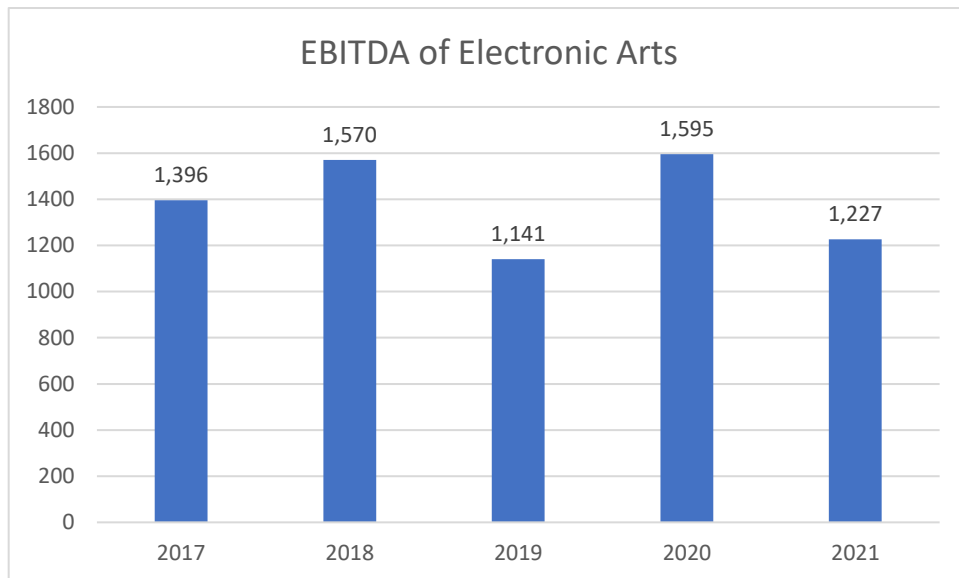


Figure 7. 2017-2021 EBITDA of Electronic Arts. (Macrotrends,2022).

In terms of net income, Electronic Arts reported that net income in 2017 was \$967 million, and it had a net income of \$1,043 million and \$1,019 million in 2018 and 2019 respectively. The net income jumped to \$3,039 million in 2020 and hit a five-year low of \$837 million in 2021. As can be seen from the figure, the net income figure of 2020 is outstanding. The growth rate of net income in this year was as high as 198.23%, but after the growth, there was a rapid decline. The growth rate of 2021 was negative, and the value was -72.46%.

Table 8. Net income growth of Electronic Arts. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
Net income	967	1,043	1,019	3,039	837
Net income growth		7.86%	-2.30%	198.23%	-72.46%

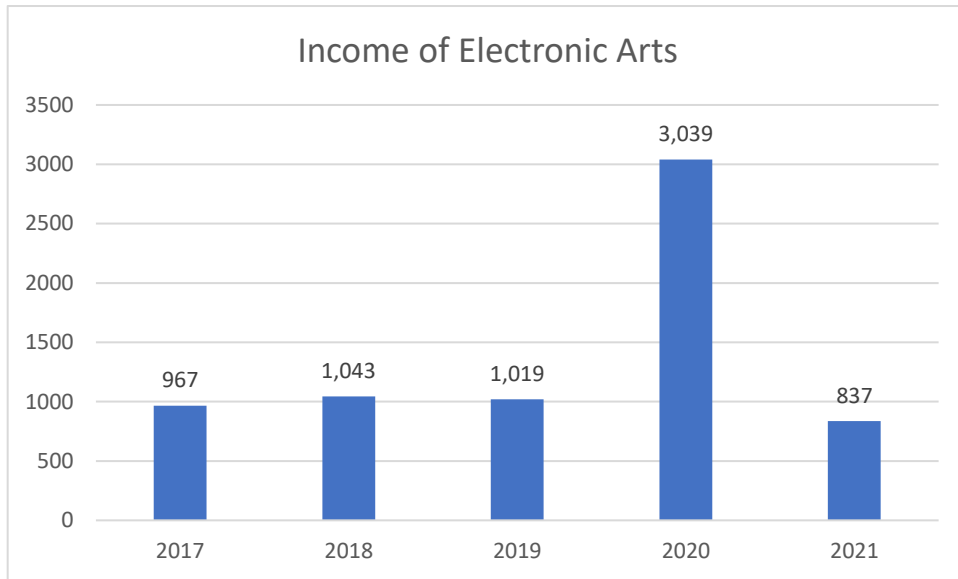


Figure 8. 2017-2021 Net Income of Electronic Arts. (Macrotrends,2022).

As for the P/E ratio, according to 2017 to 2021 annual reports (Electronic Arts, 2019), the stock price of Electronic Arts in 2017 was \$104.26, and the EPS was \$3.2. Its stock price in 2018 was \$78.31, and EPS was \$4.59 this year. The stock price in 2019 was \$106.69, with an EPS of \$9.51. That compares with a stock price of \$142.69 and \$4.03 per share in 2020 and a stock price of \$131.72 and \$2.22 per share in 2021. The way to calculate the P/E ratio is the stock price divided by EPS. According to such an algorithm, the P/E ratio of Electronic Arts in the past five years was 32.58, 17.06, 11.22, 35.41, and 59.33 respectively.

Table 9. P/E ratio of Electronic Arts. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
Market Share Price	104.26	78.31	106.69	142.69	131.72
Earnings Per Share	3.20	4.59	9.51	4.03	2.22
P/E ratio	32.58	17.06	11.22	35.41	59.33

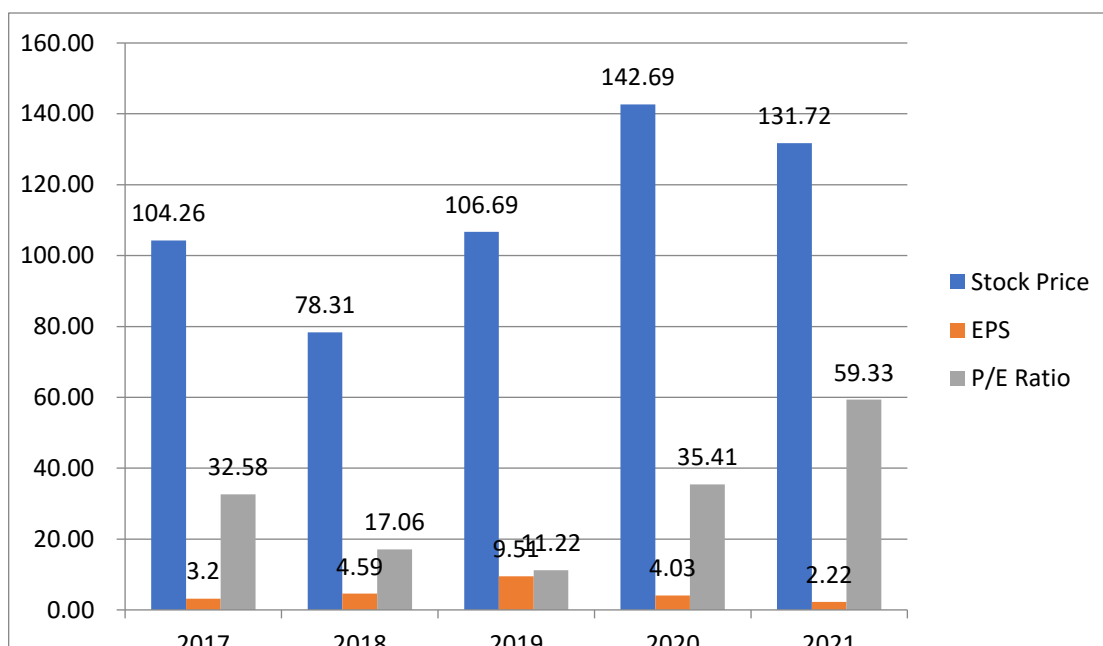


Figure 9. 2017-2021 P/E Ratio of Electronic Arts (Macrotrends,2022).

As for enterprises value, EBITDA of Electronic Arts in 2020 and 2021, which had been obtained from the annual report mentioned above. Data needed to be retrieved were the medians EBITDA multiple (EV/EBITDA) from 2016 to 2020 and 2017 to 2021. These two figures were available from Electronic Arts' public release and they were 18.6 and 19.9 respectively (CTI, 2021). They are \$1,227 million multiplied by 19.9, the medians EV/EBITDA from 2017 to 2021, and \$1,595 million multiplied by 18.6, the medians EV/EBITDA from 2016 to 2020, resulting in \$24.417 billion and \$29.667 million respectively.

Table 10. Financial performance of Electronic Arts. (Author of the thesis, 2023).

	Revenue	Growth	EBITDA	Growth	Income	Growth	Share price	EPS	PE ratio
2017	4845		1396		967		104.26	3.2	32.58
2018	5150	6.30%	1570	12.46%	1043	7.86%	78.31	4.59	17.06
2019	4950	-3.88%	1141	-27.32%	1019	-2.30%	106.69	9.51	11.22
2020	5537	11.86%	1595	39.79%	3039	198.23%	142.69	4.03	35.41
2021	5629	1.66%	1227	-23.07%	837	-72.46%	131.72	2.22	59.33

5.3 Rovio

Today's stock price of Rovio is \$7.61. The 52-week range is 5.69 to 7.75 (Yahoo, 2022). The market capital is 565.934 million. The volume is 75074. 33.62% of shares of Rovio are held by all insiders. 33.96% of shares of Rovio are held by all institutions. 51.16% of the float of Rovio is held by institutions. The recommendation rating of Rovio is 2.1 and analysts suggest buying this stock.



Picture 3. Angry Birds. (Rovio, 2021).

According to the annual report of Rovio from 2017 to 2021, the net revenue of Rovio in 2017 was 327 million dollars; The revenue of Rovio in 2018 was \$309 million; The revenue of Rovio in 2019 was \$318 million; The revenue of Rovio in 2020 was \$300 million; In 2021, the revenue of the company was 315 million dollars (Rovio, 2022). Therefore, the revenue growth of Rovio in 2018-2021 are respectively -5.50%, 2.91%, -5.66%, and 5.00%.

Table 11. Revenue growth of Rovio. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
Net Revenue	327	309	318	300	315
Revenue growth		-5.50%	2.91%	-5.66%	5.00%

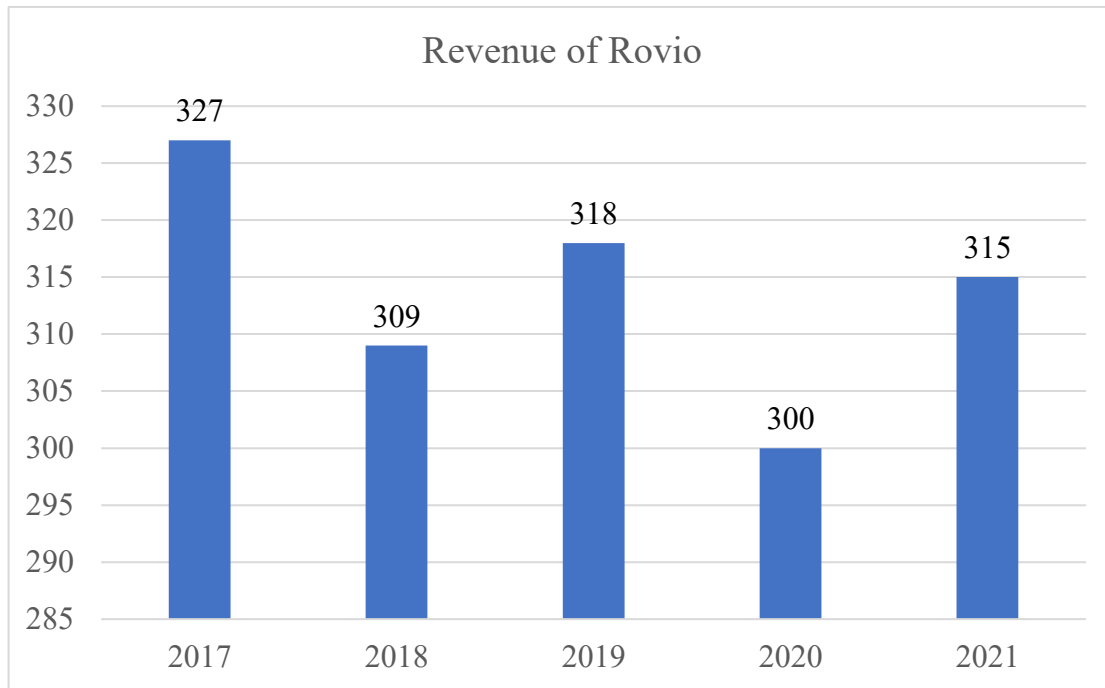


Figure 10. The Net Revenue of Rovio 2017-2021

According to the annual report from 2017 to 2021, the EBITDA of Rovio in 2017 was 65.91 million dollars; The EBITDA of Rovio in 2018 was \$52 million; The EBITDA of Rovio in 2019 was \$35.2 million; The EBITDA of Rovio in 2020 was \$66 million; In 2021, the EBITDA of the company was 56 million dollars (Rovio, 2022). Therefore, the EBITDA growth of Rovio from 2018-2021 are: -21.10%, -32.31%, 87.50%, and -15.15%.

Table 12. EBITDA growth of Rovio. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
EBITDA	66	52	35	66	56
EBITDA growth		-21.10%	-32.31%	87.50%	-15.15%

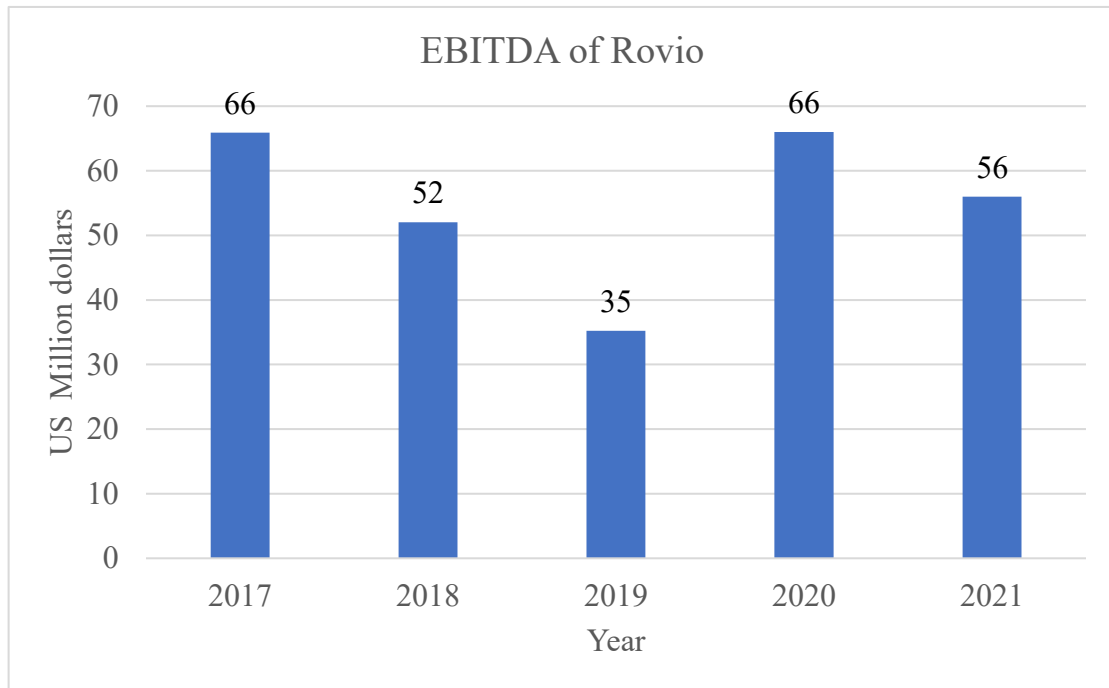


Figure 11. The EBITDA Growth of Rovio 2017-2021

According to the annual report from 2017 to 2021, the net income of Rovio in 2017 was 22.67 million dollars; The net income of Rovio in 2018 was \$27.07 million; The net income of Rovio in 2019 was \$14.55 million; The net income of Rovio in 2020 was \$34.24 million; In 2021, the net income of the company was 33.25 million dollars (Rovio, 2022). Therefore, the net income growth of Rovio in the last 4 years are respectively 19.41%, -46.25%, 135.33%, and -2.89%.

Table 13. Net income growth of Rovio. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
Net income	22.67	27.07	14.55	34.24	33.25
Net income growth		19.41%	-46.25%	135.33%	-2.89%

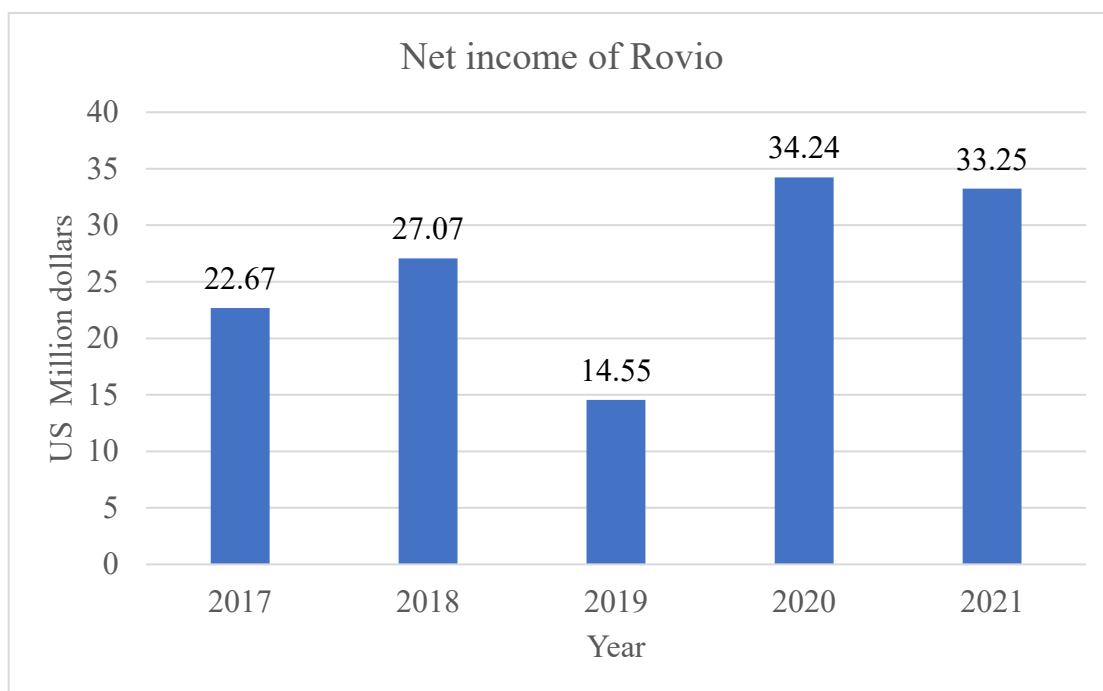


Figure 12. The Net Income of Rovio 2017-2021

For P/E ratio, according to the annual report from 2017 to 2021, In the share price aspect of in 2017, Rovio was \$10.67 and EPS was \$0.10; The share price of Rovio in 2018 was \$5.03 and EPS was \$0.10; The share price of Rovio in 2019 was \$4.98 and EPS was \$0.10; The share price of Rovio in 2020 was \$7.55 and EPS was \$0.13; In 2021, the share price of the company was \$7.71 and EPS was \$0.45 (Rovio, 2022). Therefore, the P/E ratio of Rovio from 2017-2021 are 106.70, 50.30, 49.80, 58.08, and 17.13.

Table 14. P/E ratio growth of Rovio. (Author of the thesis, 2023).

Year	2017	2018	2019	2020	2021
Market Share Price	10.67	5.03	4.98	7.55	7.71
Earnings Per Share	0.10	0.10	0.10	0.13	0.45
P/E ratio	106.70	50.30	49.80	58.08	17.13

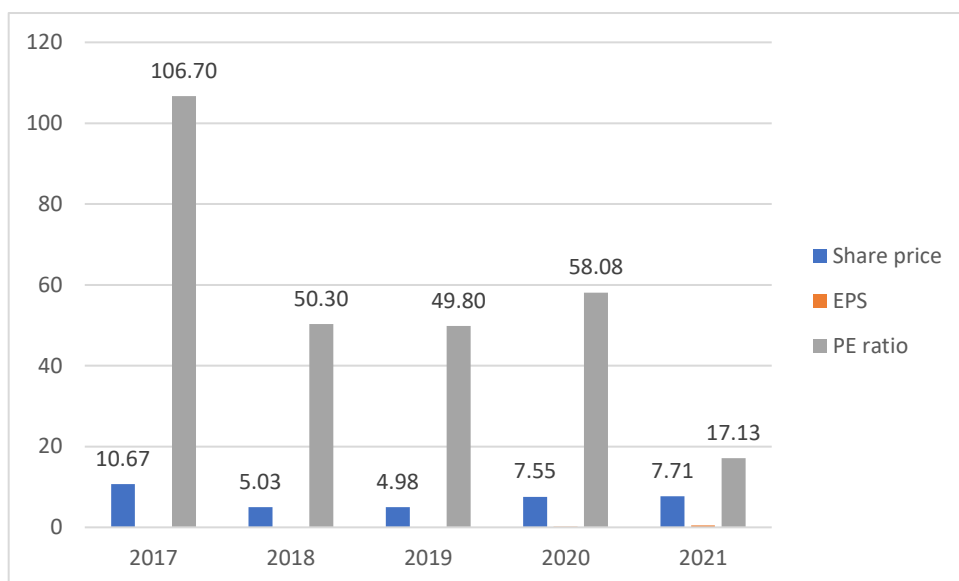


Figure 13. The P/E Ratio of Rovio 2017-2021

Based on this, the estimated implication of enterprise value should be the EBITDA of Rovio in 2021 multiplied by the median EV/EBITDA multiples in 2017-2021, that was, 55.9 million US dollars multiplied by 12.3. The final result was 687.57 million US dollars.

Table 15. The financial performance of Rovio. (Author of the thesis, 2023).

	Revenue	Growth	EBITDA	Growth	Income	Growth	Share price	EPS	PE ratio
2017	327		65.91		22.67		10.67	0.1	106.70
2018	309	-5.50%	52	-21.10%	27.07	19.41%	5.03	0.1	50.30
2019	318	2.91%	35.2	-32.31%	14.55	-46.25%	4.98	0.1	49.80
2020	300	-5.66%	66	87.50%	34.24	135.33%	7.55	0.13	58.08
2021	315	5.00%	56	-15.15%	33.25	-2.89%	7.71	0.45	17.13

5.4 Investing Suggestion of Activision Blizzard

Based on the data being collected above, the stock of Activision Blizzard is recommended to be invested in the medium and long term as a result. In the above analysis, the researcher has taken advantage of corresponding data of the revenue growth, net income, EBITDA growing rate, and P/E ratio of Activision Blizzard to help judge the stock developing trend,

generating a more accurate recommendation for the investors. Besides, in order to have a deeper understanding of the game industry, another two peer companies, Rovio *and* Electronic Arts, are also being used in this research to make a comparison to increase the reliability and validity of the conclusion. The symmetric data within the same period being used in the process of analysis can guarantee the effectiveness of the contrast.

The total revenue of Activision Blizzard has experienced a slight fluctuation in the past five years and it increased dramatically in the year 2020 with an increment of 1,579 million dollars. In retrospect of the past four years, the trend of net income of the Activision Blizzard is also corresponding to revenue developing trend in the past four years. Compared with the net income growth rate of Rovio which is respectively 2.9%, the net income growth rate of 46.17% is relatively more favorable than that of Rovio. The net income of Electronic Arts has witnessed a surge in 2020, reaching 3,039 million US dollars at a rate of 198%. This contributed to the sports games and live services produced by Electronic Arts in that year. Due to Madden NFL and FIFA's live sports games released by Electronic Arts, 2020 has become the fastest-growing year of Electronic Arts' net revenue (Clement, 2021). However, this growth has only been maintained for one year. In 2021, the net income of Electronic Arts returned to its original level. Compared with the fluctuation of the annual profits of Electronic Arts and Rovio companies in the past five years, the profits of Activision Blizzard increased by nearly one third in 2021 after its successful development in the mobile terminal market field by using the Call of Duty in 2019. Combining with the analysis of revenue trends, the net income trend, and the profit trend, it can be concluded that the operation condition of Activision Blizzard was stable and will anticipate a favorable trend in the future. Furthermore, through the comparison with other peer enterprises in the game industry, the overall operation and financial condition were regarded as above the average level, which was a favorable indicator for the investors.

With regard to the share value, the stock price of Activision Blizzard is between that of Electronic Arts and Rovio. In the year 2018 and 2019, Activision Blizzard's share price has experienced a round of decline. This is caused by the unexpected decline in revenue and profit margin of Activision Blizzard in 2018 and 2019. P / E ratio is the ratio of the enterprise's current share price to earnings per share. Generally, when the P / E ratio is 15-

30, it is a relatively desirable range for investors. When the P / E ratio exceeds this range, investors need to consider carefully when deciding whether to invest in the stock (Fuller, 1986). P/E ratio of all of the three game enterprises seems to be undesirable for investors. Compared with the P/E ratio of Rovio of 58.7, 32.26 seems to be acceptable data in the game industry.

However, the P/E ratio of Activision Blizzard has exceeded 30 in 2020, meaning a comparatively overvalued estimation of its stock. Therefore, investors are required to take consideration when making an investment decision. However, In the past four years, the P / E ratio of Activision Blizzard has maintained a stable development trend and has been showing a downward trend since the middle and late 2020. Therefore, taking the stock of Activision Blizzard as a medium and long-term investment will be a good choice.

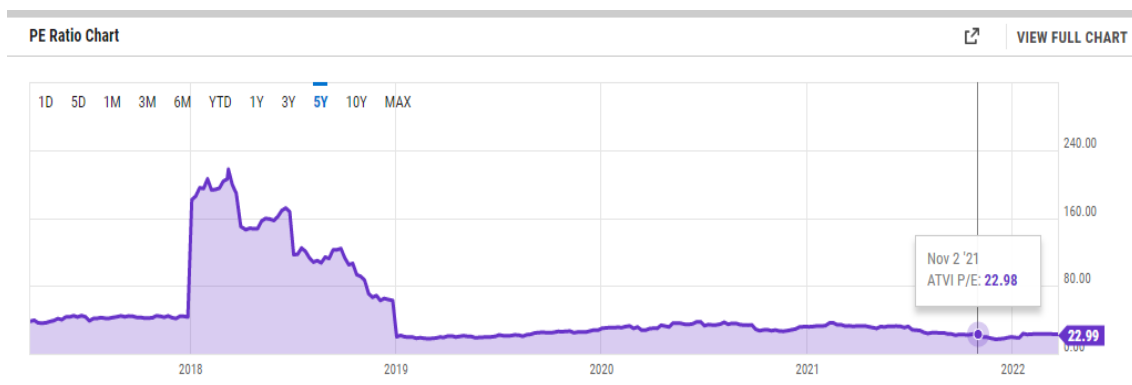


Figure 14. P/E ratio developing trend of Activision Blizzard from 2019-2022. (yahoo charts, 2022).

5.5 Learning

Revenue and revenue growth is faster than the industry as a whole reflecting the stock's robustness. Therefore, revenue and the rate of revenue growth are worth evaluating in the process of stock valuation. Under this circumstance, it is important to interpret the speed of revenue growth. In addition, the process of valuing stocks requires looking at changes in several other elements to understand how the entire process differs. EBITDA includes interest, discounts, and earnings on stock across the company, reflecting the operating performance of the company as a whole. Thus, the higher the growth rate of this indicator,

the better the growth potential of the company. Moreover, it needs to calculate the EBITDA margin to reflect the goodness of the stock in the stock valuation process.

In addition, enterprise value and EBITDA ratios are also important factors in determining stock valuation metrics. Under this circumstance, it is significant to consider EBITDA growth to weigh stock valuation. On the other hand, it is imperative to consider the net income to understand the process of stock valuation because it is an indicator to weigh the extent to which income exceeds expenses. Moreover, an increase in a company's net income affects that company's share price and market capitalization as well. Thus, an increase in net income is also worth considering in the process of stock valuation. The process of understanding stock valuations also requires looking at whether P/E ratios are outperforming. A solid P/E ratio can reflect future growth expectations. Under this circumstance, the stock's valuation would be higher than average. Therefore, investors are willing to pay higher share prices. Furthermore, in understanding stock valuations, it cannot ignore that the focus is on net income growth. Growth in net income reflects the overall rate of profit growth for a company. Understanding stock valuations require looking at whether the growth in net income is high. Therefore, understanding stock valuation is a complex and tedious process. The indicators that need to be understood and used in this process are all closely linked to each other. In addition, each indicator has played a non-negligible role and advantage in the process of stock valuation. Therefore, the process of stock valuation needs to take into account the change between this metric and the ratio.

5.6 Investing analysis of the three Stocks

When investors were considered to purchase a company's shares, it was not enough to make investment decisions only by one element. Therefore, in the case of the investment valuation analysis of Activision Blizzard, the researcher has taken advantage of a combination of analysis of revenue, net income analysis, EBITDA, enterprise value, share price analysis, earning per share, and the P/E ratio to ensure the reliability and validity of the ultimate investment determination. In order to have a command of more information in the game industry, Electronic Arts and Rovio have been utilized as peer comparisons in this research.

In respect of revenue, knowing the revenue status can help investors understand the profitability of the target company. Therefore, after the analysis of comparable companies between Activision Blizzard and EA and Rovio, this research can understand the profitability of revenue of the company compared with other two companies. From the perspective of horizontal comparison, the revenue of Activision Blizzard in 2021 was \$8803 million, \$3174 higher than EA and \$8488 than Rovio. In 2020 was \$8086 million, while that of EA and Rovio were \$5537 million and 300 million respectively, that was to say, the revenue of Activision Blizzard in 2020 was \$2549 million higher than that of EA and \$7786 million higher than that of Rovio. In addition, in the three years from 2017 to 2019, the revenue of Activision Blizzard was higher than that of EA and Rovio, respectively. Compared with EA, the revenue of Activision Blizzard in 2019 was \$1539 million higher than that of the company, \$2350 million higher in 2018 and \$2172 million higher in 2017. Compared with Rovio, the revenue of Activision Blizzard in 2019 was \$6171 million higher than that of the company, \$7191 million in 2018 and \$6690 million in 2017.

Therefore, compared with the other two electric game companies, Activision Blizzard had stronger profitability and more revenue. From the perspective of time development, the income level of Activision Blizzard had also been in the growth range on the whole. Compared with the target year and the previous year, the income of the company from 2017 to 2021, it was \$717 million higher than 2020, with a growth rate of 8.87%, then it was \$1597 million higher than that of 2020, with a growth rate of 24.61%, and \$483 million higher than that of 2018, with a growth rate of 6.88%. Only when comparing 2018 with 2019, revenue decreased by \$1011 million, with a decrease rate of -13.48%. Therefore, from the perspective of the revenue trend of Activision Blizzard in the last five years, the overall profitability of the company was also on the rise except for the natural reason of epidemic in 2019.

Table 16. Peer Comparison of Revenue

Year	Activision Blizzard	Electronic Arts	Rovio
2017	\$7,017 million	\$4,845 million	\$327 million
2018	\$7,500 million	\$5,150 million	\$309 million
2019	\$6,489 million	\$4,950 million	\$318 million
2020	\$8,086 million	\$5,537million	\$300 million
2021	\$8,803 million	\$5,629 million	\$315 million

In terms of EBITDA, the higher the EBITDA of the target company, the stronger the profitability. From the perspective of horizontal comparison, the EBITDA of Activision Blizzard in 2021 was \$3699 million, \$2472 million higher than EA and \$3643 million higher than Rovio. In 2020 was \$3180 million, while that of EA and Rovio were \$1595 million and 66 million respectively, that was to say, in 2020, the EBITDA of Activision Blizzard was \$1585 million higher than that of EA and \$3114 million higher than that of Rovio. In addition, in the three years from 2017 to 2019, the EBITDA of Activision Blizzard was higher than that of EA and Rovio, respectively. Therefore, compared with the other two game companies, Activision Blizzard had stronger profitability and more EBITDA. From the perspective of time development, the EBITDA level of Activision Blizzard had also been in the growth range on the whole. Therefore, judging from the EBITDA trend of Activision Blizzard in the last five years, the overall EBITDA level of the company also showed an upward state in addition to the uncontrollable factor of epidemic in 2019.

Table 17. Peer Comparison of EBITDA

Year	Activision Blizzard	Electronic Arts	Rovio
2017	\$2,508 million	\$1396 million	\$65.91 million
2018	\$2,986 million	\$1,570 million	\$52 million
2019	\$2,106 million	\$1,141 million	\$35.2 million
2020	\$3,180 million	\$1,595 million	\$66 million
2021	\$3,699 million	\$1,227 million	\$56 million

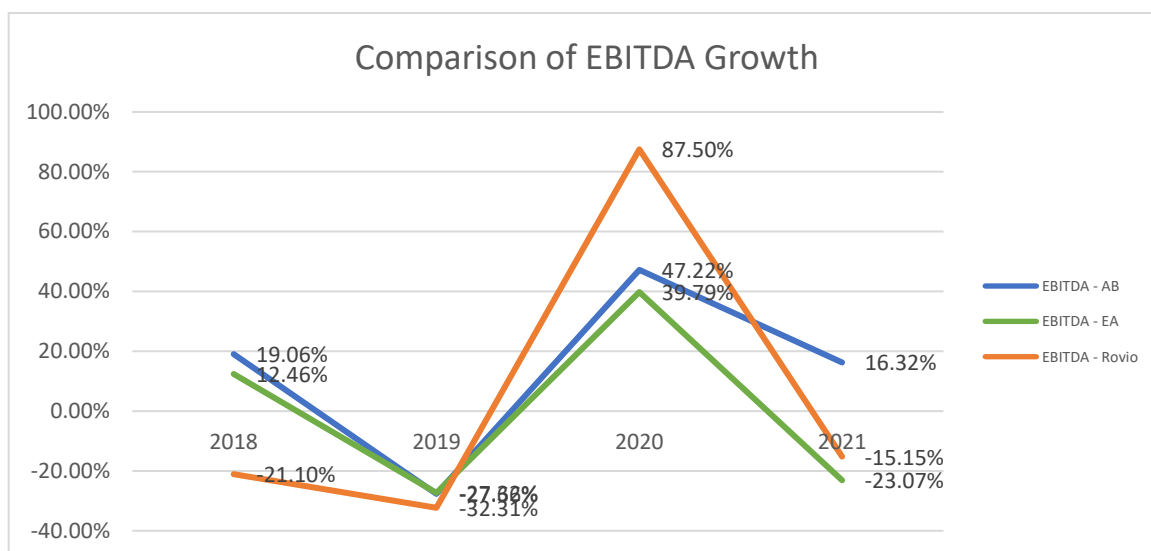


Figure 15. Peer Comparison of EBITDA Growth 2018-2021.

From the perspective of net income, the profitability of the target company is directly proportional to the growth of net income. From the perspective of horizontal comparison, the net income of Activision Blizzard in 2021 was \$2699 million. In 2020 was \$2197 million, while that of EA and Rovio were \$3039 million and 34.24 million respectively, that is to say, the net income of Activision Blizzard in 2021 was \$1862 million higher than EA and \$2666 million higher than that of Rovio, in 2020 was \$842 million lower than that of EA and \$2162.76 million higher than that of Rovio. In addition, in 2019 and 2018, Activision Blizzard had higher net income than EA and Rovio, respectively. Therefore, compared with the other two game companies, Activision Blizzard had stronger profitability and more revenue. From the perspective of time development, the net income level of Activision Blizzard had also been in the growth range on the whole. Compared with the target year and the previous year, the net income of Activision Blizzard from 2020 to 2021 was \$502 million higher in 2021, with a growth rate of 22.85%, from 2019 to 2020 was \$694 million higher in 2020, with a growth rate of 46.17%. Only when comparing 2018 with 2019, EBITDA decreased by \$345 million, with an increase rate of -18.67%. Therefore, in terms of the net income trend of Activision Blizzard in the past five years, in addition to the uncontrollable factor of epidemic in 2019, the overall net income level of the company also shows an upward state.

Table 18. Peer Comparison of Net Income

Year	Activision Blizzard	Electronic Arts	Rovio
2017	\$273 million	\$967million	\$22.67 million
2018	\$1,848 million	\$1,043 million	\$27.07 million
2019	\$1,503 million	\$1,019 million	\$14.55 million
2020	\$2,197 million	\$3,039 million	\$34.24 million
2021	\$2,699 million	\$837 million	\$33.25 million

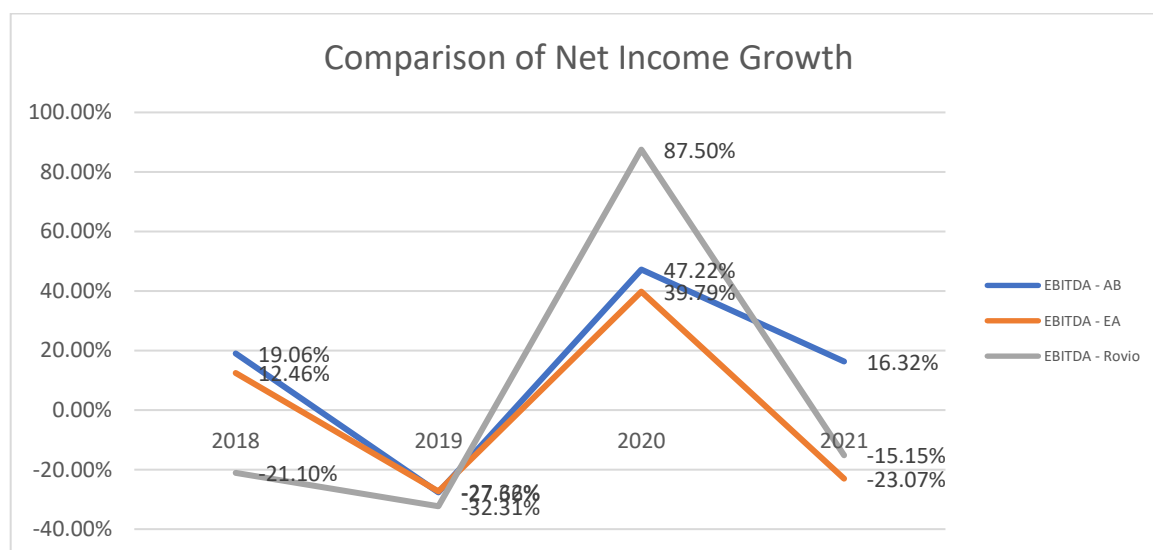


Figure 16. Peer Comparison of Net Income Growth 2018-2021.

The price at which stocks are traded on the stock market is referred to as stock price. The stock itself is worthless and simply serves as a certificate. It has a price because it can generate dividend money for its owners (Zhang, 2020). As a result, buying and selling stocks is the same as purchasing and selling a dividend-paying certificate. The level of the stock market is affected by the buying and selling price of stocks. The amount of dividend payment and the interest rate of bank deposits directly affect the level of the stock market (Zhang, 2020).

Table 19. Peer Comparison of Share Value

Year	Activision Blizzard	Electronic Arts	Rovio
2017	\$74.13	\$104.26	\$10.67
2018	\$46.57	\$78.31	\$5.03
2019	\$58.48	\$106.69	\$4.98
2020	\$91.00	\$142.69	\$7.55
2021	\$66.05	\$131.72	\$7.71

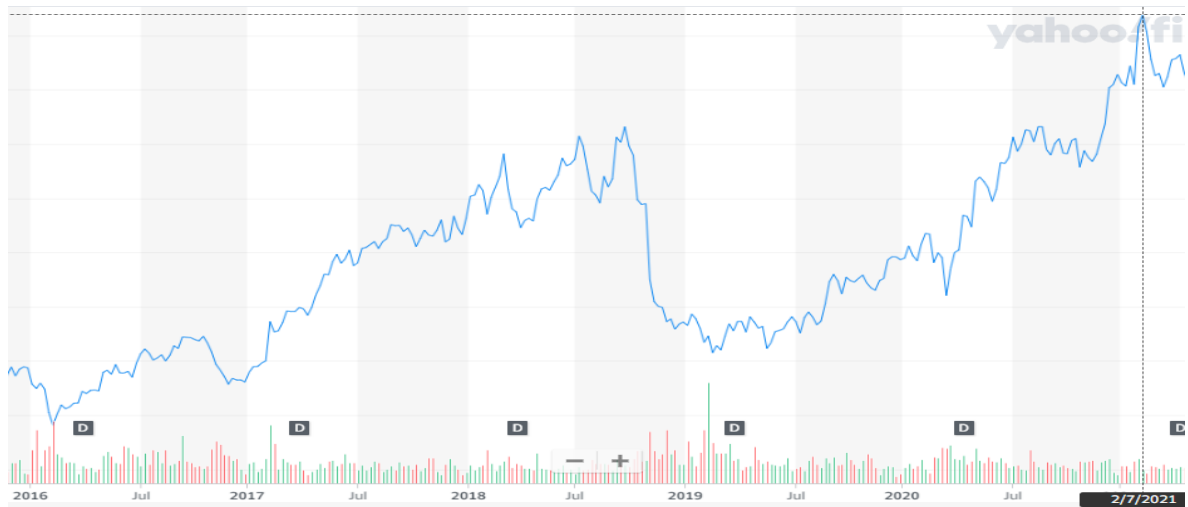


Figure 17. Stock price of Activision Blizzard from 2016 - 2021. (Yahoo! Finance).



Figure 18. Stock price of Electronic Arts from 2016 – 2021. (Yahoo! Finance).



Figure 19. Stock price of Rovio from 2016 – 2021. (Yahoo! Finance).

The stock price of Activision Blizzard and Electronic Arts were comparatively more stable than that of Rovio, which fluctuated drastically. Apart from that, both the stock prices of Activision Blizzard and Electronic Arts performed well in the past few years. Activision Blizzard’s stock price was climbing while that of Electronic Arts was comparatively stable and both of them reflect a favorable investing value.

Table 20. Peer Comparison of EPS

Year	Activision Blizzard	Electronic Arts	Rovio
2017	\$0.36	\$3.2	\$0.10
2018	\$2.40	\$4.59	\$0.10
2019	\$1.95	\$9.51	\$0.10
2020	\$2.82	\$4.03	\$0.13
2021	\$3.44	\$2.22	\$0.45

Earnings per share is an important index to analyze the value of stocks. Generally speaking, the higher the earnings per share of stock, the higher investing valuation for the investors (Mohsin et al., 2020). However, the reasons for the increase of the earning per share should also attract investors’ attention because there might be some hiding reasons for the accrete of the stock price on some occasions. For instance, in order to achieve a certain purpose,

some companies will deliberately hide the liabilities and improve earnings per share, making the financial ratios and accounting book amiable. However, when certain purposes are being achieved, the net profit is probably experiencing a sharp decline for the abnormal operation. According to Table 20, earning per share of Activision Blizzard experience an overall trend of increase in the past five years and has overpassed earning per share of Electronic Arts in 2021. However, it has also experienced a decline due to the lawsuit of sexual harassment being exposed in 2019 (Lanier, 2021). This exposure has cast enormous impacts on Activision Blizzard but the stock of this company seemed to recover in the next year.

Table 21. Peer Comparison of P/E Ratio

Year	Activision Blizzard	Electronic Arts	Rovio
2020	32.26	35.41	58.07
2021	23.40	59.33	17.13

The P/E ratio is calculated by dividing the company's stock price by its earnings per share (Cohen & Neubert, 2019). It's one of the most widely utilized indicators for determining whether a stock's price is acceptable (Cohen & Neubert, 2019). Through the P/E ratio value, investors can judge whether a company's stock is overvalued or undervalued. When the stock price of a company is undervalued, investors may choose to invest. However, when a company's stock is overvalued, investors need to take time to evaluate whether the company's growth prospects can match it. On common occasions, competitors in the same industry have similar profits and business models. Therefore, the P/E ratios of these companies are mostly similar. When a company's business performance is desirable but the P/E ratio is still relatively low, it is still possible to get a good return on investment in this company. On common condition, when the P/E ratio of a company being at the range of 15 - 30 will be regarded as the reasonable scope and the investment risk is comparatively lower (Fuller, 1986). Based on Table 21, the P/E ratio of Activision Blizzard has declined to the healthy range in 2021 which was a favorable indicator for investors. Compared with the P/E ratio of Electronic Arts and Rovio, the P/E ratio of Activision Blizzard is more stable, meaning a lower investment risk for investors.

Table 22. Peer Comparison of Enterprise Value

Year	Activision Blizzard	Electronic Arts	Rovio
2020	\$59.47 billion	\$24.46 billion	\$348.25 million
2021	\$ 45.02 billion	\$29.67 billion	\$687.57 million

Enterprise value plays an important role in measuring the total value of a company. In addition, it is a popular metric for comparing the total value of companies, assessing whether there is potential acquisition value in the company. The enterprise value calculation includes the company's market capitalization, balance sheet, and debt. Under this circumstance, comparing the EV values of these three companies can reflect the operating income and revenue-generating capabilities of these three companies. In addition, EV reflects a company's debt scale and cash reserves and is often used to compare financial ratios. In this table, Activision Blizzard has a higher EV than Electronic Arts in 2020 indicating that its estimated purchase price is higher than Electronic Arts. However, after comparing the EV of Electronic Arts and Rovio in 2021, Electronic Arts' EV performance is much better than Rovio's.

6 RECOMMENDATIONS

On the basis of the data and graphs listed above, it is not difficult to see that Activision Blizzard's revenue status in recent years is good, and all indicators show an upward trend year by year in general. However, given Activision Blizzard's recent game business history, and the recent lawsuit against the company, there are some suggestions that might be useful.

6.1 Focusing on the revenue growth driven by intrinsic factors

According to the data calculated above, the revenue growth of Activision Blizzard in 2020 is 24.61%, and the operating income on the whole also presents a rising trend. Whether an enterprise can steadily obtain profits in the long run is established on the basis of operating income. The higher the revenue growth rate, the better the share price is likely to perform over the medium to long term (Chandra & Ro, 2008).

In general, the high revenue growth rate reflects the high expansion rate of the company's business, but also indicates that the company will increase the market share and influence on the market, which to a large extent reflects the development of the company. However, it is necessary for company leaders to consider whether such high growth is sustainable and healthy, that is, to find out the reason for the high growth, which is the business growth brought by the improvement of intrinsic value such as product quality, service and technology content, or the short-term marketing promotion caused by price reduction and activities. Short-term high growth plays a certain role in expanding the influence of enterprises, but it often sacrifices profits and cash flow. This kind of growth is a double-edged sword, which is not good for long-term development. In order to establish a benign growth model, it is necessary to focus on technological innovation, product research and development and other aspects because such growth can maintain the continuous inflow of profit contribution and cash flow of enterprises, that is to say, enterprises have their own continuous hematopoietic ability.

6.2 Developing new games with high quality

However, combined with the genres and marketing status of the games developed by Activision Blizzard in recent years, the development and operation of the game business, as the main business of the company, is not smooth. World of Warcraft went down after the birth of Shadowlands, Hearthstone's new mode looked like a colossal failure, and Overwatch had become a boring wasteland gradually (Clark et al., 2022). Blizzard could have made a lot of money with its famous brand, even if it had followed suit with a hit game. It can only be said that Activision Blizzard's artist model is arrogant, stuck in its own way, too slow to react to the market. The decline in the quality of Activision Blizzard's

key games is obvious. If Activision Blizzard cannot develop high-quality games that meet the market and players' tastes in the future, and only earn money by operating old games such as World of Warcraft on the basis of cherished memory of old players, it can be predicted that Activision Blizzard's game business will suffer a considerable blow in the future.

Activision Blizzard lacks Internet thinking. In fact, on the mobile end, as early as WOW6.0, it is a very good opportunity to launch a mobile game mode, even if it is just a simple pet battle, Blizzard can seize a highland on mobile games. However, Blizzard was arrogant enough to assume that its online gaming empire would never decline and did not want to take more ground on mobile. As a result, it took at least 4-5 years for Activision Blizzard to expand its mobile games space, which caused Activision Blizzard to lose a lot of the mobile gaming markets (Clark et al., 2022). With the development of The Times, players have more and more kinds of games to choose from. MOBAs and mobile games with flexible time have taken away too many players, and the market environment has changed fundamentally. Maybe Activision Blizzard needs to take the game market seriously and put more effort into developing a good game on the mobile end.

6.3 Reinforcing internal management and binding force

In addition, Activision Blizzard is trapped in lawsuits of employee abuse and harassment. Activision Blizzard is at the center of a scandal involving allegations of chronic harassment and mistreatment of employees. After a two-year investigation, the California Department of Fair Employment and Housing initiated legal proceedings against Activision Blizzard in July 2021 (Greenbaum, 2022). Female employees are common targets of sexual harassment by male employees, and they are repeatedly teased about rape by male employees. A female employee even committed suicide after nude photos circulated on the Internet (Greenbaum, 2022). Obviously, the internal management of Activision Blizzard is a big mess. It is the corporate indulgence and connivance in this perverse environment that makes it impossible to stop. Therefore, the company should establish a perfect employee management system, give certain punishments to the employees who cross the boundary, and give severe punishment to the employees who have illegal behaviors, including taking the means of litigation when necessary.

Several approaches could be adopted to improve the valuation of Activision Blizzard since multiple factors influence the valuation. Activision Blizzard has seen exciting growth in various aspects compared to another two companies. However, the company still needs to maintain its advantages and improve its value as a stock investment. The analysis of EV and Rovio could be served as a reference even though their overall performances were no better than Activision Blizzard. Activision Blizzard could take measures to improve the performance of revenue. The revenue growth of Activision Blizzard in 2020 was 24.61% with a 46.17% growth of net income. The boasting growth was mainly contributed by the successful strategy of marketing and service. A free gaming experience was provided and the advertisement and service on mobile devices were developed. The improvement of service and core games attracted more high-end players. Because of its valuation and better financial situation, Activision Blizzard performed well.

Seeing a significant drop in revenue, Electronic Arts has failed to take a position in the top 30 companies which were popular stocks in hedge funds. Its revenue grew by 11.85% in 2020 and only 1.6% in 2021. The EBITDA growth rate of EA was 39.78% in 2020 and 2021 was -23.07%. The net income reached a five-year low of \$837million in 2021. Enterprise value reached \$24.4571 billion. The financial performance of EV was unstable which impacted its value. Several factors need to be considered for addressing the issue. Although several customers were fond of video games, they were not so sensitive to prices. The market of video games was slightly influenced by the business cycle. The services of hot video games could help companies to overcome the business cycle. The restriction of people's activities caused by pandemics was beneficial to the industry of video games to some extent.

EV's performance was heavily impacted by internal factors from itself. The ability to create hot products and manage costs was of great importance. Although EV attached great importance to the development of new products, not enough time was given to designers of games (Bartleby, 2022). Due to the limitation on the types of games were not enough to meet the demand of players. From this perspective, Rovio's measures could be taken into consideration. EV has begun to innovate and pushed players to transform. The company shifted its focus on the creation which was the basis for offering valuable experience for

players. The traditional experience of playing games would be broken and a new ecosystem for communication would be established to increase connections and build up surprising experiences. A new CFO would assume office to improve the management of finance (EA, 2022).

Rovio has managed to design multiple games to maintain its customers' base which would contribute the revenue growth as a result. The revenue growth of Rovio lost 5% in 2020 and increased by 5% in 2021 (Rovio, 2022). In 2021, the net income growth of the company decreased by 2.90%. The EPS was 687.57 million US dollars. The growth of revenue of Rovio was mainly benefited from the outperformance of games like Angry Birds. Rovio made diverse gaming experiences that targeted various tastes of the audience and players. The company aimed to accompany its audience for a lifetime. Rovio strengthened the exposure of the puzzle-solving, role-playing, and strategy games through M&A, offering Rovio a wider range of new types in the leisure and mid-core categories (Rovio, 2022). The present service was offering free F2P games centered on puzzles and slingshot, which would be expanded to new mobile patterns. RPG and strategic games were invested to realize growth in the future. The development of the new IP contributed to a diverse combination of games, which were conducive to the formation of the brand. New workshops were built up for developing more games on the mobile terminal which would be the most popular platform because of the factors of revenue and coverage. Social communication and cross-platform games were becoming popular.

Taking all factors into consideration, Activision Blizzard could make the best use of the advantages and bypass the disadvantages based on the analysis of EV and Rovio. The development of products was the core competitive power. The diverse games were contributing to meeting various demands of customers. New platforms would help improve the playing experience which improves customer loyalty. The advertisement and service on mobile devices also needed to develop to keep up with the trends. The improvement of service and core games attracted more high-end players. New intelligent tools or models for evaluating the value of the company and the preference of customers could be used for making strategies. As valuing the company, the relative valuation method was recommended. This approach help determine the target asset's value based on the price of comparable assets in the market. Risk assessment also was crucial. Before becoming an

excellent company, cultivating development potential should pay attention. Growth and potential cash flow were the key factors. The improvement of the P/E ratio of the company help improves the potential of the company. Efforts to improve financial indicators were crucial because the company's creditor's rights and shareholders' rights and interests need to be focused on. Activision Blizzard could also consider other factors for achieving the growth of valuation.

7 CONCLUSION

To sum up, the significance of stock valuation has been discussed above. Moreover, the analysis of Activision Blizzard is important for people who are extremely interested in stock investment. Thus, the objectives of this project are essential to figuring out. First of all, it aims to help establish a fundamental understanding of stock investment by interpreting the case of Activision Blizzard. Secondly, this research aims to predict the intrinsic value of stocks, which lays a foundation for exploring profitable or valuable stocks. This objective can be easily identified through the methodology part. Ultimately, it aims to provide some feasible suggestions and examples for people who are interested in stock investment, especially for these new learners in the stock field. All of these objectives have been achieved via the analysis of Activision Blizzard.

To achieve the above three goals, the application of the methodology is very important, because it directly affects the results of this study and subsequent more in-depth discussions. This research first selects three video game companies for comparative analysis, the main company is Activision Blizzard, and the other two companies Electronic Arts and Rovio are used for comparison with Activision Blizzard. The second step is to determine what indicators and multiples to use to analyze these three companies. Finally, three indexes are determined, the first is revenue and revenue growth, the second is EBITDA and EBITDA growth, and the third is Net income, P/E ratio, and net income growth. To compare the stocks of the three electronic companies for valuation, people need to figure out the corresponding rate of the revenue growth, EBITDA growing rate, net income growth, and P/E ratio in the annual statements of each company from 2017 to 2021, and then carry out

the next step for EV and the value of the three enterprises according to these indicators. This is an important reason to analyze these data. Furthermore, in the process of stock valuation, the research needs to understand the revenue of the target company and the trend of the company or enterprise about the growth of revenue in recent years, to predict the revenue of the company or enterprise in the next few years. Understanding the future revenue forecast of the company and enterprises can effectively help the research analyze and predict the expected revenue of the company. As an important part of securities analysis, income growth and forecast analysis can help investors explore the future value of the stock of their company or enterprise.

EBITDA can provide investors with short-term operational efficiency information of the target company and enterprise. It can reflect the calculation of the profit margin. Moreover, it reveals the current operating conditions of the target company or the profitability of its business. The analysis of the graph can provide effective information for the value estimation of the company, and interpret the overall situation and relationship of profitability between the target company and the whole industry. Net income often appears in the profit and loss statement of the target company. After deducting all deductions and taxes, the net income can let investors know how much profit the target company can make after paying all expenses. After knowing the profits, investors can estimate the general situation of the amount that the target company can use to pay dividends, reinvest its business and repurchase its shares. As a popular ratio, the P/E ratio can let investors understand the relationship between the valuation of the target company and EPS so that the investment value of the target company can be more clearly and comprehensively displayed. In other words, the analysis of the P/E ratio can give a piece of basic knowledge about the earnings of the stock of the companies.

Ultimately, whether the stock of Activision Blizzard is worth investing in should be concluded from the analysis above, the conclusion gets from the analysis is that the stock of Activision Blizzard is recommended to be invested in the medium and long term as a result. In the above analysis, the researcher has taken advantage of corresponding data of the revenue growth, net income, EBITDA growing rate, and P/E ratio of Activision Blizzard from 2017 to 2021 to help judge the stock developing trend, generating a more accurate recommendation for the investors. Besides, to have a deeper understanding of the

game industry, another two peer companies, Rovio and Electronic Arts, are also being used in this research to make a comparison to increase the credibility and rationality of the conclusion. The symmetric data within the same period being used in the process of analysis can guarantee the effectiveness of the contrast. The investing analysis of the three stocks includes the peer comparison of revenue, EBITDA, NET income, share value, EPS, P/E ratio.

In addition, the enterprise value is worth discussing. The enterprise value calculation includes the company's market capitalization, balance sheet, and debt, which reflects the operating income and revenue-generating abilities of the company. Therefore, understanding stock valuation is a complex and tedious process. The indicators that need to be understood and used in this process are all closely linked to each other. In addition, each indicator has played a non-negligible role and advantage in the process of stock valuation. Therefore, the process of stock valuation needs to take into account the change between this metric and the ratio.

For further going, the stock is an integral part of a company, thus the basic information about a company lays a foundation for further exploration, which means that the three indicators are essential in analyzing the stocks. In other words, the analysis of revenue, EBITDA, and net income, P/E ratio are inevitable to assess the stock valuation. Having basic knowledge about the methodology, the discussions and findings are based on that, which contributed to the conclusion that the stock of Activision Blizzard is worth investing in. Additionally, the purpose of this project is to provide feasible suggestions for the stock learns via the analysis of the three companies. Thus, hoping this research can help people who are interested in stock investment learn something about stock and the operation of companies. The continuing research for this thesis could be the risk analysis in investment, extent of the impact and solutions.

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APPENDICES

1. Balance Sheet Statement of Activision Blizzard

ACTIVISION BLIZZARD, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(Amounts in millions, except share data)

	<u>At December 31, 2022</u>	<u>At December 31, 2021</u>
Assets		
Current assets:		
Cash and cash equivalents	\$ 7,060	\$ 10,423
Held-to-maturity investments	4,932	—
Accounts receivable, net	1,204	972
Software development	640	449
Other current assets	633	712
Total current assets	<u>14,469</u>	<u>12,556</u>
Software development	641	211
Property and equipment, net	193	169
Deferred income taxes, net	1,201	1,377
Other assets	508	497
Intangible assets, net	442	447
Goodwill	9,929	9,799
Total assets	<u>\$ 27,383</u>	<u>\$ 25,056</u>
Liabilities and Shareholders' Equity		
Current liabilities:		
Accounts payable	\$ 324	\$ 285
Deferred revenues	2,088	1,118
Accrued expenses and other liabilities	1,143	1,008
Total current liabilities	<u>3,555</u>	<u>2,411</u>
Long-term debt, net	3,611	3,608
Deferred income taxes, net	158	506
Other liabilities	816	932
Total liabilities	<u>8,140</u>	<u>7,457</u>
Commitments and contingencies (Note 22)		
Shareholders' equity:		
Common stock, \$0.000001 par value, 2,400,000,000 shares authorized, 1,212,894,055 and 1,207,729,623 shares issued at December 31, 2022 and December 31, 2021, respectively	—	—
Additional paid-in capital	12,260	11,715
Less: Treasury stock, at cost, 428,676,471 shares at December 31, 2022 and December 31, 2021	(5,563)	(5,563)
Retained earnings	13,171	12,025
Accumulated other comprehensive loss	(625)	(578)
Total shareholders' equity	<u>19,243</u>	<u>17,599</u>
Total liabilities and shareholders' equity	<u>\$ 27,383</u>	<u>\$ 25,056</u>

The accompanying notes are an integral part of these Consolidated Financial Statements.

2. Income Statement of Activision Blizzard

ACTIVISION BLIZZARD, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(Amounts in millions, except per share data)

	For the Years Ended December 31,		
	2022	2021	2020
Net revenues			
Product sales	\$ 1,642	\$ 2,311	\$ 2,350
In-game, subscription, and other revenues	5,886	6,492	5,736
Total net revenues	7,528	8,803	8,086
Costs and expenses			
Cost of revenues—product sales:			
Product costs	519	649	705
Software royalties and amortization	231	346	269
Cost of revenues—in-game, subscription, and other:			
Game operations and distribution costs	1,324	1,215	1,131
Software royalties and amortization	148	107	155
Product development	1,421	1,337	1,150
Sales and marketing	1,217	1,025	1,064
General and administrative	1,001	788	784
Restructuring and related costs	(3)	77	94
Total costs and expenses	5,858	5,544	5,352
Operating income	1,670	3,259	2,734
Interest expense from debt	108	108	99
Other (income) expense, net (Note 18)	(182)	(13)	(12)
Loss on extinguishment of debt	—	—	31
Income before income tax expense	1,744	3,164	2,616
Income tax expense	231	465	419
Net income	\$ 1,513	\$ 2,699	\$ 2,197
Earnings per common share			
Basic	\$ 1.94	\$ 3.47	\$ 2.85
Diluted	\$ 1.92	\$ 3.44	\$ 2.82
Weighted-average number of shares outstanding			
Basic	782	777	771
Diluted	789	784	778

The accompanying notes are an integral part of these Consolidated Financial Statements.

(Source : <https://investor.activision.com/static-files/01d1f04d-1c00-4a17-8743-4e6a20e17335>)

3. Balance Sheet Statement of Electronic Arts

ELECTRONIC ARTS INC. AND SUBSIDIARIES CONSOLIDATED BALANCE SHEETS

(In millions, except par value data)	March 31, 2022	March 31, 2021
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 2,732	\$ 5,260
Short-term investments	330	1,106
Receivables, net	650	521
Other current assets	439	326
Total current assets	4,151	7,213
Property and equipment, net	550	491
Goodwill	5,387	2,868
Acquisition-related intangibles, net	962	309
Deferred income taxes, net	2,243	2,045
Other assets	507	362
TOTAL ASSETS	\$ 13,800	\$ 13,288
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 101	\$ 96
Accrued and other current liabilities	1,388	1,341
Deferred net revenue (online-enabled games)	2,024	1,527
Total current liabilities	3,513	2,964
Senior notes, net	1,878	1,876
Income tax obligations	386	315
Deferred income taxes, net	1	43
Other liabilities	397	250
Total liabilities	6,175	5,448
Commitments and contingencies (See Note 14)		
Stockholders' equity:		
Preferred stock, \$0.01 par value. 10 shares authorized	—	—
Common stock, \$0.01 par value. 1,000 shares authorized; 280 and 286 shares issued and outstanding, respectively	3	3
Additional paid-in capital	—	—
Retained earnings	7,607	7,887
Accumulated other comprehensive income (loss)	15	(50)
Total stockholders' equity	7,625	7,840
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	\$ 13,800	\$ 13,288

See accompanying Notes to Consolidated Financial Statements.

4. Income Statement of Electronic Arts

ELECTRONIC ARTS INC. AND SUBSIDIARIES CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(In millions)	Year Ended March 31,		
	2022	2021	2020
Net income	\$ 789	\$ 837	\$ 3,039
Other comprehensive income (loss), net of tax:			
Net gains (losses) on available-for-sale securities	(3)	4	(3)
Net gains (losses) on derivative instruments	76	(68)	17
Foreign currency translation adjustments	(8)	64	(34)
Total other comprehensive income (loss), net of tax	65	—	(20)
Total comprehensive income	\$ 854	\$ 837	\$ 3,019

See accompanying Notes to Consolidated Financial Statements.

ELECTRONIC ARTS INC. AND SUBSIDIARIES CONSOLIDATED STATEMENTS OF OPERATIONS

(In millions, except per share data)	Year Ended March 31,		
	2022	2021	2020
Net revenue	\$ 6,991	\$ 5,629	\$ 5,537
Cost of revenue	1,859	1,494	1,369
Gross profit	5,132	4,135	4,168
Operating expenses:			
Research and development	2,186	1,778	1,559
Marketing and sales	961	689	631
General and administrative	673	592	506
Acquisition-related contingent consideration	—	—	5
Amortization and impairment of intangibles	183	30	22
Total operating expenses	4,003	3,089	2,723
Operating income	1,129	1,046	1,445
Interest and other income (expense), net	(48)	(29)	63
Income before provision for (benefit from) income taxes	1,081	1,017	1,508
Provision for (benefit from) income taxes	292	180	(1,531)
Net income	\$ 789	\$ 837	\$ 3,039
Earnings per share:			
Basic	\$ 2.78	\$ 2.90	\$ 10.37
Diluted	\$ 2.76	\$ 2.87	\$ 10.30
Number of shares used in computation:			
Basic	284	289	293
Diluted	286	292	295

See accompanying Notes to Consolidated Financial Statements.

(Source:

https://www.annualreports.com/HostedData/AnnualReports/PDF/NASDAQ_EA_2022.pdf

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5. Balance Sheet Statement of Rovio

Consolidated statement of financial position

€ 000	Note	2022	2021
Assets			
Non-current assets		89,028	90,190
Property, plant and equipment	2.1	1,580	1,302
Intangible assets	2.3	20,813	24,834
Goodwill	2.2	39,795	37,476
Right-of-Use Assets	2.1	5,445	6,835
Investments	3.3	9,567	8,270
Non-current receivables	3.3	3,461	3,420
Deferred tax assets	5.2	8,368	8,052
Current assets		205,320	196,842
Trade receivables	3.3	25,286	27,585
Prepayments and accrued income	3.3	8,016	7,584
Other current financial assets	3.3	1,326	855
Money market funds	3.4	59,913	50,621
Cash and short-term deposits	3.4	110,780	110,197
Total Assets		294,349	287,031
Equity and liabilities			
Equity			
Issued capital	3.14	733	733
Reserves	3.14	51,856	45,986
Translation differences	3.14	4,688	101
Fair value reserve	3.14	3,937	2,965
Treasury shares	3.14	-35,868	-36,863
Retained earnings	3.14	178,605	154,478
Profit for the period	3.14	22,873	30,138
Equity holders of the parent company		226,824	197,539
Total equity		226,824	197,539

€ 000	Note	2022	2021
Liabilities			
Non-current liabilities		17,986	20,733
Interest-bearing loans and borrowings	3.2	128	325
Contingent consideration liabilities	4.1	12,046	13,235
Lease liabilities	3.2	2,997	3,849
Deferred tax liabilities	5.2	2,815	3,324
Current liabilities		49,538	68,759
Trade and other payables	3.5	12,103	8,799
Interest-bearing loans and borrowings	3.2	113	530
Contingent consideration liabilities	4.1	322	27,763
Lease liabilities	3.2	2,647	3,164
Other current financial liabilities	3.5	657	973
Advances received	3.6	1,358	1,682
Deferred revenue	3.7	7,136	6,338
Income tax payable	5.1	1,934	4,861
Provisions	3.8	300	308
Accrued liabilities	3.9	22,967	14,340
Total liabilities		67,524	89,492
Total equity and liabilities		294,349	287,031

6. Income Statement of Rovio

Statement of consolidated profit or loss and other comprehensive income

€ 000	Note	2022	2021
Revenue	1.1	317,723	286,224
Other operating income	1.2	2,841	921
Materials and services	1.3	-79,626	-74,464
Employee benefits expense	1.4, 1.5	-57,801	-53,203
Depreciation and amortization	2.1, 2.3	-14,696	-13,056
Other operating expenses	1.6	-139,883	-108,676
Operating profit		28,557	37,746
Financial income and expenses	1.7	2,004	2,512
Profit before tax		30,561	40,258
Income tax expense	5.1, 5.2	-7,688	-10,120
Profit/loss for the period		22,873	30,138
Attributable to:			
Equity holders of the parent company		22,873	30,138

€ 000	Note	2022	2021
Other comprehensive income/expense			
Other comprehensive income that will not be reclassified to profit and loss (net of tax):			
Change in fair value, investments valued through other comprehensive income		972	2,965
Other comprehensive income to be reclassified to profit or loss in subsequent periods:			
Translation differences		4,637	618
Total comprehensive income for the period, net of tax		28,481	33,721
Equity holders of the parent company		28,481	33,721
Earnings per share for net result attributable to owners of the parent:			
Earnings per share, EUR		0.30	0.41
Earnings per share, diluted EUR		0.30	0.41

(Source: https://investors.rovio.com/sites/rovio-ir-v2/files/2023-03/Rovio_Annual_Report_2022.pdf)