Research article

An overview of the gaming industry across nations: using analytics with power BI to forecast and identify key influencers

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ABSTRACT

Esports has seen a phenomenal explosion in popularity in recent years, gaining increasing interest from the media, sports, and technology industries. The purpose of this study is to show an overview of the recent evolution of the gaming market in representative countries in Eastern Asia, Western Europe, and North America during 2017–2019, and the corresponding growth projections for the next five years. For this purpose, descriptive, correlational, and forecasting analyses were used to assess the relationships among key variables associated with the growth of the gaming industry and to show different possibilities to address the data using data analytics. The games market revenues, total number of players, Google trends data, GDP per capita and online population were studied as possible key influencers to explain the industry's growth. Predictive analytics with MS Power BI revealed a positive correlation between GDP per capita and market revenues and players in European and North American countries, while in Asia was just the opposite. Also, a positive relationship between Google trends in esports and the games market revenues is noted. Forecasts showed significant growth for each region. Practical implications and future research directions are discussed.

1. Introduction

Esports stands for "electronic sports" and involves an alternative way of sports assisted by electronic systems and mediated by human-computer interfaces (Hamari and Sjöblom, 2017). In simple terms, it refers to competitive professional video games and is equivalent to other terms such as cyber athletics or professional games -pro-gamers- (Hiltscher and Scholz, 2017). One of the biggest advantages of esports is that people can enjoy it anywhere, anytime, and with anyone, all over the world, as they are free from time and place restrictions over the Internet (Reitman et al., 2020).

The growth of computers and the development of the Internet have brought great changes in esports, as they are involved in many aspects of daily life (Seo and Jung, 2016). This new form of sport has seen a phenomenal explosion in popularity in recent years, and its popularity has even threatened traditional sports (Ward and Harmon, 2019). The conventional view of modern sport denotes a physical, competitive, and institutionalized activity. Nowadays, sports are described by a scientific vision of the world (i.e., standardized rules, as well as time, height, and length measurements), and fair play and good spirit, supporting better physical and mental health, as well as promoting social values (Jonasson and Thiborg, 2010).

Games have always been called creative media, where neither the developers nor the player creators are solely responsible for producing the final assembly that is "the game", which requires the participation of both. The same can be said of esports, that the final assembly of the esports experience is co-created by viewers, the game company, and other stakeholders (Hiltscher and Scholz, 2017). The esports experience is valuable in today's economy, where increasingly, companies must organize experiences that engage and connect with consumers in a personal and memorable way to generate economic value. In response to the growing popularity of esports, professional players or gamers, professional teams, and professional leagues were created in a similar way to existing traditional sports (i.e., soccer, basketball, baseball) and numerous global companies have begun to invest big to buy sponsorships (Jang and Byon, 2019; Weiss and Schiele, 2013), thus a growth in revenues and players in this industry is expected for years to come.

The rapid growth of esports has spawned another trend: people not only play games, but they create spectators as well. That is, esports represent an emerging sports genre, which has expanded from being a participation sport to an audience sport (Watanabe et al., 2021). Despite its relevance, limited research has been done around esports, making it an interesting topic to investigate.

This study aims to show an overview of the recent evolution of the gaming market and the number of players in representative countries in Eastern Asia, Western Europe, and North America during 2017–2019. Moreover, this paper addresses the following research questions: What influences both total games market revenues and the number of players to increase? Are such key influencers the same for the regions of Western Europe, North America, and Eastern Asia? What are the corresponding forecasts in terms of revenues and gamers for the following five years for each of these regions? To answer these questions, this paper is organized into four main sections. This section provides an overview of esports and discusses factors associated with the professionalization and growth of esports. Section two presents the methodology used in this study, as well as introduces analytics as a useful tool to organize and process an excess of available data online and gather valuable insights. The third section highlights the results of the descriptive, correlational, and forecasting analyzes. Finally, the fourth section delivers an overall discussion, followed by future research directions, and final remarks.

1.1. Background

The early years of esports date back to 1970s with the introduction of arcade machines and game consoles. As computer components became more affordable, companies began to explore such market opportunities in videogames, which in some respects challenge modern and hegemonic sport (Bornemark, 2013). Video games are a generic term for all types of digital games, played and used on some type of screen. This includes arcade machines, handheld devices, game consoles (i.e., Xbox, PlayStation, Game Boy), and computer games (González-Moreno et al., 2019). Stanford University in the USA hosted the first eSports tournament in 1972 giving rise to competitive video games (Li, 2016; Taylor, 2012). Following attempts to increase the popularity of esports were made during the 1980s and 1990s with the organization of national tournaments and world championships. Companies such as Atari or Nintendo used these events as a marketing tool to promote its video games, while fostering a gaming culture (Borowy and Jin, 2013).

During the 1990s, with the development of the internet and further multiplayer capabilities, video games experienced significant growth, making it possible to not only to connect but to compete with external players. Further multiplayer tournaments began proliferating, as well as the tournament organizations across the globe (i.e., Cyberathlete Professional League (CPL) and the AMD Professional Gamers League (PGL) in the USA, the Deutsche Clanliga (DeCL) in Germany, among many others in different countries and over the years) (Scholz, 2019).

As multiplayer video games became more popular, people began to compete more seriously. The spread of personal computers made more people able to play games and the rapid development of the Internet and the game's network code allowed for lower latency in the game among players (Bornemark, 2013). Esports are primarily focused on the competition, and while generally, any computer game could well be a discipline in esports since it refers to one-on-one competition, there are certain core games, which are more popular even from a global perspective, such as Battlefield series, Quake series, Warcraft series, EA Sports FIFA, among many others (Saiz-Alvarez et al., 2021).

During the 2000s, the esports teams and tournament grew stronger in structure, organization, and prizes. A growing number of video game developers started to offer and support esports capabilities in their games. Sponsorships began to play a bigger role in esports with companies such as Samsung, Microsoft, ATI, AMD, among others. Player's contract signing, and team transfers started at that time. Traditional media became involved by following and broadcasting the World Series of Video Games competitions, which attracted lots of spectators. Additionally, online broadcasting emerged as an important alternative to television to reduce costs and reach a worldwide audience (Scholz, 2019).

Compared to traditional sports, esports have delivered a group of thrilling adjustments to content material manufacturing and delivery. This marketplace has made the internet its essential support for the consolidation of transmedia processes, streaming platforms, and video on demand (Block et al., 2018). In this regard, this social phenomenon has recreated a new way of interaction providing a new experience for the spectators and audience, allowing direct contact with professional players, adding new statistics, metadata and media production techniques (Jungsuk, 2018).

1.2. Professionalization and growth of esports

Nowadays, computer games are spotted in the media as an activity that competes with other physical sports and socializing events (Jonasson and Thiborg, 2010). However, due to the popularity of video games, competencies in computer games have developed. Success in esports requires fine motor skills, coordination, and mental skills, rather than height, muscle power, and explosive speed. Thus players require a strategic eye for the game (Jalonen, 2019). Many players want to measure and compare their skills with and against other players. As a result, online confrontation between players and at different levels of competition (i.e., amateur, semi-professional and professional) represents a determinant characteristic for the proliferation of esports (Roncero and García, 2014). Consequently, players with a higher level of professionalization have a complete dedication to esports, being able to receive a salary by belonging to a professional team, compete for prizes (depending on the prestige and sponsorships), and likely acquire other sources of income through their sponsors and media relations.

Esports has implied a revolution for the video game industry, particularly in the diversity of the participants, new channels of economic income and increased physical activity (Jenny et al., 2017). Today, it is still an emerging field of exploration that is diversifying thanks to the variety of sectors involved, including IT, government agencies, companies specialized in games, media, among others (Steinkuehler, 2020) directly impacting on multiple degrees, models and marketing strategies that seek to impact and engage the global market (Lu et al., 2010).

Esports has evolved into a professional game as well as their players. This is possible due to technological advances fostering a competitive commercial environment across the globe for both players and spectators (Block et al., 2018). Several organizations have advanced competitive systems to manage such players (Seo, 2013). Hence, esports relates to mental and fine motor skills development and training in the use of information and communication technologies -ICT- (Wagner, 2006). The youth culture prevails among consumers since generally, they are more competent in the use of ICT, while many adult generations have not yet realized these developments. In fact, more than 70% of the total global esports total audience are from the ages of 16–34 years old; while 19% belong to 35–44 years old (Zuckerman, 2020). This implies a rapidly widening socio-technological generation gap.

Nowadays, esports have become a worldwide phenomenon based on the professionalization of the competitive world of video games (Roncero and García, 2014). Such competitive online games are the fastest growing means of participating in and following sports. Worldwide, it interests up to 500 million people (Jalonen, 2019). One of the most intriguing social phenomena is a gaming culture that has developed alongside the media. People are no longer satisfied with just playing games, they are also creating new ways to enjoy them. These new means of enjoyment include "watching" and "supporting" professional players and teams in the game (Kim and Thomas, 2015). For instance, the esports gambling market is growing swiftly with its particularities compared to traditional sports (Roncero and García, 2014). Besides currency, players can also bet on in-game items. Such characteristics in addition to the game's addictive

and interactive characteristics support the significance of extending the study between gambling, addiction, and esports.

2. Method

2.1. Data analytics and the gaming industry

The opportunities in the gaming industry are vast in terms of new market analysis methods. In fact, analytics and big data is revolutionizing the future of this industry (Wooden, 2021). This is evidenced in the present-day higher demand for data scientists or analysts, and data engineering for this billion-dollar industry (Ozyazgan, 2019). The increasing developments in ICT stream new approaches for using multiple open data sources and real-time metadata or big data (Brady et al., 2008). Since, information is flowing continuously at great lengths and speed, it represents both a challenge and an opportunity not only for scholars to apply data analytics in scientific research, but for organizations and governmental institutions to adapt the means and resources to analyze such data and aid their decision-making processes (Chen et al., 2012; Davenport, 2013; Stone and Woodcock, 2014).

Data science, computer analytics, or analytics refers to a field or line of research where statistics converge with predictive computer models and data processing techniques to generate knowledge and contribute to decision-making (Kannan and Li, 2017; Mulhern, 2009). Therefore, analytical and technical skills and useful performance metrics are determinants for strategy processes where digital technologies progressively impact. This challenging aspect of analytical skills results from the vitality of this research field and the excess of available data. However, the data is useless without proper analysis and interpretation (Chaffey and Patron, 2012). As noted by experts in the field "decisions will be based on data-driven extrapolations and statistical heuristics" (Valos et al., 2010, p. 363). Such new approaches to assess data information have provided innovative techniques to study different micro and macro-economic variables (Fisher, 2009; Leskovec et al., 2020).

While the field of analytics continues to grow, a surplus of data keeps being spawned and the limitations to capitalize on such data usage remain greatly unexplored (Järvinen and Karjaluoto, 2015; Järvinen et al., 2012). Data analytics is expected to provide valuable insights (Desouza and Jacob, 2017; Fosso Wamba et al., 2015; Janssen and Kuk, 2016; Kyriazis et al., 2020; Palma-Ruiz and Gómez-Martínez, 2019). Consequently, there is a need to develop models and methods that are inclusive in terms of information and various stakeholders, involve reasonable analysis and synthesis, and are quick (Bryson et al., 2010, p. 13).

This study used analytics techniques to illustrate how the gaming industry has evolved during the previous three years (2017–2019) by comparing online data from ten main economies in Asia, Europe, and America that have had the greatest growth in revenues. The focus of this research was exploratory since it is intended to explore and highlight the main differences among these economies associated with the growth of such industry. In addition, a correlational analysis was conducted to identify and compare significant relationships between variables, known as "key influencers", which could be associated with the growth of this industry among these nations. Finally, forecasting analyses in terms of games market revenues and total players for each region were also provided for the following five years.

2.2. Data collection

The research used data from ten representative economies in the regions of eastern Asia, Western Europe, and North America, which also account for an important growth of esports during the years 2017, 2018, and 2019, and have had the greatest growth in revenues. These countries correspond to China, South Korea, Japan, Germany, France, Italy, Spain, the United Kingdom, the United States of America, and Canada. The sampling frame used in this study corresponded to the following online datasets indicators:

- Games market revenues and total number of players - retrieved from https://newzoo.com/(Newzoo, 2019).
- Macroeconomic variables such as GDP per capita and online population - retrieved from https://data.worldbank.org (World Bank, 2021).
- Trends in "Esports" using Google Trends data - retrieved from https://trends.google.com/(Google Trends, 2021).

Games market revenues reflect the year-end US$ exchange rate. Revenues are based on the amount the industry generates in consumer spending on games in each country (including physical and digital full-game copies, in-game spending, and game subscription services, such as PlayStation Plus and Xbox Game Pass). Moreover, revenues exclude hardware sales, tax, business-to-business services, and online gambling and betting revenues (see Romeijn, 2021).

On the one hand, Google trends represents a relatively new approach to providing new techniques to study different areas and lines of research (Palma-Ruiz and Gómez-Martínez, 2019). Google Trends records the interest over time in a particular topic or term based on how often is entered or queried into Google web browsers. Based on Google, the numbers represent search interest relative to the highest point for the given region and time (i.e., 100 is the peak popularity for the term). As a result, Google trends data depict relevant indicators on topics of interest for the general population. Such web queries are convenient indicators for present and future customer decision-making and provide valuable information for data analysis (Choi and Varian, 2012; Nakatani and Chuang, 2011).

2.3. Analysis

After collecting the data from the aforementioned online datasets for the corresponding three years of analysis, the data was cleaned and sorted in Microsoft Excel to further allow Microsoft Power BI analytics software to process and obtain a better visualization of the data in the form of graphs, trend analyses, key influencers, and forecasts; in this way, a more accurate appreciation of the development and growth of the gaming industry was possible. In addition, in order to answer the research questions and to show the different possibilities to address data and assess the relationships among the different variables considered, descriptive, correlational, and forecasting analyses were conducted.

One of the useful tools in analytics software refers to the ability to forecast future trends based on previous historical datasets. The use of time series facilitates the analyses of major patterns, such as trend cycles or seasonality (Davenport, 2013). Furthermore, time series is used for various applications including economic and stock market forecasting, pattern recognition, natural phenomena predictions, among many others (Shaulska et al., 2021). Microsoft Power BI provides two versions of exponential smoothing, one for seasonal and another for non-seasonal data. Conveniently, Power BI chooses the appropriate model based on the analysis of the historical data previously supplied. The results and discussion are presented in the following section.

3. Results

3.1. Descriptive analysis

The descriptive analysis conducted in this study reveals the evolution of the gaming industry in the last three years, which allows deepening into the study of key relationships between gaming and certain key influencers. Figure 1 compares the games market revenues in billions of US$ from the countries considered in this study. In 2019, China accounted for 31.69% of the games market revenues (37.2 billion of US$), followed by the USA (29.05%) with 34.10 billion of US$, and Japan (15.25%) with 17.90 billion of US$. In all cases, total revenues present an increase from the previous year, except in Japan, which remained the same. For the region in Eastern Asia, South Korea's games
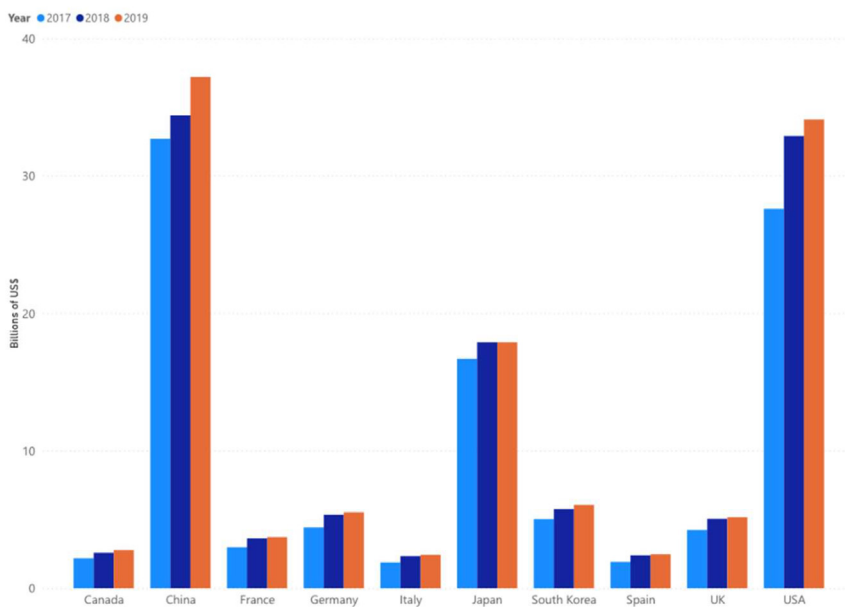
Figure 1. Games market revenues (billions of US$) by country and year. Note: Own elaboration based on Newzoo (2019).

market revenues grew 14.5% from 2017 to 2018, followed by Japan (7.2%), and China (5.2%); whereas, during the 2018 to 2019 period, China grew 8.1%, followed by South Korea (5.4%), and Japan (0.0%). Considering the total 2017 to 2019 period, in eastern Asia, China has had the highest total revenues with 60.06% of the region, followed by Japan (30.23%) and South Korea (9.71%).

On the other hand, in Western Europe, Germany has had the highest total revenues during the 2017 to 2019 period in the region with 28.59%, followed by the UK (27.0%), France (19.29%), Spain (12.68%), and Italy (12.44%). The Spanish game market revenues grew 25.0% from 2017 to 2018, followed by Italy (24.5%), France (21.8%), Germany (20.8%), and UK (19.1%). During the 2018 to 2019 period, Italy grew 4.3%, followed by Germany (3.4%), Spain (2.9%), France (2.5%), and UK (2.4%).

Finally, in North America, the USA has had the highest total revenues in the region during the 2017 to 2019 period with 92.62% and Canada with 7.38%. From 2017 to 2018 and 2018 to 2019 periods, USA's games

market revenues grew 19.2% and 3.6%, respectively, while Canada grew 18.3% and 7.8%, respectively.

Figure 2 shows the total players growth during the 2017 to 2019 period in each country. China accounted for 56.39% of the total players from 2017 to 2019. In Eastern Asia, China has had the highest growth in total players from 2017 to 2018 periods with 5.2%, followed by South Korea (5.1%), and Japan (2.8%). In 2019, South Korea experienced a 5.6% grown in players with 30.2 million, followed by China (5.2%) with 642.0 million, and Japan (0.4%) with 74.10 million.

In Western Europe, Germany showed the highest growth in players during the 2017 to 2018 period with 9.4%, followed by Italy (8.3%), UK (7.3%), France (3.2%), and Spain (0.8%). For 2019, France grew the highest with 5.9% with 34.2 million, followed by Spain (5.2%) with 26.5 million, Italy (1.8%) with 34.4 million, Germany (1.2%) with 43.4 million, and UK (1.1%) with 35.5 million. Finally, in North America, the USA players grew 5.7% during the 2017 to 2018 period, while in Canada
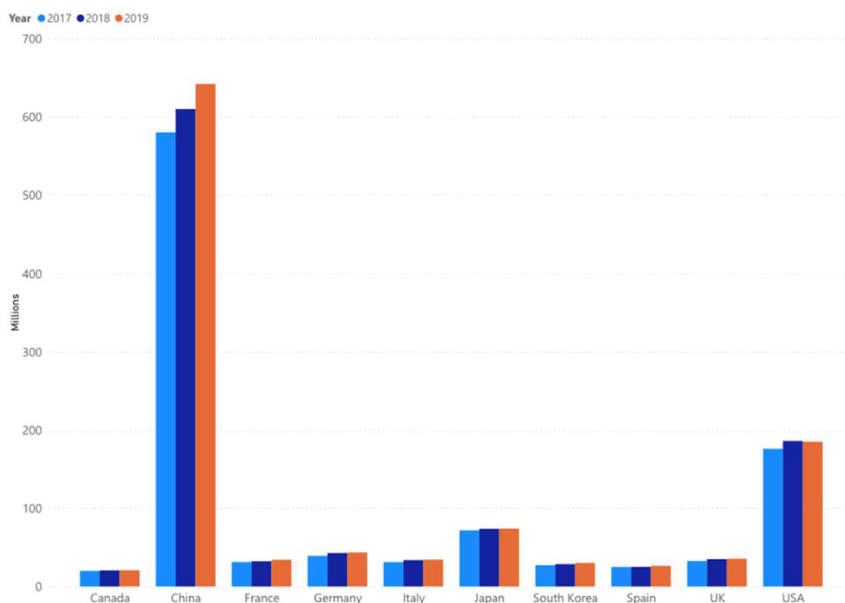

Figure 2. Total players (millions) by country and year. Note: Own elaboration based on Newzoo (2019).

grew 3.0%. Unusually, for 2019, the total players in USA decreased a 0.5% resulting in 185 million, while in Canada grew 1.0% to 20.8 million for the same period.

Based on Figure 3, Asia accounts for 64.67% of the total players for 2019 with 778 million, followed by Western Europe (18.29%) with 220 million, and North America (17.04%) with 205 million.

As shown in Figure 4, the region of Asia stands out for its growing popularity of esports. As suggested by Seo and Jung (2016), interest in esports including casual titles are increasing exponentially in Asia. Nonetheless, the recent slowdown in-game licensing in China could affect the exposure of Chinese gamers to new esports titles. As a result, fewer new games are appearing on the market. Still, esports is exceptionally important to China, where major cities such as Chongqing, Xi'an, and Hangzhou are striving to become the country's new esports hub (Xiao, 2020).

3.2. Correlational analysis

In order to answer the research questions in this study, one of the aims is to determine possible key influencers or significant variables related to games market revenues and the total number of players. Hence, data analysis was conducted independently considering the countries in this study and regions. Firstly, for the countries in Western Europe and North America on average when GDP per capita (thousands of US$) increases, the games market revenues also increase (see Figure 5). More specifically, results show that when GDP per capita goes up 7.47 thousand the average of the market revenues increases by 1.13 billion of US$. This result is also directly associated with a positive relationship between the growth of the online population and the market revenues. When the online population increases by 78.94 million, the average market revenues also increases by 2.74 billion of US$. Furthermore, when the interest in esports through query searches in Google Trends goes up 377.77, the average market revenues also increases by 0.77 billion of US$.

Interestingly, for the region in Eastern Asia, and contrary to Western Europe and North America, when the GDP per capita decreases, the market revenues increase. More specifically, on average when the GDP per capita goes down 13.10 thousand of US$, the market revenues increase by 1.18 billion of US$ (see Figure 6). This finding is complemented with an increase in interest in esports (measured by Google trends), the market revenues increase as well. This is, when Google trends goes up 352.48, the average of total market revenues increases by 1.24 billion of US$. Finally, when the online population goes up 367.49 million, the average of market revenues increases by 3.36 billion of US$.
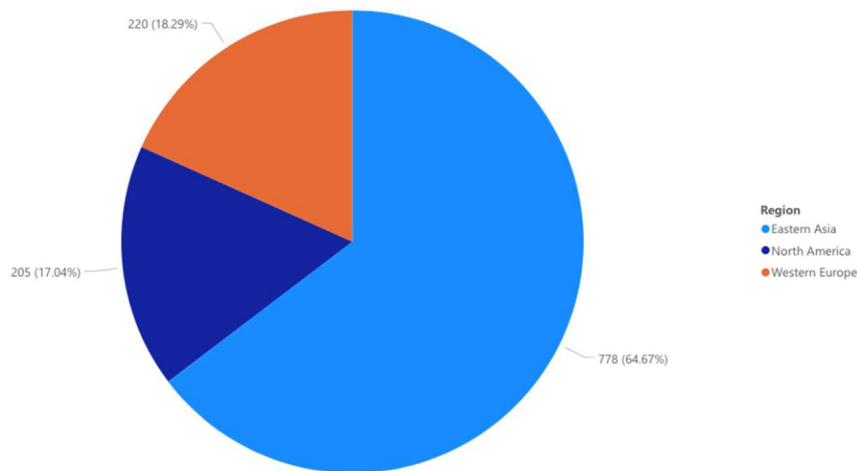

Figure 3. Total players (millions) per region during 2019. Note: Own elaboration based on Newzoo (2019).
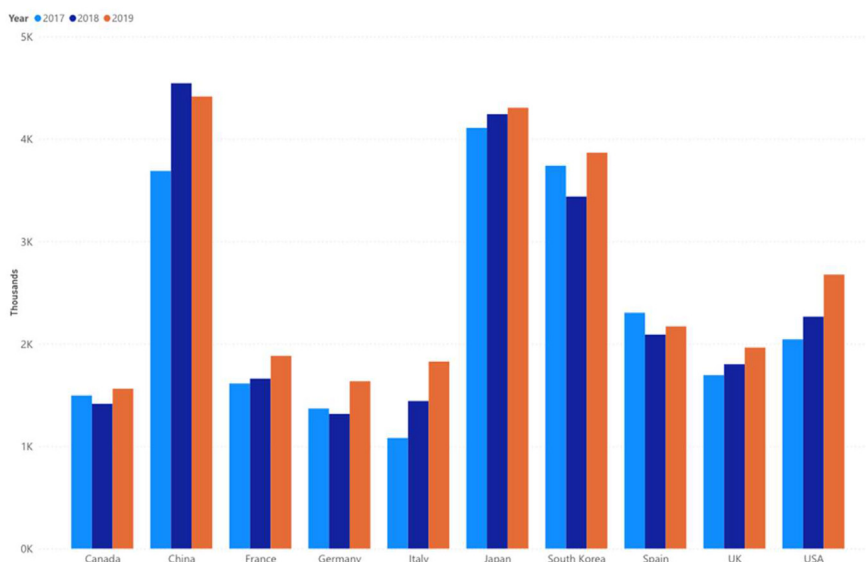

Figure 4. Google Trends in eSports (total of search interest over time). Source: Own elaboration based on Google Trends, 2021
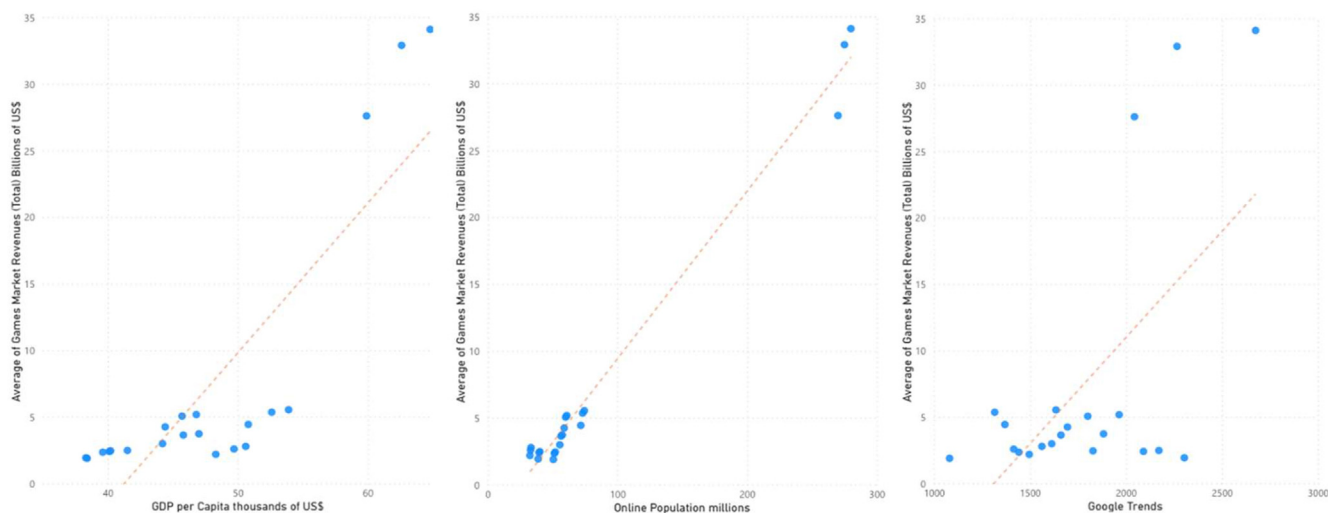
Figure 5. Analysis of key influencers in game market revenues for Western Europe and North America.

In terms of possible key influencers to determine an increase in the total number of total players, both Western Europe and North America regions on average when the online population goes up by 78.94 million, the total players also increase by 18.69 million (see Figure 7). Furthermore, when the interest in esports through searches in Google trends goes up by 377.77, the total players also increase by 0.79 million.

Finally, for the region of Eastern Asia on average when GDP per capita goes down 11.75 thousand of US$, the average of total players increases by 67.59 million (see Figure 8). Moreover, when the online population goes up by 367.49 million, the average of total players increases by 79.75 million.

3.3. Forecasting

In order to answer the final research question and to complement the correlation analyses in the previous section, the authors performed time series forecasting in terms of audience and revenues for each of the regions and based on the non-seasonal data provided for the years 2017–2019. Forecasts were completed for the following five years with a 95% confidence interval, also calculating the upper and lower bound indicators resultant for such confidence level. The results for North America are shown in Figure 9, for Western Europe in Figure 10, and predictions for Eastern Asia are shown in Figure 11.

As shown in Figure 9, the predictions for total games market revenues for North America, bearing in mind the data from the USA and Canada, show a forecast of 44.71 billion for 2021, 48.43 billion for 2022, 52.15 billion for 2023, and 55.87 billion for 2024. In addition, total players forecasts show 217.52 million for 2021, 222.88 million for 2022, 228.23 million for 2023, and 233.58 million for 2024.

Figure 10 shows the forecasting results for Western Europe, considering previous data from Germany, France, Spain, Italy, and UK. A forecast of 23.68 billion of US$ for 2021, 25.73 billion for 2022, 27.77 for 2023, and 29.82 for 2024. Additionally, total players forecasts show 189.48 million for 2021, 196.98 million for 2022, 204.49 million for 2023, and 212.00 million for 2024.

Finally, Figure 11 shows the forecasting results for Eastern Asia. Considering previous data from China, South Korea and Japan, the forecasting for the games market revenues showed 68.0 billion of US$ for 2021, 71.39 billion for 2022, 74.78 billion for 2023, and 78.17 billion for 2024. Additionally, total player forecasts show 813.52 million of players for 2021, 847.15 million for 2022, 880.78 million for 2023, and 914.41 million for 2024.
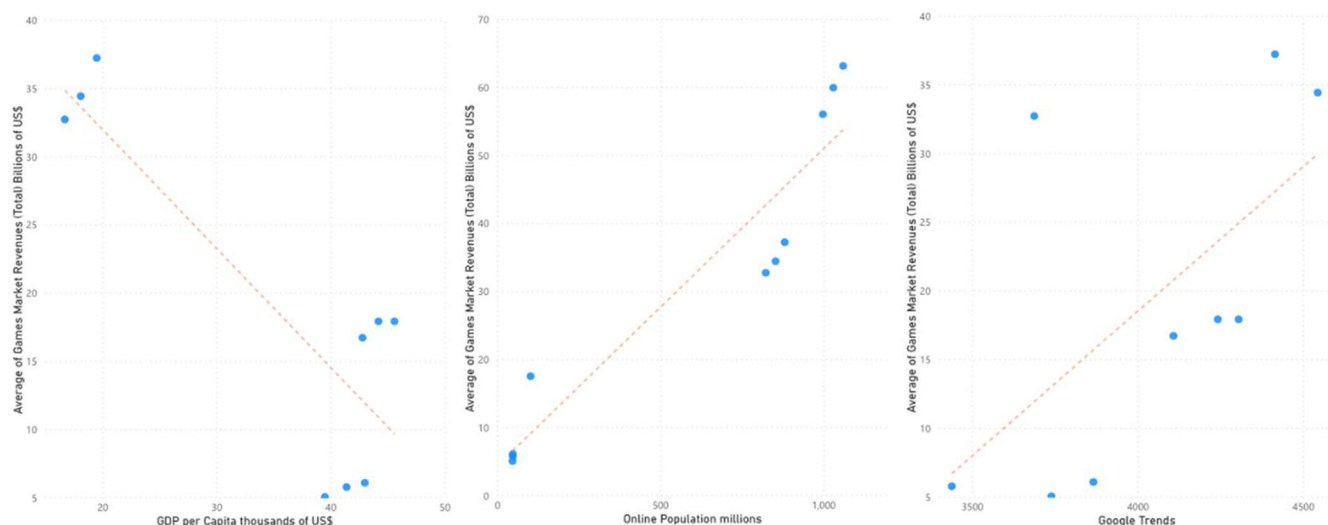

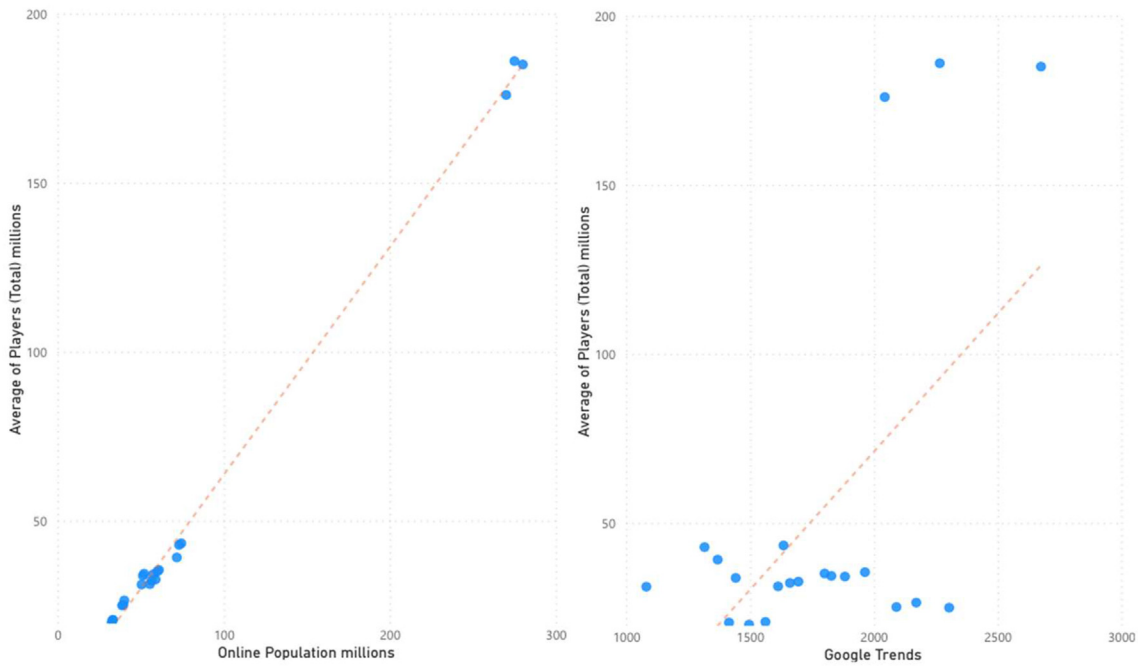**Figure 6.** Analysis of key influencers in games market revenues for Eastern Asia.

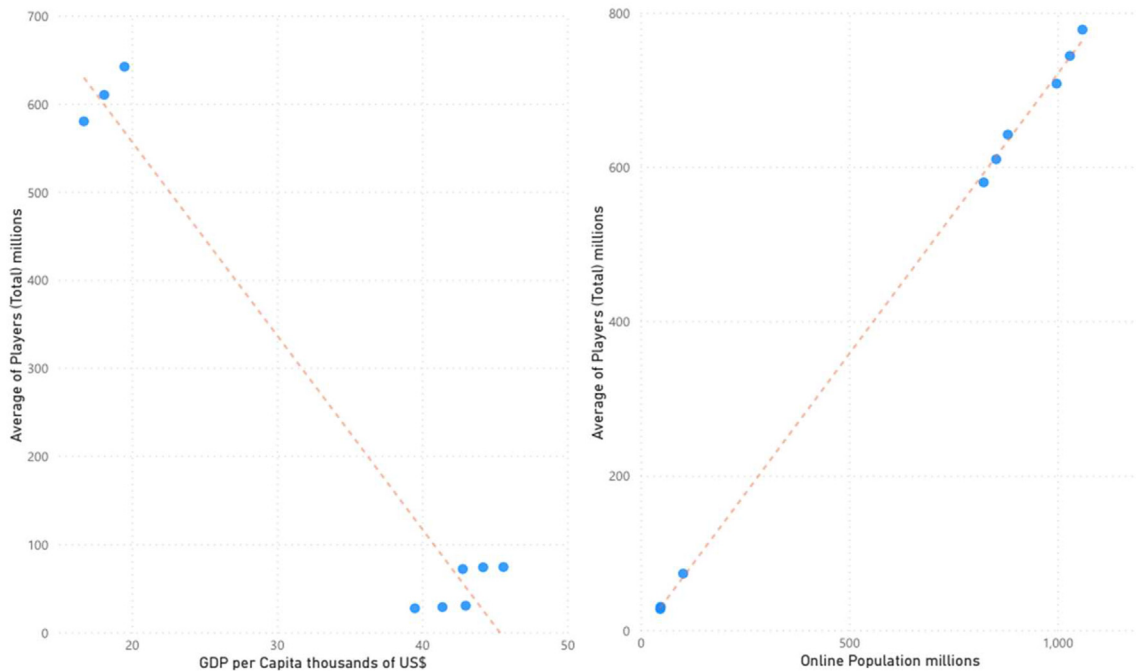**Figure 7.** Analysis of key influencers in total players for Western Europe and North America.

Figure 8. Analysis of key influencers in total players for Eastern Asia.

4. Discussion and conclusion

Gaming is a social experience. As seen in this study, the games market is growing at an exponential rate, and the forecasting analyses show a very promising industry for the years to come in terms of total market revenues and number of players. There is no question that games and esports have become a worldwide phenomenon because of the professionalization of the competitive world of video and computer games, in addition to the growing interest and increasing number of players and spectators in the different countries and regions around the globe.

The different analyses shown in the previous sections deliver evidence to answer the research questions in this study. Economic indicators such as GDP per capita, online population, and Google trends interest in esports indicators have resulted in key influencers in determining the increase in games market revenues and total players growth based on the data for the countries per region considered in this study. Interestingly, in those countries from the regions of Western Europe and North America with higher GDP per capita will continue to experience an increase in game revenues and players. However, the opposite happens in countries in Eastern Asia. In all cases, Google trends are a key influencer to determine growth in a particular industry. Another implication refers to
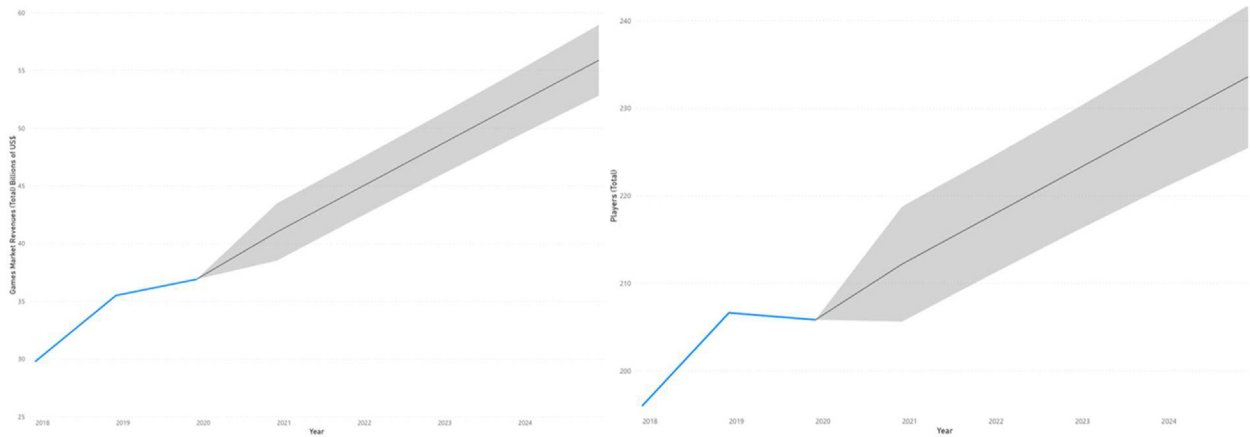
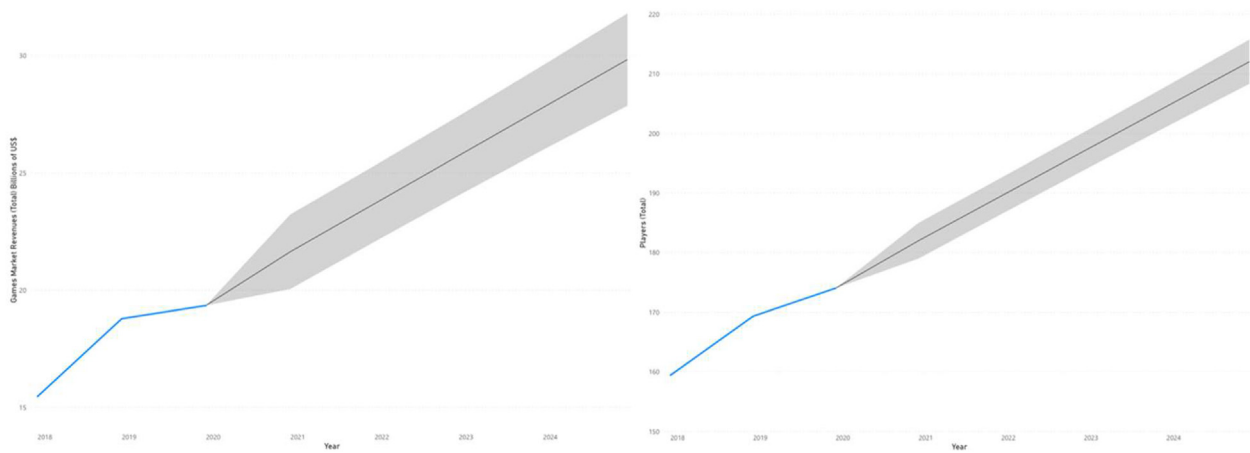**Figure 9.** Total game market revenues and players forecasts for North America.

Figure 10. Total game market revenues and players forecasts for Western Europe.
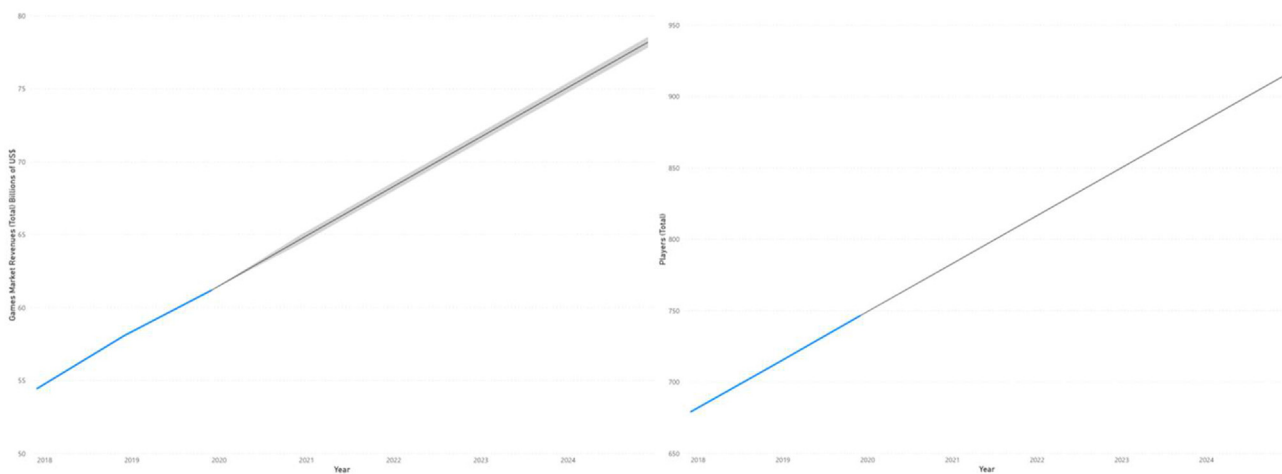

Figure 11. Total game market revenues and players forecasts for Eastern Asia.

the online population growth, which as continues to increase worldwide, resulting in market opportunities for the gaming industry development.

Future studies should address the identification and relationship of key influencers in other nations and regions across the world (i.e., emerging economies, such as Latin America, which continue to gather internet access at higher speeds). Moreover, data analytics software, such as Power BI, has been shown to offer attractive alternatives to explore and visualize data easily and identify valuable insights. These tools can assist not only data scientists and researchers to later deepen into more comprehensive and sophisticated statistical analyses but are appealing to a wide range of stakeholders that can easily identify key determinants for growth and significant relationships assisting decision making (i.e., forecasting techniques). Hence, this paper has fulfilled its purpose of answering the research questions and illustrating the use of analytics as a tool for examination of data over a series of time and in specific contexts and regions while considering NewZoo, World Bank, and Google Trends data.

Limitations of publicly available data have restricted the potential to explore further analytic techniques. Future studies should continue to explore and exploit the advantages of analytics software and evaluate the potential to explore additional data sources and other specific variables to complement and deepen the study of determinants of market growth and many other aspects related to the gaming industry and esports from diverse points of view (i.e., individual –developer, user, player, strategist, team, and spectator; company – sponsors, developers, investors, media; organization –associations, clubs, regulators). Further approaches to disaggregate data can be considered to inform of alternative techniques to gather and analyze information, encouraging researchers to undertake the challenges of using metadata and other analytics resources. Accordingly, in this study the authors have demonstrated with a valid example the use data analytics as a method to gather valuable market insights and to identify key influencers as determinants for market growth, offering both research and practical implications.

Declarations

Author contribution statement

Jesús Manuel Palma Ruiz: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Sonia E. González Moreno: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

Angel Torres-Toukoumidis: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Herik G. Valles-Baca: Performed the experiments; Wrote the paper.

Funding statement

Data availability statement

The data that has been used is confidential.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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