Exploring the visual presentation of popular games on Steam storefront

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Abstract

This research paper explores the evolution, societal impact, and design principles of video games, focusing on their accessibility, visual appeal, and genre diversity. The study examines how video games have progressed from simple, rudimentary forms to complex, immersive experiences, and how they have become a significant cultural phenomenon. Various game genres such as action, adventure, and horror are analyzed to understand their appeal and impact on different audiences.

The research also delves into the advancements in graphic technology, highlighting the transition from basic pixelated graphics to hyper-realistic visuals, and the crucial role of aesthetics in game design, including color palettes, illustration styles, and cover art. Additionally, the study emphasizes the importance of accessibility, considering factors like language support, operating system compatibility, and pricing models, to ensure that a wide range of players can engage with and enjoy video games.

Methodologies employed include a comprehensive literature review, analysis of game design trends, a detailed analyzation of the players preferences and experiences. Key findings reveal the multifaceted nature of video games as both entertainment and educational tools, the significance of visual and aesthetic elements in player engagement, and the ongoing efforts to make games accessible to a global audience. The study concludes by highlighting the continuous evolution of the video game industry and its potential future directions. Moreover, this study helps the player observe some gaming trends that evolved over the 2023 year, bringing back old visual design trends such as the stylized graphics, forcing the gaming industry to aim to create diverse games, suitable for all audience preferences and create a unique experience for the players. In addition, this research study focuses on observing what similar aspects have in common the most popular games based on the Concurrent users number.

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I. Introduction

Video games have evolved significantly from their early iterations and have become a global cultural phenomenon, having a substantial impact on modern society. They are no longer viewed merely as entertainment for a niche audience but are recognized for their profound influence on cultural, economic, and educational aspects. Through video games, players not only develop cognitive and social skills but also engage in a dynamic and diverse global community.The importance of video games in society is also reflected in how they are perceived as forms of art and interactive media. Video games not only provide entertainment but also promote creativity, interactive storytelling, and experiential learning. They play a crucial role in education, cognitive and behavioral therapy, as well as in developing problem-solving and critical thinking skills.

A key aspect of video games that contributes to their success and popularity is visual design, particularly the cover art. On digital distribution platforms like Steam, covers represent the first point of contact between the game and potential players. These covers not only attract attention and pique interest but also convey essential information about the game's theme and genre, thus influencing purchasing decisions.

This research paper aims to explore the importance of video games in society and analyze the role of visual design in the marketing and presentation of games on the Steam platform. Through a multidisciplinary approach, we will investigate how game covers are designed to attract and retain user attention, as well as their aesthetic and psychological impact on the target audience. Additionally, we will discuss current trends in cover design and how they reflect the developments and innovations in the video game industry.

Accessibility in video games encompasses several key aspects, including price, language for the game interface, and operating system compatibility. These factors play a crucial role in ensuring that a wide range of players can enjoy and benefit from video games. The cost of video games varies widely, with options ranging from free-to-play titles to premium games with higher price points. This variability allows players of different economic backgrounds to access and enjoy games. Additionally, sales and discounts on platforms like Steam make it easier for players to purchase games at more affordable prices, further increasing accessibility. Language support is vital for making video games accessible to a global audience. Many games now offer multiple language options for their interfaces and subtitles, allowing non-native speakers to fully engage with the content. This multilingual support helps break down language barriers and ensures that players from different regions

can understand and enjoy the game. Video games are developed to be compatible with various operating systems, such as Windows, macOS, and Linux, ensuring that players with different types of computers can access them. Some games are also available on multiple platforms, including consoles and mobile devices, which broadens their accessibility even further. By providing support for various operating systems, developers can reach a wider audience and ensure that more players can enjoy their games regardless of their preferred device.

II. Introducing games and the playing motivation

In order to understand why this topic is so important, we should take a look at the very beginning and observe why games are so important for us. In the paper called *Understanding video games: the introduction* (Egenfeldt-Nielsen, Smith, and Tosca 2020), the authors talk about how games were used by our ancestors and how vital they are to us. In their paper, they say that: "Creating and playing games is a basic impulse of Homo sapiens. The ancient Greeks, the Vikings, and most likely even our ancient cave-dwelling ancestors had rule-based systems of play."(Egenfeldt-Nielsen, Smith, and Tosca 2020) In addition, they observed that our ancestors used these games for many purposes that are still valid now. In their study, the authors say that: " These served many purposes, from entertainment to competition to education."(Egenfeldt-Nielsen, Smith, and Tosca 2020) Nowadays, the horizon for games is huge and there are many games that serve different purposes, but those three categories written above are still the ones that divide games into 3 major categories: games played for entertainment, games played in competitions and games played for educational purposes. Until now, games evolved significantly and spread rapidly all over the world, through fast technology. Nowadays, games are everywhere. We can see them on TV, on the internet and even on our mobile phones. In this study, the authors observed that games have an important role in our everyday life and that we are surrounded by games at every step. "In the historical blink of an eye, video games have colonized our minds and invaded our screens. From a Boston basement, video games have exploded exponentially—reproducing at an alarming rate, much like the fearful space invaders that inspired so many early games— until they are now everywhere, from tiny mobile phone displays to ostentatious wall-mounted plasma

TVs."(Egenfeldt-Nielsen, Smith, and Tosca 2020) Another important question about games is: "Why are there games? Why do we, biological entities capable of creating poetry, climbing mountains, and splitting the atom, spend so much time playing games—especially when playing these games often conflicts with our basic human needs: to sleep, to feed ourselves, to communicate with our spouses?"(Egenfeldt-Nielsen, Smith, and Tosca 2020) This question does not have a final answer, but many people approach this question from the perspective of biology saying that the reason for which we play games is that "the ability to play allows organisms to stimulate real-life situations. Through these simulations, the organism can practice important skills in relative safety." (Egenfeldt-Nielsen, Smith, and Tosca 2020)In their study, they explored questions regarding games, such as: "Do games affect the player?" (Egenfeldt-Nielsen, Smith, and Tosca 2020) and how they affect the player if the answer for the first question is yes. At the end of the study, they answer these questions saying that games do affect the player, but just at a certain level. The story can affect the player, but the game itself can't.

III. Categories of games

Games and the play activity changed over the years and evolved until today. Now, we have multiple types of games, such as: board games, video games, old motric games etc. They are all games, but they look and can be played differently from each category. In a study called *Games in Culture* (Roberts, Arth, and Bush 1959), the authors talk about how games can be played and why they are different. They say that the "games of the world may be classified in terms of distinctive patterns of play. Some outcomes are determined primarily by the physical abilities of the players, some by a series of moves, each of which represent a player's choice among alternatives, and others either by nonrational guesses or by reliance on the operation of some mechanical chance device such as die; some are determined by combinations of these patterns"(Roberts, Arth, and Bush 1959). In their study, the authors observed that games can be divided into 3 major categories based on how the player interacts with the game itself: physical skill, strategy and chance. In their studies, the authors gave us some examples to better understand their classification. In the category of physical games, they included the following: marathon races, prize fights, hockey and the hoop and pole games. In the strategy category they included chess, go and poker. In the chance category they included the high card wins and dice games. This categorization works also for video games.

IV. Popular vs unpopular video games

Video games are quite different from any other physical games because they are uploaded on the internet and a lot of people can access them. However, it is important to observe why there are games that are by far more popular than others. In order to do this, I chose the article called "*What makes the difference between popular games and unpopular games? Analysis of online game reviews from steam platform using word2vec and bass model*"(Ahn, Kang, and Park 2017). In this paper, the authors observed how the Steam platform works, why the reviews are important and how they can affect the player's perception. The Steam platform is an online platform and application that lets users purchase and store games on their platform. At the moment when the study was elaborated, the Steam platform had over 7,400 products. However, there are many games there that do not become popular among the customers. In their study, they analyzed the top 10 popular games from the first 3 categories of games, the reviews of users regarding price, experience and technical aspects. At the end of their study, they found some interesting facts regarding the experience of each user and their reviews. The authors evaluated the differences between the category of popular and unpopular games using the Kano model. The Kano model calculates the distance between two chosen words of a cluster and evaluates the results of text mining. As a result of their analysis, they found out that there are major differences between the popular and unpopular groups. In terms of prices, they observed that those people who paid more for a popular game were happier than the ones that bought a cheap and unpopular game. In addition, the story of the game also influenced the users to leave a review. As a result, the authors observed that the story is more original and structured in the case of popular games. In conclusion, they observed that the popular games are more likely to correctly function, to have a better story or narrative and gameplay overall, but the users appreciate the motivator and uniqueness of the unpopular games more.

V. Selling a video game on Steam

Since the game industry evolved so fast in the last decade, game designers and developers work constantly on updating and developing games to publish them on games platforms such as Steam. Selling on such a platform can be a challenging process because there are many steps that should be checked to upload a valid game on this platform. Luckily,

there are a lot of tutorials and step-by-step guides on how to successfully upload a game on Steam. The guide called *How do I sell my game on Steam: A step-by-step guide* (Javadi 2024) to publishing written by Gadget Mates is a good example of guide because it does not show the user only the requirements for the process itself, but it shows them how to prepare for that and what kind of information they should provide. The guide itself is complex and is divided in 11 steps. In the first part, the technical part is discussed. In this part, users learn about the legal obligations and technical aspects, such as: compatibility with the Steam's hardware and software standards, creating a Steam work account, payment details (including bank account and details for payment) and relevant tax information (VAT details). The next part is about uploading the game on Steam. Once the user defines his Steam works account, he can start uploading his game assets. Once the game is up, he can decide on a price for the game. It is essential for users to do some research before putting a price on the game in order to understand how the platform works and what expectations they should have. In the following part, the creator should focus on how to attract other users to buy the game. In the second part of the article, called Attracting an audience on Steam, the author talks about which elements are vital for attracting an audience to a certain game. In this case, the authors included some information that should be provided after the game builds are uploaded on the platform, but not after they finished the publishing process. They talk about uploading the following elements: high-quality screenshots, engaging and informative trailers, a list of key features of the game, and a way of keeping the audience updated constantly on the development process. The next part of the publishing process is the marketing part, where the authors suggest that the marketing campaign should start before the release date. In addition, after the audience is already well contouring on Steam, the publisher should ensure to have a good communication with the audience in order to encourage players to leave reviews, talk about the game in different forums and create related game arts and publish them on the Steam Workshop. More important is for the publisher to support players if they have issues with the game. After all these steps are done, the publisher can set a release date for the game and the publishing process is over here. After the game is published, the publisher can add updates or DLCs to the game.

VI. Gameplay and graphics

In the following part of the paper, I will focus on the esthetical part of the games, analyzing the design aspects and illustrations. As the first reference, I chose the article called *Game Graphics, Beyond Realism: Then, Now and Tomorrow*(Masuch and Röber 2005) . In the first part of the article, the authors talk about what key features a game should have in order to be interesting and fun. They say that this part is really challenging to understand nowadays because "great graphics do not necessarily come along with great gaming experience"(Masuch and Röber 2005). From the perspective of the authors, the creators of the games should cross the existing barriers of game visuals and use "more artistic rendering styles"(Masuch and Röber 2005). These changes can create a better experience for the player. In addition, these methods could be used "for artistic purposes to capture the style of different media (e.g. comics), and to assist in storytelling by changing the style used throughout the game (e.g. to evoke emotions, or establish certain moods)."(Masuch and Röber 2005) In order to understand these concepts, we should go back to the research part where the authors explained some concepts that are vital for this study. The first topic that they discussed is about the graphics in computer games. The graphics are important, from the perspective of marketers, because they are the first visual element for a game (the cover of the game). The authors say that: "Marketing departments of game publishers, however, are convinced that screenshots of great graphics on the cover of a game is most important"(Masuch and Röber 2005). Moreover, in the last period, game developers and publishers are focused on creating eye-catching graphics using new technologies, such as 3D graphics, with a better quality and a more realistic perspective. They admit that a game with good graphics is not necessarily good, but it is still outstanding. In their paper, the authors say that: "As a matter of fact, however, mediocre graphics does not ruin a great game, whereas on the other hand outstanding graphics typically does not make a bad game any better"(Masuch and Röber 2005). In the next part of the paper, the authors talk about the graphics elements of a game and how these elements could affect the gameplay. The author begins explaining what the gameplay actually is, saying that : "Generally it is assumed that gameplay is "everything except graphics"(Masuch and Röber 2005). Or in other words: "gameplay is what happens and how it is achieved in a game from the viewpoint of the player"(Masuch and Röber 2005). In addition, they specify that a good gameplay means that the game should have a good balance between interaction, navigation, communication and presentation that let the player play the game in their way, but still respecting the rules. They say that: "A good gameplay

grants the player an appropriate interaction within the game world but also sets certain boundaries without obstructing or confining desired actions"(Masuch and Röber 2005). However, every game should have some pop-ups with important things, such as: hit points, highlighting objects, damage points, etc. This part of the gameplay is represented by the graphical elements. These elements are constructed in order to help the player understand the game. Moreover, all these graphical elements have a set of different aspects that are essential for the player's orientation and perception, such as: dimensionality, perspective, color, presentation and realism. Each of them is explained by the authors of this paper. The first one is dimensionality, which is related to 2D graphics, 3D graphics and so on. Usually, the 2D graphics are used when developing a board-based game where a top view of the board is enough for the player to understand the game. The 3D perspective was brought from the animated movies and it is used in order to "give the illusion of 3D, although the underlying technique was entirely 2-dimensional"(Masuch and Röber 2005). The second aspect discussed in the paper is perspective. The perspective of the game refers to the first or third person game which is developed "using a 3D game engine, usually use to accustomed perspective camera"(Masuch and Röber 2005). The next aspect discussed in the paper was color. The color also has an important role in establishing the atmosphere, because certain colors can create certain moods or feelings. In addition, a sudden change of color can have a different meaning, from a radical change to a flashback. The presentation is the next discussed aspect and it refers to how the game elements are presented on the screen ("The presentation defines how the game world and the player himself manifest on the screen"(Masuch and Röber 2005)). The last aspect that is discussed in this paper is the realism of a game. The realism is, as the authors says, "defined by whether the game is (photo) realistic in look and feel, or exaggerate as an example the use of a comic shader and uses a nonrealistic game environment"(Masuch and Röber 2005). In the last part of the paper, the authors talk about old-fashioned graphics, such as: pen-and-ink style, oil painting and colored crayon drawing. In addition, they discussed the future of game graphics, which is realism.

VII.   The composition and importance of game interface

In the book called *Game Interface Design* (Fox 2004) written by Brent Fox, the author presents the importance of the video games interface. In the first part of the book, he explains what is the interaction, saying that: "Interaction is what makes a video game different from a movie. When playing a video game, the user can make choices and respond to events"(Fox 2004). Moreover, he says that the connection between the user and the game is the interface which should be well-designed in order to make the experience of that video game fun. The visual aspects of a video game are very important especially when the player has not heard about the game before. The interface is the first impression of a video game and, like the author says: "the visual quality of a game is very important; it is hard to sell a game if it looks bad, even if the game-play is fun. Great art can do amazing things to boost game sales"(Fox 2004).In his book, the author talks about creating a good and attractive interface in Chapter 3, called "*The Look and Feel of Your Interface*". In this section, the author took each step one-by-one and explained the whole process in detail. The first step in order to achieve an attractive interface is to define a general look, in which direction the interface should go and what users should expect from the game. The second step is to create a game mock-up which should look like a sample for the game. In this part, designers should create the look and feel of the video game interface. The interface should contain the following: "a single screen of the interface and just a few more pieces of art, such as some important buttons from other screens"(Fox 2004). This screen should be the first screen with interactive buttons and it will often contain the game logo. In addition, the color of the interface is also very important and it is very hard to choose at the beginning of the process. The color is important because it will transmit a mood to the player and it will make him feel in a certain way: "When creating a color chart, make sure it feels like you want your game to feel"(Fox 2004). In his book, the author gave an example about a game for children. He says that: "If you are working on a game for young children, for example, then bright, saturated colors may be appropriate". The color is also important for setting the atmosphere. For example, in horror video games, the colors should be adapted to the story, but most likely, it will be a combination of black with orange and green accents. It is important for designers to create a color scheme that is appropriate for the game idea, setup and audience. The authors gave some examples in his book, such as: "If you are working on a game that takes place in a jungle, green is probably

the wise color choice. If you are working on a game with demons and gargoyles, then red and black may be a logical choice. Your colors should feel like they fit with the subject matter"(Fox 2004). The interface can contain some of the following: photographs, illustrations, 3D solutions, pre-rendered 2D art and so on.

VIII.   Design principles

In order to create or comment on a good design, we should take a look at the basic design principles. For this part I also used the book *Game Interface Design* (Fox 2004) *written by Brent Fox.* At the beginning of the chapter, the author talks about color and how a combination of color sets a certain mood or atmosphere. In addition, he says that colors and emotions are connected, as the author says that "Colors are often linked to emotions—you've heard the phrases "feeling blue" or "green with envy". You can probably picture what these colors look like. The blue color is not very bright and saturated. It would most likely be a very gray-blue color. Gray, cloudy skies have a sad feeling associated with them"(Fox 2004). Furthermore, the combination of colors is more important because all those colors should be in a perfect balance in order to transmit the whole story correctly. In the book, the author says that: "When colors look good together, the effect is often referred to as color harmony"(Fox 2004). This process of creating color harmony is very challenging, yet the process was studied for a long time. Johannes Itten was one of the firsts people who studied color and how colors can be combined together for a certain goal. In 1961, Johannes Itten published his book, called The Art of Color which is a good example for color theory. He was the first one to observe that: "color harmony is not just based on personal color preference" (Fox 2004). In the next part, the author explained the difference between harmonious colors and complementary colors, saying that harmonious colors are "colors that look good together" (Fox 2004), when complementary colors are "the two colors opposite each other on the color wheel" (Fox 2004). In addition, the author observes the difference between warm colors and cold colors and how colors can be perceived in the digital environment. In the digital environment, such as on a computer or TV, the whole spectrum of colors is created using just three colors of light. The author explains the color process as: "Red, green, and blue lights are projected onto your screen and combinations of these three colors produce all of the colors you see on your monitor. All three colors at their full intensity produce a pure white. The absence of all three colors produces black"(Fox 2004). In the digital environment, these

combinations of colors are called a color system. There are three major color systems that include: RGB, CMYK and HSB. There are many combinations like this, but those are the digital one's, the others combinations are used for print. The main difference between RGB and CMYK is that the RGB spectrum is wider than the CMYK. Leaving the colors behind, the author focuses on the visual organization next. The alignment is very important in a design because it can create a sense of organization. The author says that "A good rule when creating an interface is to space elements evenly and align them well. Paying attention to spacing and alignment results in visual organization"(Fox 2004). Another important principle is unity and variation because this principle can create a visual harmony in the design. Each chosen element should, such as color and shapes, should look good together, but not identical. In order to avoid the forced similarity, a little variation of color and shapes should be added ("A little variation is required to make a design pleasing to the eye"(Fox 2004)). Another important aspect of a good design is the negative space. The author define this negative space as "Negative space is the empty area around an object—not the shape of the object itself, but the shape of the background"(Fox 2004). The negative space is usually used in order to give the eye a little break. Movement is the next important principle discussed in the book. This principle is important even for the non-animated projects because even if an image is static, certain aspects from it give us the feeling of movement. In his book, the author gave us an example saying that "Certain shapes have an inherent movement, while others appear to be stationary. Angled lines give the feeling of motion" (Fox 2004). Eye Movement is the next important aspect that the author discussed. He defines the eye movement as "Eye movement refers to the order in which a viewer looks at an image"(Fox 2004). This principle is important because it allows the designer to create a first impression of the design. This eye movement is controlled by the size, color and shape of the design elements. Balance and weight are also an important principle because it influences the variation of the design. The author gave us an example in which all the elements have equal visual weight and the design is too balanced. In addition, this principle is also used if the design lacks energy. However, if the design is unbalanced, it will create tension. This principle of unbalancing can be used when the designer wants to add a feeling of tension. In the author's example, the designer added an element that is huge on the top and very sharp on the base. This design can create a feeling of tension because the shape can appear as it will fall over. Another principle that the author discusses is the odd number principle that refers to placing an odd number of objects in a design to make it more visually pleasing. One of the reasons is that if the design contains an odd number, there will be a center. The next principle is the image dividing. This principle

refs to elements placed that could divide the design in distinct parts. When dividing an image, the designer should be careful because if the division is not correctly made, the design can lose its harmony, like the author said in his example: "If an image is divided near the center but the division is not centered, it may look like a mistake"(Fox 2004). The last design principle discussed by the author is about the intersection. The intersection should be well calculated and can create a certain impression. The author says that: "either make them line up perfectly with one another or move them so they are far enough off that no one thinks you tried to line them up and missed"(Fox 2004).

IX. The graphical style

The graphical style of a game can be an important factor by which players choose a game despite another. In the study called *Graphical Style in Video Games* (Keo 2017) written by Mary Keo and others, this importance of graphical elements is explained. In addition, the author analyzes the common graphical styles and visualization methods. In the beginning of the paper, the author explains the graphic term, saying that: "graphic is an image or a visual representation of a character or an object"(Keo 2017). However, the video game graphics are slightly different. As the author says, "video game graphics are the visualized game content shown on the display of the gaming platform"(Keo 2017). Graphics can be perceptive differently depending on external factors, such as: graphics cards and processor. The graphics can affect the gameplay which is "the generalized term used to describe the overall experience a player has while interacting within a video game"(Keo 2017). However, the gameplay is not only influenced by the graphics. A good gameplay is determined by multiple factors, such as: interactions, rules and challenges. In this book, a good gameplay should "give meaningful interactions for the player and at the same time have rules to make the gaming experience challenging"(Keo 2017). The graphics have a major importance because they are the bridge between the gameplay and the player. The graphics are important for marketing too, because it offers the first impression of the game. The author says that: "According to game publishers, game graphics is the most important aspect in marketing the game. After all, graphics are the first thing a player sees and people tend to gravitate more towards graphically eye-catching and impressive games"(Keo 2017). A good graphic can keep the player interested in the game and can bring him excitement towards the game. In the next part, the author talks about the graphical style and its evolution over the years. The designers and developers used different techniques for video games to achieve various visual outcomes.

Although there are many games that have the same principal idea, for example that you are a shooter and you need to kill the others, the video games can look very different. This difference is related to the visual aspects, elements and colors. The author gave us an example about two popular games, saying that: "Blizzard has given Overwatch a stylized, colorful and cartoon-like graphical style very iconic to the company's other games. Battlefield 1 on the other hand has a photorealistic, dark and rough graphical style that succeeds on immersing the player to the World War I time-period where the game is set"(Keo 2017). Over the years, the style and the visualization of video games changed. However, there are multiple studies that show us which are the favorite and most used styles in video games (McLaughlin, Smith, and Brown 2010; Egenfeldt-Nielsen, Smith, and Tosca 2020). These styles are: abstract, stylized and realistic.

a.   Abstract graphical style

The abstract graphical style refers to representing the game with geometric shapes and form instead of focusing on quality. The author gave us an example of such a game saying that Tetris (1984) is one of the first games from this category. Another relevant example for the video game industry is the game called Pong (1972) which was the game that "launched the video game industry in the 1970s"(Keo 2017). However, this style is not very popular nowadays because the players are searching for story games. On mobile phones, these games are still popular, probably because of the limited time that a game like this has and because of the lack of story.

The abstract style consists of: lines, colors and geometrical forms. In order to create an abstract image, the designers modify the elements to create a feeling of abstractness. However, a lot of games should give the player certain instructions because the game was too abstract for the player's perception. The authors gave us such an example: "While the game was graphically abstract, the manual gave context to the world because the game graphics themselves could not properly convey what the intended objects were"(2ale9 2018). The abstract style was created due to hardware limitations that determine the very simplified graphics that represent just the essential information. Characters, objects and environments were reduced to shapes, colors and geometrical forms. After 1990, this style almost disappeared, but there were companies which wanted to bring it back to life by adding 3D elements or more realistic representations.

Mobile games are the future of abstractionism because these games are enjoyable, simple to pick and do not take too much from the player's time. These games could be played on a bus, when the person waits in a line or just on a break. Moreover, a lot of developers of

mobile games reduced their style to abstract because in this way, the player could "focus purely on the gameplay"(Keo 2017). This style is also easier to make because it does not require many hardware resources. A good example of a game like this is the Geometry Dash. This game was released in 2014 and it was created as a platformer for iOS and Android and later it was released on PC.
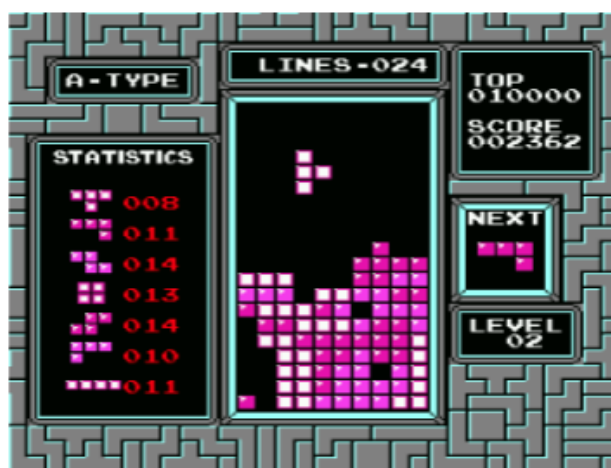

Figure 1 – Tetris

b. Stylized graphical styles

The stylized graphical style focuses on presenting a character or an object by "exaggerating its most prominent features" (Egenfeldt-Nielsen, Smith, and Tosca 2020) .This style existed from the beginning of the games industry and can be seen in many games now, but in different forms. One good example for this category is the game called Word of Warcraft (2004). Even though the game industry evolved significantly over the years, there are game developers that "lean more towards impressive photorealistic styles with accurate physical simulations"(Keo 2017). This style is a good choice if the developers want to accentuate certain aspects or objects. Compared to realistic games, these games are more timeless and age much better over time. This style is described by Jarvinen in his study as caricatures. He defines this term as a "picture or a representation of an object that is simplified down to its most defining features"(Järvinen 2002).This style took inspiration from cartoons, drawings or paintings. However, usually these games are not intended for younger audiences. Stylized graphics are the most flexible out of those three styles from the beginning. As the author says, "stylized graphics can be tailored to get the most out of the gameplay and to customizing the game's appearance to cater to a certain audience"(Keo 2017). Some examples of stylized games are: Legend of Zelda, Super Mario Bros 3 or Mega Man 2. A popular technique which is still used today is pixel art. Pixel art appeared between 1970 and 1990

because the screen resolutions were small and only consisted of 256 colors. As a result, in the 8-bit era, those games came in as pixelated. This technique is still used today in modern Indie games like Stardew Valley. Developers use this technique because they found this style appealing and easier to create. In addition, many developers want to bring back the nostalgic feel in certain games by using this style. There are a lot of examples of games using this style including: Terraria, Shovel Knight, Papers Please etc. In the last few years, this style exists usually in two-dimensional video games where the perspective is important. Video games like Don't Starve or Limbo are a good example for this style.

Another technique used in stylized graphics is the cell-shading. This technique is also called toon shading because of its look. Cell-shading is explained by the author as: " a 3D technique that recreated the look of traditional two-dimensional media with the use of flat colors for shading 3D objects"(Keo 2017). This technique is used to create 3D models that look like a hand-drawn art like in comic books. The video games that use this technique "stand out from the crowd of realistic styled games"(Keo 2017). Games like Jet Set Radio, Okami or The Legend of Zelda: The Wind Waker are good examples of use for this technique.

A related technique of cell-shading is the 3D cartoon graphics. This technique is used in video games to create an exaggerated, caricature or comic visualization of the game, focusing on character or environments. This technique is used for a satirical reason and unlike other techniques, this one-use texture for realistic reasons. Games like Super Mario 64 or Minecraft are some examples of games from this category. This technique is still used today, but in a more realistic way. Modern cartoon games focus on aesthetic atmosphere or a specific style. Some examples of games in this category are: Team Fortress 2, Overwatch or Firewatch.

Figure 2 – World of Warcrafts

    c. Realistic graphical styles

Realistic style refers to a realistic visualization of objects, environment and characters. This style became very popular at the beginning of 1990 when three-dimensional visualization became a standard for the video game industry. It is considered to be the "most desired look for modern games"(Keo 2017). This concept became so popular that now it is almost like a standard for the AAA titles. There are many examples of games from this category, including: Rise of the Tomb Raider, Call of Duty: Advanced warfare or Detroit: Become Human. At the beginning, this style was very desired, but was too restricted because it required advanced hardware resources for rendering and came with some gameplay limitations. Some limitations are specified by the author in the next paragraph: "For example, realistic graphics worked the best with only specific video game genres, these included but were not limited to: third-person adventure games, first person shooters, simulations, racing games, survival horror and sports games. In addition to this, making realistic 3D graphics up to par with the modern standards was usually very time consuming"(Keo 2017). The process of developing a game using this style was very challenging for the developers because they also worked on the modeling, texture, lighting and animation. The reason games become more realistic is described in the book saying that: "When games resemble real life, the players feel immersed in its world"(Keo 2017).

In the next part of the book, the author explains realism and its sub-categories. Realism is defined as "the true representation of subjects without any idealization or artificiality"(Keo 2017). Photorealism is a sub-genre of realism that exaggerates this concept and it produces images as realistically as possible by trying to reproduce a picture as detailed as it could be. Some examples from this category are: Battlefield, The Last Of Us or Grand Turismo. Another sub-genre of this style is semi-realism which is mostly realistic but it has

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some aspects that are stylized or simplified. Moreover, realism could be divided into two more sub-categories: televisualism and illusionism (Järvinen 2002). The first one, refers to a style that tries to recreate television broadcasts by using multiple cameras and the possibility of replay. This style uses photorealistic graphics and it usually appears in video games with the following themes: sport or racing games. A good example for this style is the FIFA series. Illusionism is a technique that uses photorealistic graphics but simulates non-realistic and fictional content. It is usually used for fantasy role-playing games or sci-fi games. A good example for this category is the game called The Witcher 3. One of the earliest games that could represent this category is Mortal Kombat. The future of photorealism would probably focus on the ray tracing. This technique is used to render 3D graphics in the most realistic way so far. However, this technology has many limitations and can't be used in many games because it requires advanced hardware for the gameplay. Stylized realism or semi-realism is a "hybrid style of stylized and photorealistic graphics"(Keo 2017).The style is produced using realism but the aesthetic is stylized. In order to create this, the developers should add some of the following: "the game must have either stylized characters, spaces or objects and the graphics must utilize realistic materials, textures and advanced lighting in the 3D environment"(Anhut 2016). Examples of games from this category are: Final Fantasy XIII and Bio Shock Infinite.

Figure 3 – Rise of the Tomb Raider, Call of Duty: Advanced Warfare and P.T.

X. Emotions in video games

In the book called *The Art of Videogames (Tavinor 2009)* written by Grant Tavinor, the author talks about how our emotions are connected with video games. The chapter in which he analyzes this phenomenon begins with the following sentence: "I couldn't bring myself to kill the little girl, even though she had been surgically and genetically manipulated for the purpose of extracting stem cells, and so wasn't really human at all; or so I was

told"(Tavinor 2009). The authors observed the fact that the game required him to kill a little girl, but his emotions would not let him do it. In his example, he talks about the game called BioShock which is a survival-horror game that is focused on role-playing. In his opinion, this game impresses the players for the emotional depth and its narrative. The narrative focuses on morality and freewill, but it is more like " how we control our own actions and those of others, and how we resist the control of other people with our own (hopefully, better) judgment (Tavinor 2009)". In his study, the author observed that the emotions are used in video games in order to connect the player to the game. However, there are studies that show the fact that people could hardly connect emotionally with a fictional character (Radford and Weston 1975). Although this connection exists because the player uses his cognitive sensors and puts himself in the story, that is why some players can't finish a horror game: because they are afraid of the monster as if the monster is real. In the book, the author's gave us an example saying that: "The paradoxical nature of our responses is strengthened by the cognitivist view of the emotions as necessarily involving beliefs: to be afraid is in part to believe that one is in danger" (Kenny 1963). In addition, this paradox is more complex because these emotions have an impact on the player's life because it makes him think what is or is not willing to do in a game world. From the experience of the author, he says that "In BioShock, how you treat the Little Sisters has an effect on how the narrative finishes, and so that I could see these effects, it became necessary for me play the game again, and to treat the Little Sisters badly so as to harvest their resources: I didn't want to do it, and it made me squirm when I eventually did"(Tavinor 2009). From his perspective, emotions are crucial when playing a video game because it connects the player with the game. Moreover, the fact that video games are interactive force the player to make some decisions that could affect the game world. However, a video game can induce emotions from two perspectives. The first perspective is that the game has a certain story, atmosphere or narrative that affects the player emotionally. The second perspective is that the game is frustrating in a way and that induces certain emotions to the player. These emotions can be: frustration, anger or irritability. Additionally, these emotions can lead to spontaneous actions like rage quit or uninstalling of the game.

In his book, the author talks about the role of emotions in video games and how a fictional story creates a certain emotion. The author mentions at the beginning of the chapter that "Emotions become involved in fictions through the relevance or connections that the representational content involved in fictive practice has for the emotions"(Tavinor 2009). Thus, emotions are related to the narrative just like when watching a movie or reading a book.

However, in books or movies, the appreciator is passive and their emotions do not affect the fictional world, while when playing a game, the appreciator should be active and choose a certain path. Philosophers like Susan Feagin discussed this topic in her work saying that the player can only have two types of emotions regarding a fictional story: sympathetic form or empathic form. Regarding video games, the author says that the situation is similar. In video games, the emotions can guide the player to perform a certain action, usually that helps him complete a mission like the author explain in the following part "I think that it is relatively clear that in videogaming the player's emotions have a role in guiding the player to a successful interaction with the obstacles and situations encoded in the game's fiction" (Tavinor 2009) . In games like racing simulators, the player is motivated even more after losing a race. However, another defeat will bring some intense emotions that will either motivate the player or that will lead him to give up. The authors found three major benefits for emotions in video games. The first one is that emotion has a significant role in directing attention and keeping the player more engaged with the game. Secondly, emotions have an important role of motivating decisions and force the player to engage with the game's story. Last, but not least, emotions are important because if a game uses emotions, those emotions will create a more pleasing atmosphere where the player can escape reality and live in those worlds. Living in a fictional world, helps the player open emotionally, as the author says "Fictional worlds seem to allow us a greater access to some kinds of emotionally provocative situations, given that acting in a fictional world lacks the costs of acting in the real world"(Tavinor 2009). Thus, video games let players experience some emotions and situations that in the real world will have consequences. Additionally, video games that involve emotions allow the player to step into fictional roles. Playing a certain role in a game will motivate the player to engage in the story because he knows that his actions have consequences and his life in the game could be compromised. In the following paragraph, the author explains this process in details: "The technology of fiction – based on the underlying psychology of pretense – allows us to have experiences that lack the consequences they would bear in non-fictive locations, and this is part of the reason why videogames are the delectable fun they are" (Tavinor 2009). Moreover, curiosity is one of the factors that draw attention to the players and make them more engaged in the game. The authors asked himself questions like "What is behind that next hillock, or within the ancient ruin on the near shore? How far can I climb into the mountains? What is the view like from up there?"(Tavinor 2009). Finally, he defined this process of simple curiosity and considered that this is really the primary interest in games. Additionally, in the last period, games encourage sympathy with their

characters and this process involves a different set of emotions. Until recently, the characters in the game were either attackers or attacked, but in the last few years, developers created characters with different properties that can play a significant role in the story of the game. Thus, players find themselves in situations where they don't want to kill a certain person because they developed sympathy.

XI. Game genres

There are a lot of studies that talk about the game genres over the years. In a study called *An Introduction to Genre Theory* (Chandler 1997), the author begins his study with the very beginning choosing to talk about the etymology of the word „*genre*". He discovered that the root of this word comes from the French words „*kind or class*". It is usually used in domains such as rhetoric, literary theory or media theory. In his paper, he quotes Robert Allen with the following: „for most of its 2,000 years, genre study has been primarily nominological and typological in function. That is to say, it has taken as its principal task the division of the world of literature into types and the naming of those types - much as the botanist divides the realm of flora into varieties of plants"(Chandler 1997). In addition, there are such classification in literature, where poetry, prose and drama are divided in distinct categories. Movies and television have been also classified into small categories, depending the message and construction. Nowadays, the discussion about genres is still debated because genres are abstract and we should look at them from an objective perspective. Moreover, there are debates about whether a classification is considered a genre, a sub-genre or models. David Bordwell notes, "any theme may appear in any genre" (Bordwell 1996). He asks: „Are animation and documentary films genres or modes? Is the filmed play or comedy performance a genre? If tragedy and comedy are genres, perhaps then domestic tragedy or slapstick is a formula"(Chandler 1997). It is hard to classify a work on just a genre because, for example, a movie can be classified by the period of country, director or producer, by narrative structure, by cycle, by purpose, by audience, by subject or theme, by series and by style. In the next part of the study, the author talks about the fact that some genres are easy to recognize, while others are problematic, because there is no definition for this abstract domain, like the author says „the definition of a genre depends on our purposes"(Chandler 1997).

In the paper called „*Video Game Genre, Evolution and Innovation*", the author talks about the classification of game genres and their evolution. In the first part of the paper, he observes that there is a major problem with the genre term because it is too abstract and should be included in a distinct category, not alongside with movies or other media products. Here, the author quoted a phrase from the study *Two Decades of Game Studies*, in which the author said that: „This is clearly a danger when looking at games as cinema or stories, but also when making general claims about games, as though they all belonged to the same media format and shared the same characteristics"(Arsenault 2009). Moreover, the author observed that there is quite difference between the „*over-particular*" and the „over-universal" concept of a game. Thus, this difference is explained in a paper called *Genre Blindness* (Klevjer, Rune 2005). He analyzed this phenomenon and observed that: „There is a gap on our field between general theory and analysis of particular games. […] We see a lot of theoretical investigation into aesthetic, social and psychological mechanisms that applies either very broadly or to games and play in general. On the other hand, there is also quite a lot of analysis that focuses on one, or maybe two or three games, and which may include some general observations on the condition of modernity and so on, but which does not make any consistent claim to describe the typical characteristics of larger categories of games"(Klevjer, Rune 2005). In order to correctly define a genre, the analysis should be done on multiple games because it is easier to see their common features and to place them in a certain category. In his paper, the author inspected a database from Moby Games which has a glossary list and, in each category, there are some terms that are included. This database can be observed in Figure 4. Unfortunately, the database was erased from the actual web page.

Basic Genres	Action, Adventure, Educational, Racing / Driving, Role-Playing (RPG), Simulation, Sports, Strategy
Perspectives and Viewpoints	1st-Person, 3rd-Person, Isometric, Platform, Side-Scrolling, Top-Down
Sports Themes	Baseball, Basketball, Bike / Bicycling, Bowling, Boxing, Cricket, etc. (29 total)
Non-Sports Themes	Adult, Anime/Manga, Arcade, BattleMech, Board / Party Game, Cards, Casino, Chess, Comics, Cyberpunk / Dark Sci-Fi, Detective / Mystery, Fighting, Flight, Game Show, Helicopter, Historical Battle (specific/exact), Horror, Interactive Fiction, etc. (42 total)
Educational Categories	Ecology / Nature, Foreign Language, Geography, Graphics / Art, Health / Nutrition, etc. (14 total)
Other Attributes	Add-on, Coin-Op Conversion, Compilation / Shovelware, Editor / Constructor Set, Emulator, Licensed Title

Figure 3 – Extract from Moby Games genres glossary by Dominic Arsenault

Another important division that split games into genres and styles is from AllGameGuide and can be observed in Figure 5. However, this database was erased too from the website.

Genres (15 total)	Styles
ACTION	2D Action, 3D Action, 3D Platform, Action Adventure, Ball and Paddle, Combat, First-Person Action, Fixed Screen Platform, Interactive Screen Saver, Maze, Miscellaneous, etc.
ADVENTURE	Action/RPG Adventure, First-Person Adventure, First-Person Graphic Adventure, Interactive Movie, Survival Horror, Text-Based Adventure, Third-Person Graphic Adventure
FIGHTING	2D Fighting, 3D Fighting
RACING	Aircraft Racing, Bicycling, Boat/Watercraft Racing, Demolition/Combat, Drag Racing, Extreme Racing, Formula-1/Indy Racing, Futuristic Racing, Go-Kart Racing, etc.
SHOOTER	First-Person Shooter, Fixed Screen Shooter, Overhead Free-Roaming Shooter, Platform Shooter, Shooter with Weapon Peripheral, Side-Scrolling Shooter, Squad-Based Shooter, Third-Person 3D Shooter, Vehicle Shooter, Vertical Scrolling

Figure 4 – Extract from AllGameGuide by Dominic Arsenault

Another important perspective belongs to Metacritic in which the genre classification is simpler and easier to understand. They created a list of game genres, including the following genres: action, adventure, extreme sports, fighting, first-person shooter, flight/flying, party, platform, puzzle, racing, real-time strategy, role-playing game, simulation, sports, strategy, third-person shooter, turn-based strategy, wargame, wrestling. However, this list is problematic because it does not contain labels, such as „Massively Multiplayer Online Role-Playing Game". In this case, the study's author contacted the site editor Marc Doyle and asked him why these kinds of genres are not included in the website's genres list. He responded that the genre list is just a normal list and the genre labels were just text fields and users can change them. The author observed that the scholarly writing about this topic focuses either on the interactive genres or on the „nature of the interactive, narrative, thematic, social and/or even material genres". The first classification, of video games is about the thematic and iconographic genres where we can observe some categories from the movie's domain, such as: Science-Fiction, Fantasy or Horror. Regarding the category where the gameplay is focused more on the interactive genres, the author observed categories such as: action, adventure, role-playing or strategy. Thus, there are genres that are built by multiple criteria, but they are all connected to the gameplay. For this phenomenon, the author gave us example such as: real-time, turn-based strategy, first-person or third-person shooter, action/adventure, role-playing, sports, platformers and so on.

In the next part of the paper, the author observes that the term genre is not enough for splitting games into categories because the world genre itself can refer to multiple aspects. Thus, the author says that the world genre is used by different people to split multiple concepts into categories that can be defined using only one term, as the author explains in the next part „the word genre is an umbrella word, and that the bundling of disparate concepts under a single name gives them a false impression of unity"(Arsenault 2009).

Another important study is called *What Defines Video Game Genre? Thinking about Genre Study after the Great Divide* (Clearwater 2011). In his paper, he talked about how the gender appears, how are they divided in different types of media and why video games cannot be divided into genres. Regarding the video games, he observed that there are some criteria used to split games into genres based on different studies over the years. He observed that there are three main focuses on their studies, including: "1) formal and aesthetic considerations, 2) industrial and discursive context, and 3) social meaning and cultural practice"(Clearwater 2011). However, in the author's opinion, these studies should be focused on other elements that are more particular to a game and can reduce the entire game to just one world. From his opinion, we observe that he wants to focus on the „mechanics and rules, art and level design, character design and forms of characterization, story patterns and narrative structure, kinesthetic qualities of the gameplay, the use of hardware and peripherals, etc." (Clearwater 2011). In addition, it is important for them to keep in mind that the externals factors, such as external context and cultural productions are important because it can influence the genres. These factors can be disputed by marketing agencies and could create a certain image of a genre. Moreover, it is also important to observe the cultural approach of a game because the community have a major impact of the elements lately. Some examples of these elements are: „Modding, homebrew, walkthrough and FAQ creation, clan formation, wiki projects, virtual trading, emulation and archiving communities all point toward the highly social aspects of the medium"(Clearwater 2011).

XII.   Research design

For my research, I will conduct an analysis on the gaming platform called Steam in order to observe some aspects regarding the presentation of video games. Firstly, I will focus on observing the visual style of the popular games from this platform and see if there is a popular trend or genre in which they fit. Secondly, I will take a closer look at the visual elements of each game to see what kind of illustrations, graphics and animation gained more

popularity in the public's eye. Lastly, I will observe if the promotional materials, such as trailers or store page graphics have an impact on the public's perception and if they are motivated by these elements to buy a certain game. In addition, in the qualitative part of the research, I will be analyzing reviews for the top 10 popular games to observe which are the most discussed topics and whether they comments are positive or negative.

1.   Research questions

The research questions that will help guide my analysis on the presentation of video games will be the following:

1. Which visual style dominates the most popular games on the Steam platform, and how has this trend evolved over time?
2. How do different genres of games on Steam utilize visual elements such as illustrations, graphics, and animations to attract and retain users?
3. Which are the most used color palletes and font designs for the presentation of the most popular games?

2.   About the platform

In this paper, I will focus on analyzing some interesting topics regarding the video game platform called Steam, including a detailed analysis about the platform, how does the platform work, why is it so popular, what kind of game does the platform provide or host, how does the platform look from the player's perspective and why is the number one on popularity tops. Moreover, I will collect some information from the platform and I will interpret it using a grid of analysis. After the data is extracted from the platform and it is structured and organized, I will create some graphics in order to observe some aspects that are interesting.

For this paper, I chose to analyze the online game platform called Steam because it is the most used platform for PC games. According to PC MAG (Minor 2023), Steam is the top platform for buying and playing online games, followed by GOG.com. In addition, there are other online sources that agree with them. For example, PC Gamer (Prescott 2019) wrote an article in 2019 saying that Steam has increased its popularity because it was the first platform to ever distribute Counter Strike 1.6 and had constantly been uploading over 100 games per week. In 2024, Statista.com (Clement 2024) analyzed the gaming behavior worldwide and did some graphics and statistics for the gaming industry. Thus, they found out that the total

gaming revenue for 2023 was around 80 billion U.S. dollars. Considering that, Steam is still the leader on the market for Pc games, increasing and growing every year. In their article, they stated this fact saying that: "Steam has been distributing third-party titles for almost 20 years and is the undisputed leader in terms of online PC gaming sales. The number of video game units sold by Steam continues to smash through the 400 million mark. Steam's revenue from game sales surpassed 8.5 billion U.S. dollars in 2023"(Clement 2024).

Steam is a video game distribution platform that sells games and services. It is developed by the Valve Corporation and it was launched as a software client on 12 September 2003 to ensure automatic updates for Valve's games and for some third-party titles from 2005. Right now, according to PC Mag (Minor 2023) and other publications, Steam is the most popular platform for distributing games. Users use it because of the various features such as: game library, reviews, Steam Marketplace, Community and so on. At the beginning, Steam was just a platform for distributing games, but in the last decade, the developers added features that let users interact with each other share their work or sell different items. Steam is the largest digital distribution platform for PC games and has more than 135 million monthly active users.

3.   Instrument

For this research, I used the analysis grid as instrument. This tool will help me observe the differences between the video game presentation elements. In addition, it will help me notice certain trends in terms of themes, genres, tags and developers. Using this tool, I will be able to give context to my data and integrate it more easily into the paper, along with previous studies. In this way, I will be able to observe aspects such as the percentage of games that fall into a certain category or the percentage of manufacturers that create games for multiple operating systems.

4.   Method, data and sampling

a.   Method

The research method for this paper is the content analysis. This method is suitable for my study because it is a descriptive method and it can help me to understand some of the differences between the results that I will observe after graphing the themes. In addition, this method will help me in the quantitative analysis part as well as in the qualitative analysis part, as it is a good method of comparative analysis and correlation. Moreover, I will also analyze what kind of colors, symbols and themes they have and what type of visual materials they use

to present the game, including: cinematic videos, screenshots from the game or presentation images.

Thus, this research is conducted in order to respond to the research questions that were established in chapter XII, point 1. In addition, I will use two types of methods, quantitative and qualitative research. Both methods will be discussed below at the sub-point 5.

For the analysis I will use the collected data and I will create some visualization in order to observe trends, user preferences and anomalies. For tables and graphs, I will use the Tableau app because it works well with large sets of data. Using Tableau, I will create some visualization for: operating systems, most popular games by downloads and reviews and more.

b.   Data

My analysis will be based on the data collected from *Kaggle* (Roman 2022) for the Steam platform in the early 2024 for the 2023 year. The database was extracted from the Steam platform using a code provided by MIT via an API provided by Steam. In addition, they collected some information from Steam Spy. The database has one year coverage, starting from 24.04.2022 and finished in 07.05.2024. The author, Martin Bustos Roman specified that he only extracted games, excluding the DLC's, music, episodes etc. The database is frequently updated by the author and the last update was in January 2024. The database contains more than 85,000 games, from over 70 categories.

This database is complete and has already been cleared by the author. The database is stored in an Excel file and contains detailed data about each video game, including: author, release date, video game name, tags, platform, ratings, and more.

c.   Sampling

The database will be sampled by observing only some aspects regarding the game genres that are the most popular on the platforms among others, if the single player games or multiplayer games are the most chose ones and more. Although, I will organize the genre category following the discussed methods from the research part. Thus, the original database has more than 70 distinct categories/genres in the genre column. It is not something unexpected the fact that there are not only genres in this column, because, as it was discussed previously in the research part, those genres from Steam are just some words that can be freely written by the publisher when they uploaded the game on the platform. I will reduce

those 70 initial genres to 10 main genres, including: action, adventure, indie, simulation, strategy, casual, free to play, RPG, racing and massively online multiplayer. It is important to mention that all these categories were defined as categories by the publishers on Steam.

5. Quantitative research

The first part of the research will be focusing on working with the quantity of the data, using the database. Here, I will focus more on the general vision over the video games on the platform, observing which are the most popular categories of games, which are the most commented and reviewed games from the platform and so on. This part will bring the general visualization of the collected data and will help us understand which elements have a significant importance over the player's perception.

As far as this type of analysis is concerned, I will focus on observing more general but interesting data, such as: the names of the most important game manufacturers in the industry, the number of games that are in a certain category or genre, the number of games that have been created to be played on multiple operating systems and so on. This analysis will be carried out on a set of 85,000 games and will capture consumption trends for the year 2022-2023.

In order to create a more general picture of the work, I decided to include some visualizations in my study to help me better understand certain aspects of Steam. So, I decided to create 5 graphs that highlight trends such as: game prices by year of release, gamers' favorite game genres and their favorite games. The database was cleaned again, and for each graph I used certain columns or certain combinations of columns (for example for the average price I combined the prices of games released in one year). I chose to use these types of charts, i.e. bar charts, line charts and a combination of these to keep the visualizations as easy to understand as possible. I also created a visualization for all of them side-by-side that can be observed in *Figure 6.*

First Genres	Distinct count of App ID	Avg. Price	Avg. Peak CCU	Avg. Positive
Simulation	1,768	14	501	1,159
Massively Multiplayer	92	7	455	1,196
Action	33,388	7	248	1,649
RPG	1,265	12	240	2,452
Strategy	1,161	10	213	1,825
Racing	470	13	147	1,666
Audio Production	137	21	112	379
Early Access	31	13	88	194
Free to Play	1,172	0	73	693
Indie	7,584	8	66	741
Animation & Modeling	352	22	57	323
Utilities	317	8	51	185
Sports	192	11	45	505
Adventure	16,639	7	38	445

Genres Game — Displays the number of games released per genre

First Genres	
Action	33,388
Adventure	16,639
Casual	15,800
Indie	7,584
Simulation	1,768
RPG	1,265
Free to Play	1,172
Strategy	1,161
Racing	470
Violent	455
Animation & Modeling	352
Utilities	317
Sports	192
Design & Illustration	183
Education	180
Audio Production	137
Sexual Content	108
Massively Multiplayer	92
Nudity	61
Video Production	49
Software Training	42
Gore	38
Early Access	31
Photo Editing	24
Accounting	17
Game Development	11
Web Publishing	6

Figure 6 – Steam Analytics

a. Observing the price and the release year

For a better overview of the situation, I decided to create visualization for observing if the price and release period influenced somehow the number of downloads. Thus, we can look at the *Figure 7*. Here, we can observe that there two lines, the orange one that represents the number of games that were released every year and the blue line that represents the average price of games every year. Focusing on the orange line, we can observe that there is a significant growth since 2013. In 2013 there were 492 games released and in 2014 there were 1,634 released games. The higher point on the graph represents the year 2023, since the analyzed period ends in 2023 it is completely logical. Moreover, in this period, the data-base contains multiple early released games that could be played from 2024. In this year, there were 15,540 video games released, which was the higher number of released games until now. Taking a look at the blue line, we can see that the price has not had a continuous increase, but has undergone some fluctuations over time. Starting from 1997 when the average price for a game was 4,50 $ and finishing with an average price of 6,86 $. There were some ups and downs over the time, even if the price for the AAA games was higher in this period. These ups and downs happened because in the analyzed period, the majority of the released games were games from small developers. The lower average price was in 1999 when the average price for a game was 2, 67$ and the highest average price was in 2002 when the average price for a game was 12, 00 $. We can also observe that after 2013, the average price for a game went down from 10.01$ to 7, 87 $ in 2014. All these changes happened in 2013 when the internet evolved significantly and created a good space for creators, designers and game

developers to promote their games globally. Additionally, in 2013 appeared crowdfunding platforms such as Kickstarter that boosted the gaming industry and create a good opportunity for game developers to share their games with the world. Accordingly to PC Gamer, "Crowdfunding eliminated some of the cost risk associated with indie game development, and created more opportunities for indie developers to take chances on new titles" (Cobbett 2017) Moreover, there were some changes and developments in the industry that affected the gaming industry. Beneath these developments, we can mention that the expansion of the internet and the appearance of online tools for creators and gamers leave them the opportunity to contribute with their own ideas in the gaming industry.

Figure 7 – Average price & Release count

    b.   Favorite genres

An important aspect that should be discussed in this study is related to the game genres. Understanding the use of genres is crucial from different perspectives, such as: game design, audience, marketing companies and more. Game genres should be analyzed closely because it influences the game industry from different perspectives. For example, if a videogame is considered to be an action game, that game will have certain design, mechanics and flow. An action game will probably be focusing on action and motion rather than visual design. Thus, all game genres are different and are focused more on a certain aspect of the game. In *Figure 8*, we can observe that there is a major difference between the action and adventure game than the other genres. The visualization shows us how many users have downloaded and currently owns the games from each genre category. Thus, we can observe

that the action games were the most preferred ones, followed by adventure and indie games. On the right, in the *Figure 9*, we can also observe that there are 33,388 games released in the action genre in the analyzed period. However, we can also observe the visualization in parallel, seeing that there is an interesting phenomenon. Even if there are more games released in the casual genre, that genre is not in the top 5 most downloaded games.
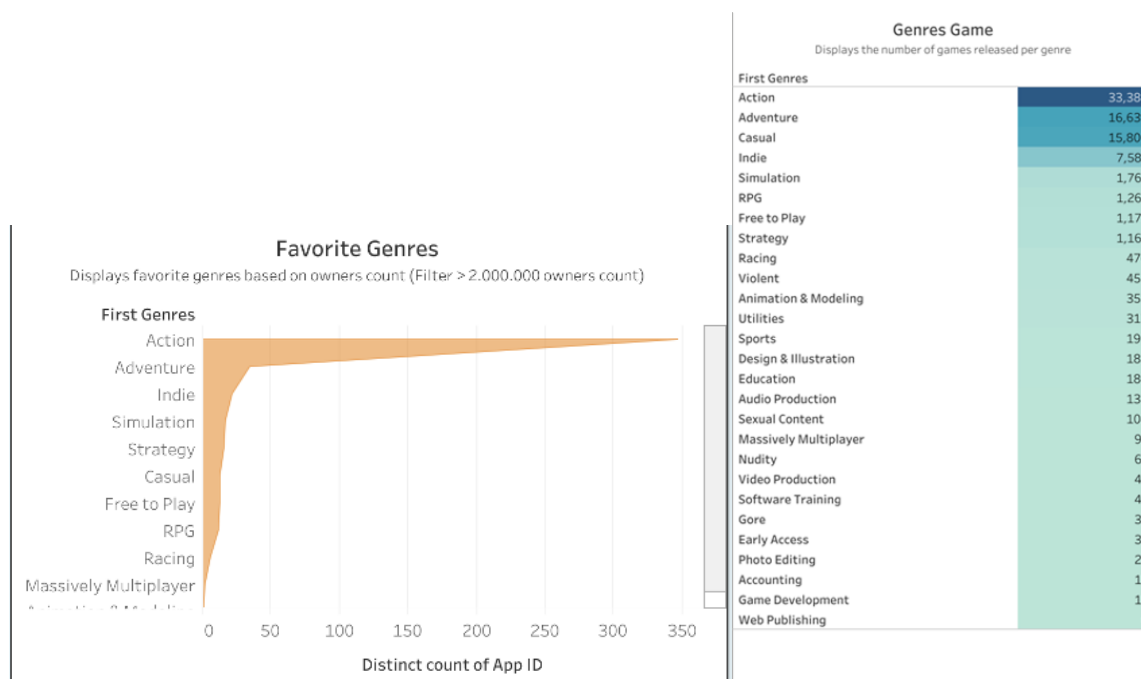

Figure 8 – Favorite games

Figure 9 – Games genre

c.   Favorite games

Taking things to the more specific, we will take a look at the most favorite games for the users. Thus, we can observe in the *Figure 10* that the most reasonable way to find the most popular games is to analyze the CCU in relation with games. The CCU is an abbreviation for the Concurrent users and it is used to define the number of users that are simultaneously connected to a certain game. Using this procedure, I created this visualization in which we can see that there are some popular games that occupy the places in this graphic. Thus, we can see that there are some games, such as Counter Strike: Global Offensive (released in August 21, 2012) or Dota 2 (released in July 9, 2013) that are considered old and games such as Hogwarts Legacy (released in February 10, 2023) and Sons of the Forest (released in February 23, 2023) which were highly awaited by gamers. Counter-Strike: Global Offensive and Call of Duty: Modern Warfare III are both first-person shooter games. Dota 2 is an online battle arena game (MOBA). Sons of the Forest is a survival horror game. PUBG: BATTLEGROUNDS and Apex Legends are both battle royal games. However, on the Steam platform all these games

are set by publishers as action games. We can observe that there are many games from many genres in this visualization of the popularity and the majority of them are either action games, shooter games or battle royale games, in which the actions are the main quality of that game. Each of these games was created by well-known game companies.

Taking a closer look at the chart below, we can see some vital aspects that make the ranking games in this order. Here, we can observe certain tendencies of players to choose a game and the elements they analyze when they are interested in a certain game. It is an interesting fact that the most popular games are either too expensive or free, the first ten positions on the popularity scale are occupied by free games or games over 25$. In the next part, I will look comparatively at details related to price, languages, operating systems, date and year of release and number of DLCs. Thus, the first position in the ranking according to CCU number is Hogwarts Legacy. This game was released in February 2023 and has a CCU number of 872138 players. The game costs $59.99 and has one DLC. It offers support for 14 languages from Europe and beyond. It is only compatible for players using the Windows operating system and is a single-player, action-adventure game. The second ranked game is Counter Strike Global Offensive. This game was released in August 2012 and has a CCU number of 825215 players. The game is free to play and has one DLC. In terms of language support, the game offers support for 28 languages on the interface side, but only English on the audio side. The game is intended for Windows, Mac or Linux users and is multiplayer. The third game in the ranking is Dota 2. According to the database, Dota 2 was released in July 2013 and has a CCU number of 558759 players. The game is free to play and contains 2 DLCs. It offers support for 28 interface languages, but only English on the audio side. The game can be played by all three types of operating system users, Windows, Mac and Linux, being a multiplayer game. Fourth place in the ranking is occupied by Sons of The Forest. This game was released in February 2023 and has a CCU number of 405191 players. The game costs $29.99 and has no DLC. The game offers support for 16 languages from around the world for the interface side of the game, with a focus on English for the audio side. The game is only intended for players using the Windows operating system. They can choose whether they want to play single-player or multi-player. The 5th place game is PUBG: BATTLEGROUNDS. This game was released in December 2017 and has a CCU number of 275374 players. The game is free to play and contains no DLC. It offers support for 17 languages for the interface part of the game. The game can only be played on Windows operating system. This game is a multiplayer, action game in the Massively Online Multiplayer category. Sixth place goes to Apex Legends which is a game released in

November 2020 and has a CCU number of 235067 players. The game is free to play and has 2 DLCs. On the language side it offers support for 13 languages for the interface side. The game can only be played on Windows OS and is a multi-player game. The 7th place in the ranking is the game Call Of Duty: Modern Warfare III which was released in October 2022. This game has a CCU number of 233454 players. Players have to pay $69.99 if they want to play it. Besides the base game, the developers have also created a DLC. The game has support for 14 languages on the interface side and can only be played on computers using the Windows operating system. The game is multiplayer and belongs to the action games category. The 8th place in the ranking is occupied by Grand Theft Auto V which was released in April 2015. This game has a CCU number of 170527 players. The game is free to play and contains 1 DLC. It offers support for 13 languages for the interface part of the game. Players can play it using the Windows operating system. It can be played single-player or multi-player. The 9th place in my top is occupied by Resident Evil 4 which came out in March 2023. The CCU number is 153726 players. The game costs $59.99 and has 9 DLCs. It offers support for 13 languages for the interface part of the game. Players can play it using the Windows operating system. This is a single-player game, belonging to the action game category. The 10th place in the ranking is occupied by Team Fortress 2. It was released in October 2007 and has a CCU number of 107702 players. It is a free to play game and has one DLC. It offers support for 26 languages on the interface side and can be played on all three operating systems, Windows, Mac and Linux. It is a multi-player game and belongs to the action games category.
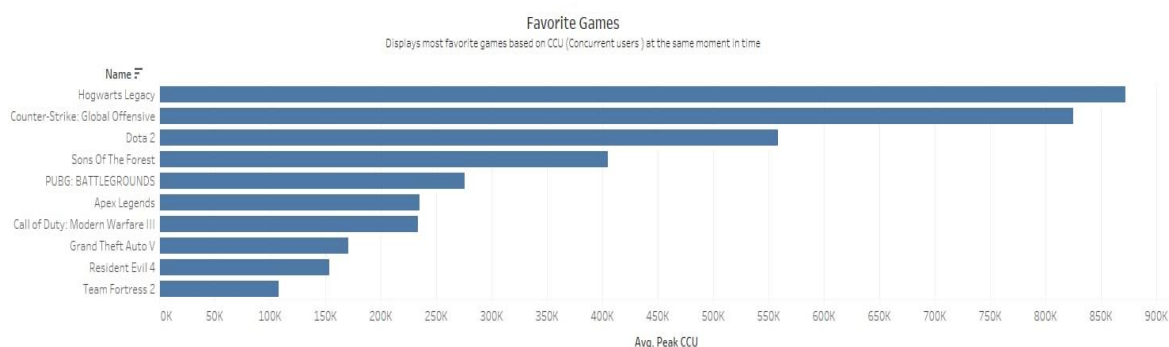

Figure 10 – Favorite Games

d.   Supported operating systems

The operating system is another aspect I want to investigate in this study, as it plays an important role in determining the most popular genres and games. I have chosen to compare

games that work on Windows, Mac and Linux to see how the gaming industry creates their games and which is they targeted audience in terms of operating systems. Thus, I created a graph in which we can see the number of games that are suitable for each operating system. Looking at the view below, we see that there are multiple games that are suitable exclusively for Windows (66135 games), but not as many games for Mac (24 games) or Linux (5 games). It is important to mention that this analysis was made using the filtering option in Excel applied on three columns, one for each operating system (Windows, Mac and Linux). The filtering options are displayed in the last column on the right in *Figure 11*. The results that I mentioned above represent the games that support only one operating system. For a better comparison, I created some relationships between them to observe how the developer thinks when they create a game. The first relationship that I have explored is between Windows and Mac OS in which I had observed that there are a significant number of games that are developed to work on these two operating systems. In comparison, regarding the relationship between Windows and Linux, we can see that the number of games suitable for both operating systems simultaneously is significantly lower, including only 2564 games. Furthermore, the next relationship between Mac OS games and Linux games is the worst one. There is only one game developed to work only on Mac OS and Linux. Looking at the total number of analyzed games (85.103 games), we can observe that the majority of them are developed to work on mainly on Windows, respectively more that 77% of the total number. The games that are suitable for all mentioned operating systems represent ~10% of the total number.

These major differences between the numbers of games that are suitable for a certain operating system are relatively common because of many reasons. A first aspect is that the gaming industry focuses more on producing games for Windows operating systems because the players invest more on building Windows PC's. In a study realized in 2023, Statista observed that almost 97% of Steam users use Windows as their operating system. Surprisingly, in their report, the author Thomas Alsop also mentioned the following: "Windows at almost 97 percent. Linux followed in second place, with 1.6 percent, ahead of OSX with 1.43 percent share" (Alsop 2023). In addition, games that are intended to work on more than one operating system are harder to make, requiring more advanced expertise and experience. This is probably where a major part of Indie games doesn't fit in, as they are generally made by developers who are just starting out and don't have much experience.

Operating system	Games supported	Filtered by:
Windows	66135 games	Windows: True Mac: False Linux: False
Mac OS	24 games	Windows: False Mac: True Linux: False
Linux	5 games	Windows: False Mac: False Linux: True
Windows & Mac OS	7742 games	Windows: True Mac: True Linux: False
Windows & Linux	2564 games	Windows: True Mac: False Linux: True
Mac OS & Linux	1 game	Windows: False Mac: True Linux: True
Windows & Mac OS & Linux	8626 games	Windows: True Mac: True Linux: True
Unspecified	6 games	Windows: False Mac: False Linux: False
Total	**85.103** games	

Figure 11 – Video games and operating compatibility

e.   Supported languages

Another important aspect is language. These are important because they help me determine if a game is popular because it is more accessible. That's why I have created a view of the languages most used by creators. Thus, we see that English is the most used language, being as used in 80.095 games. In addition, there are 43.539 games that support only the English language. The second most used language is Chinese with 21.542 games. In addition to these, we can also see other internationally spoken languages such as French (18.077 games), Spanish (17.681 games), German (18.656 games), Italian (12.604 games), Arabic (2.889 games), Korean (9.909 games), Japanese (15.414 games) and Portuguese (12.022 games). We also note that there are a number of lesser-spoken languages, such as Urdu, Basque, Kiche, Hebrew, Hindi, Tajik, Dari, Tatar and more. An interesting fact to observe here is that small developers invest more in building a multilingual game so that minorities can play the game in their language. This aspect is important if the game has an educational purpose to learn a second language or aim to reach a certain audience.
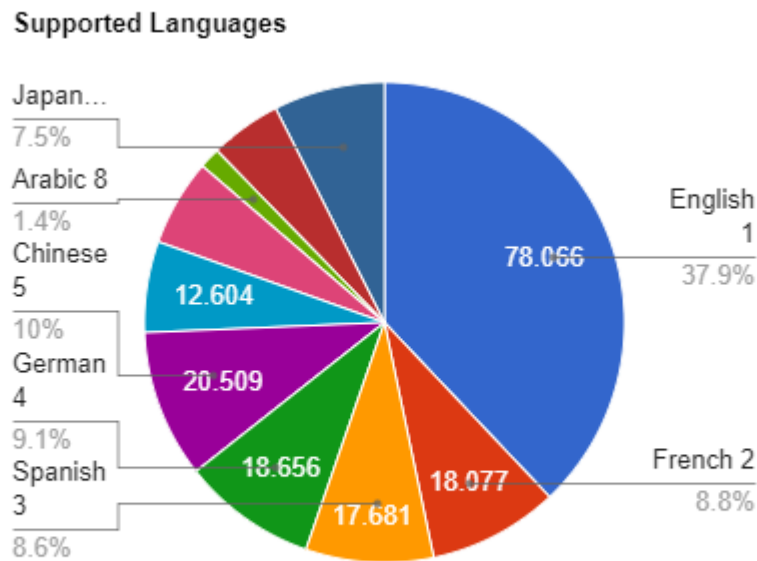
Supported Languages

Japan...
7.5%
Arabic 8
1.4%
Chinese
5
10%
German
4
9.1%
Spanish
3
8.6%

English
1
78.066
37.9%

French 2
18.077
8.8%

20.509
18.656
17.681
12.604

Figure 12 – Supported Languages

6.   Qualitative research

The second part of the paper will be focused more on the qualitative part of the research. After observing the top categories, genres and the video games that involved more interaction between users, I will analyze the first 10 games from the Steam platform to see why are they the most popular ones and if some promotional elements, such as: trailers, banners and covers helped them succeed.

As far as this type of analysis is concerned, here I will focus more on highlighting certain results obtained in the first analysis, i.e. the quantitative one, looking more closely at consumption trends. Thus, I will analyze a number of 10 games from the most popular and most downloaded categories, looking at design trends such as graphic styles, symbols, colors and themes. Here I will focus on the title part, visual elements such as images, videos and thriller for the most popular games.
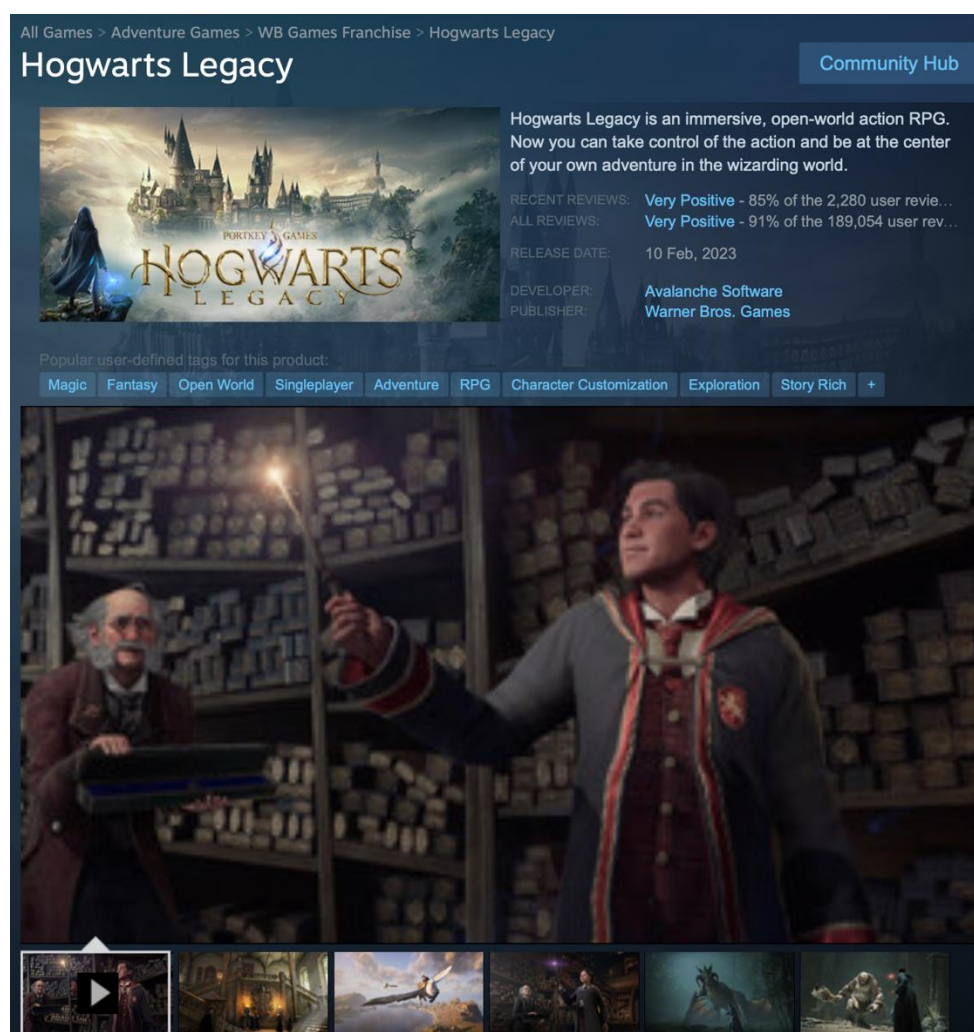
Figure 13 – Screenshot from Hogwarts Legacy on Steam

Is an "immersive, open-world action RPG" in which you play the character of a very powerful wizard boy. The story begins when the main character (represented by a boy or a girl) starts their studies in the fifth year at the Hogwarts. Their journey will follow some quests after which the main character will learn how to control his magic and protect the ancient magic that he possesses.

The cover of the game is very well constructed, aiming to attract the potential players in the Harry Potter world. The cover uses a realistic and fantasy style, combining fantasy elements and adventure. The focus is on depth and perspective, representing on one hand the magician and on the other hand the mystery of the Hogwarts School of Witchcraft. The chosen color palette uses darker colors to create the atmosphere of mystery and magic, combining different shades of blue, green and gray. The contrast is also important because it highlights some important elements of the game. Using the contrast a dark environment with

brighter elements, the player's attention is oriented to a certain area, focusing on glowing elements such as the magical spells or artifacts that are more visible in this context. In addition, the use of contrast can help the player see some key areas, such as the figure and the Hogwarts castle. The colors used by the designers when creating the name of the game are also symbolic. The blue elements are associated with tranquility and intelligence. They are used to highlight the magical and scholarly aspects of the game. The gold color emphasizes of the magical part of the game and reinforces the theme of discovery and adventure. The place of the elements is also important because it creates a story of the game using key elements. The castle is positioned in the background serving as a magical place and it represents the central setting of the game that is instantly recognizable by the Harry Potter fans. The protagonist is the central figure of the game. He is positioned with their back to the viewer facing the castle probably because it represents the player's character and the appearance is fully customizable. Moreover, placing him facing the castle invites the players to project themselves into his shoes, highlighting the aspects of the role-playing. The inclusion of forest, mountains and mythical creatures expand the player's conception and it creates a sense of expansion of an open-world. These details are not fully visible in the clouds, highlighting once more the mystery of the game and the hidden secrets. The overall image invites the players to project themselves into the game and set to an epic journey that is conducted by magic. The cinematic style highlights the importance of the game and their impact into the franchise.

On Steam, we can see some important details about the game that are necessarily for the analysis. The game was released in February 10, 2023 by Warner Bros. Games and was developed by Avalanche Software. There are some user-defined tags that define in a certain way the game, including: magic, fantasy, open world, adventure, single-player, RPG, exploration, story rich or character customization. From here, we can see that some tags describe the general idea of the game (e.g. magic, fantasy, exploration, adventure, RPG, open word) and some describe some game features (e.g. single-player, character customization, story rich).

Looking at the reviews, we can observe that the game has a very good image in the community being defined as "very positive". According to Reddit (Jman583 2014) there is a hierarchy when talking about the reviews. Thus, a game can be considered to be: overwhelmingly positive, very positive, positive, mostly positive, mixed, mostly negative, negative and very negative. These tags are influenced by the number of owners and their reviews. Hogwarts Legacy has over 91% percent of positive reviews. In addition, at the

bottom of the page is displayed the Metacritic score for the game, Hogwarts Legacy received 83 points out of 100.

The visuals are very important for a game on Steam because it can motivate the user to buy the game. Hogwarts Legacy has some powerful visuals, including a short thriller presenting the idea of the game and 5 screenshots from different scenes of the game, including the interiors, monsters, other characters and landscapes. See *Figure 13*.

There are some other vital elements that should be filled by the publishers on Steam. In the following part, we will explore them regarding the Hogwarts Legacy game. Below the pictures, there is a table with the most important aspects of the game from the perspective of the buyer (*See Figure 14*). Here, the buyer comes to see if the game suits their interest, desires and compatibility. Hogwarts Legacy is a single player game that has over 45 Steam Achievements available and let the player purchase content in the games, such as skins. Moreover, the game progress is saved in the Steam cloud. This game has full Controller support and can be played with an Xbox Controller or a PlayStation Controller. The rating for this game is PEGI 12, which means that the game is suitable only for players over 12 years old because of the violence, bad language and in-game purchases. The game was voted and won the best game on Steam Deck Award in 2023.

In the next part, the publishers wrote the minimum system requirements that should be checked by the player before buying the game. Unfortunately, this game works only on Windows and it requires a 64-bit processor with Windows 10. Moreover, the memory should be at least 16GB RAM and 85 GB required space for the game itself.
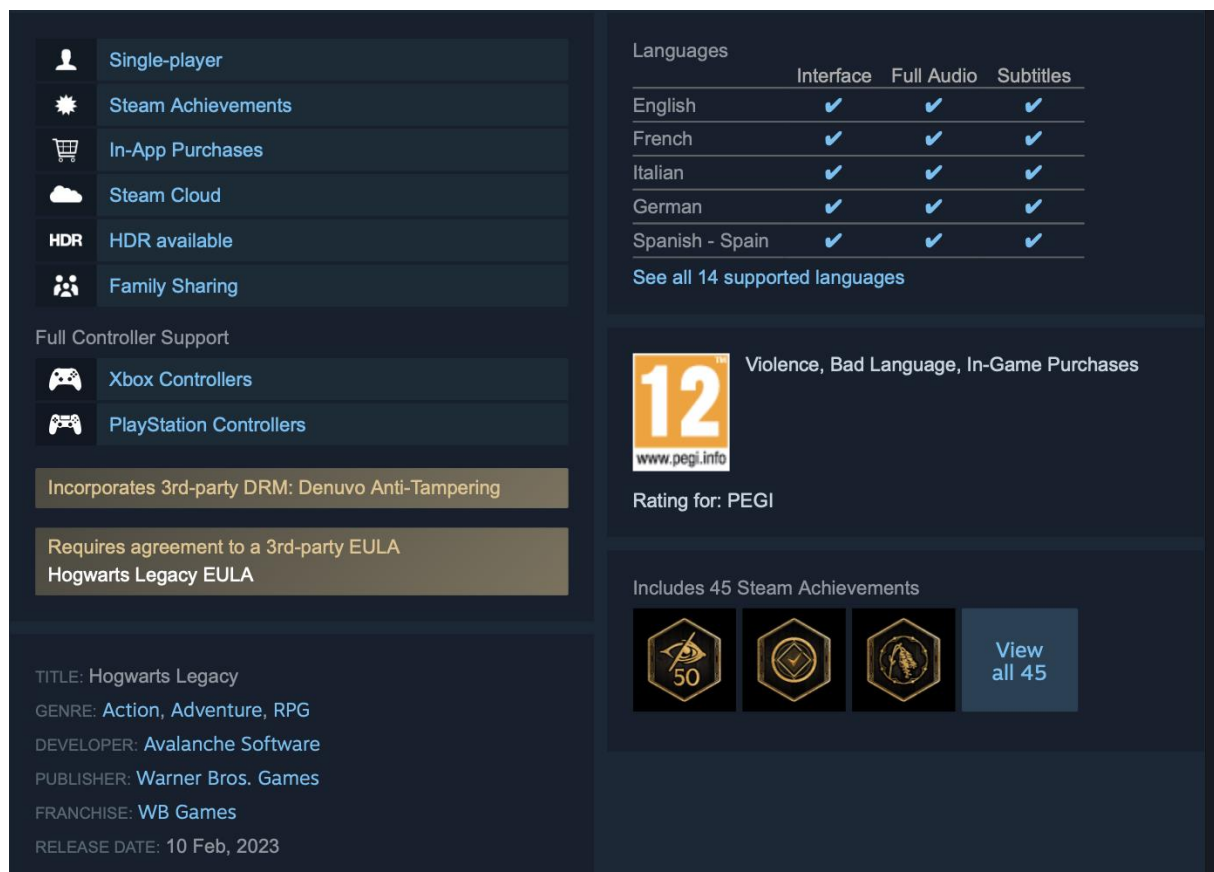
Figure 14 – Hogwarts Legacy characteristics

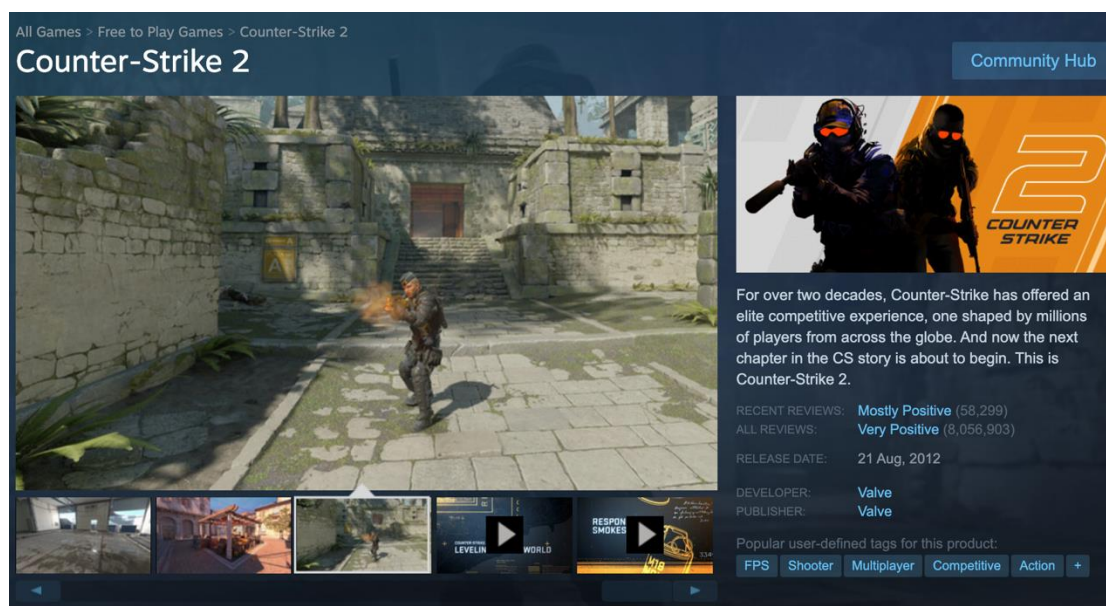b. Counter-Strike: Global Offensive

Figure 15 – Screenshot from Counter-Strike 2 on Steam

The second game in terms of popularity on Steam is Counter-Strike: Global Offensive which is now called Counter-Strike 2. The game is a free upgrade to CS: GO which appeared in 2023. The game is a multiplayer first-person shooter and it was released in 2012. The game had a significant impact over the gaming industry for over 20 years. CS: GO had offered a competitive multiplayer experience. This game is defined to be an "Action" game by the developer in the lower part of the Steam's game profile.

The cover of the game is simple and does not contain too many visual elements, keeping the first image of the game realistic, focusing on tactic and serious nature of the game. The cover contains detailed representation of characters, reflecting the focus on skill and precision. The color palette was chosen to reflect the main idea of the game and it combines different shades of gray, orange, brown and black. Here, the contrast is more visible, using a white and orange background and placing the two characters in the middle of the scene. The use of black and brown in character's representation is used to draws player's attention to them, but the main focus is, in fact, the weapons and goggles that are highlighted in the scene using red and blue. Their placement in also important because the white part of the background reflects on their uniform like sunlight and creates an important detail. From there, the player can understand that there will be two teams that will fight against each other because the use of two different uniform colors: orange and brown, blue and black.

On Steam we can observe some important details about the game, including the description, recent and overall reviews, release date, developer, publisher and popular tags. We can see that the game was released in 21 August 2012 by the Valve Company. In terms of reviews, the game is really good in the eyes of the players because the recent reviews (58,389 reviews) says that it is "Mostly Positive" and the all-time reviews (8,056,903 reviews) says that it is "Very Positive". The popular tags that are usually associated by the players with this game are: "FPS", "Shooter", "Multiplayer", "Competitive" and "Action". Some of them refer at the gaming experience, using the "FPS" tag or "Multiplayer" tag. The rest of the tags refer to the gaming atmosphere, using the following tags: "Shooter", "Competitive" and "Action".

The visuals are important for this kind of games because they could help the player decide if he wants to play this game or not. Here, the fidelity of the elements is very important and even more important are the mechanics of the game. Valve noticed that and chooses 23 visuals that would convince the player to play the game. Between the screenshots from the game, we can observe that there are also some videos of the gaming interface, world and from some real matches observing the player playing the game. The screenshots are relevant because it shows the player almost every interesting aspect from the perspective of a new

player, including screenshots of the: environment, characters, weapons, skins, special effects, single-player perspective and multiplayer perspective. In addition, there are a lot of screenshots of the environment, focusing on lights and reflections.

Some important aspects regarding the game are the located below the game, in the right sidebar. Here, we can observe some technical aspects that the player should consider when buying this game. A significant part of them is related to the gaming platforms or to the Steam features. We observe that the game is a cross-platform multiplayer and can be remote played from phone, tablet and TV. The Steam features that are available for this game are: Steam Trading Cards, Steam Workshop, In-App Purchase and Stats. In addition, there is a special feature from the Valve Company which is named "Valve Anti-Cheat enabled". This feature should improve the gaming experience because it prevents the cheating. Counter-Strike: GO or 2 can offer support for 28 different languages.

In the lower part of the page, the developers posted the system requirements and we can observe that this game works on Windows and on SteamOS with Linux. There is detailed only the minimum requirements which are a standard these days for the players. This game works on Windows 10 PC's which have at least an Intel Core i5 and 8GB RAM. The player must have at least 85 GB available in order to install this game.

The game was awarded with a Steam Award in 2020 for the "Labor of Love Award". This game remains very popular even if it's older than another action games and the developers spend a lot of time on keeping improving the gaming experience for the players.
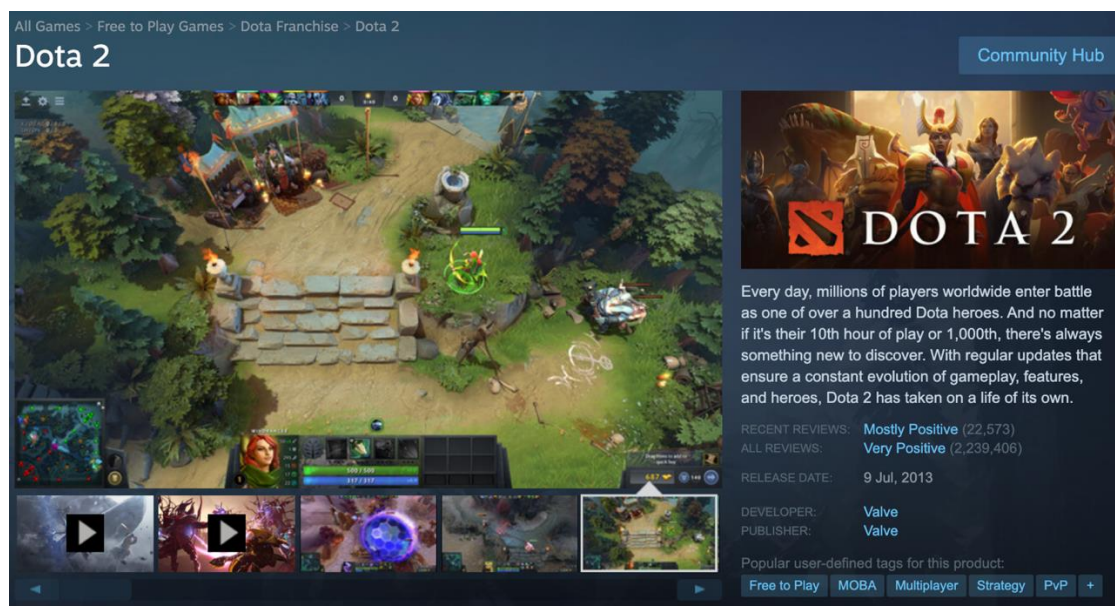
c. Dota 2

Figure 16 – Screenshot from Dota 2 on Steam

Dota 2 is another popular game amongst the players and it was released more than 10 years ago. The game is a multiplayer online battle arena (MOBA) and it was developed and published by Valve on 9 July 2023. The game combines a diversity of heroes, abilities and items and creates a diversified gaming experience for the players. The gaming mechanics are always the same, but they keep introducing new features and update the game for their players. From the second sentence of the game's description ("And no matter if it's their 10th hour of play or 1,000th, there's always something new to discover. With regular updates that ensure a constant evolution of gameplay, features, and heroes, Dota 2 has taken on a life of its own."), we can easily understand that the game can be repetitive, but there are always new elements and combinations that keep the players entertained.

The cover of the game is designed to reflect the fantasy theme and the strategic gameplay. The cover is a stylized image, combining fantasy elements with realism and dramatism to convey an artistic overview of the game. The artwork is detailed and it captures the game's diversity of heroes. In addition, the centers of the cover are the key characters of the game presented in dynamic and heroic poses. The color palette is well chosen, combining a variety of colors, but mainly using deep red, blues, greens and gold. These colors are used because they can catch very easily the eye of the player, reflecting the fantasy world and the diverse range of heroes. The high contrast is used to highlights characters and elements against the background. In addition, this contrast creates a sense of depths and focuses only the mains aspects of the cover. The use of red symbolizes the action, danger and power in the game and it is a dominant color in the game's logo. The use of red highlights the intense battles and the continuous action in the game. The use of gold and yellow creates a sense of glory and victory and it is fitting for the game's heroic characters. The blues and greens represent the importance of nature and environments in the game. The key symbols in the cover are: the characters, the logo, weapons and magical items and fantasy elements. The cover prominently features heroes from the game, representing different classes and abilities. These characters are the central focus in the cover, highlighting the action-oriented game, unique skills and the strategic theme of the game. The logo of the game is also important because is centrally placed and it is placed on the cover to ensure the brand recognition. The symbol before the text it is instantly recognized by the fans and signifies the game's identity. The use of weapons and magical items highlight the game's focus on combat and strategy through different methods. The background of the cover contributes to creating the fantasy setting of the game, enhancing the sense of epic and mythical world. Overall, the cover of the

game is effective because it captures the essence of the game, focusing on fantasy aspects and strategically gameplay.

In terms of reviews, the game is really good in the eyes of players, having 22,573 recent reviews that are "Mostly Positive" and 2,239,406 all-time reviews that are "Very Positive". On Metacritic, the game has 90 score which is a pretty huge score for a game published in 2013. The most popular used tags that define this game are: "Free to Play", "MOBA", "Multiplayer", "Strategy" and "PvP". Amongst these tags we can observe that there are some characteristics that define this game genre, which are "MOBA" and "Strategy". The developers define the genre of this game at the bottom of the page, including the game in the "Action", "Strategy" and "Free to Play" categories.

Regarding the visuals, this game uses 16 visual elements including: videos and screenshots. There are some aspects that can be observed by looking at those visuals and that can help the player to understand the gaming environment. These screenshots include: characters, environment, map, items, effects and more. Almost every video focuses on the story and present the game in a cinematic mode, using only a few shots from the game itself and more cinematic shots for presenting the world.

There are some Steam features that can be used on this game, including the Steam Trading Cards, Steam Workshop and SteamVR Collectibles. In addition, there is a special feature from Valve Company called "Valve Anti-Cheat enabled" which was also available for the Counter-Strike: 2. In terms of languages, this game supports a total number of 8 languages from all-over the world.

In terms of system requirements, the game is supported on Windows, Mac OS and SteamOS with Linux. The player should have a minimum of Windows 7, 4 GB RAM and at least 60 GB available space. This game did not receive any Steam Award in the last years, but it is still one of the most popular games from this platform.
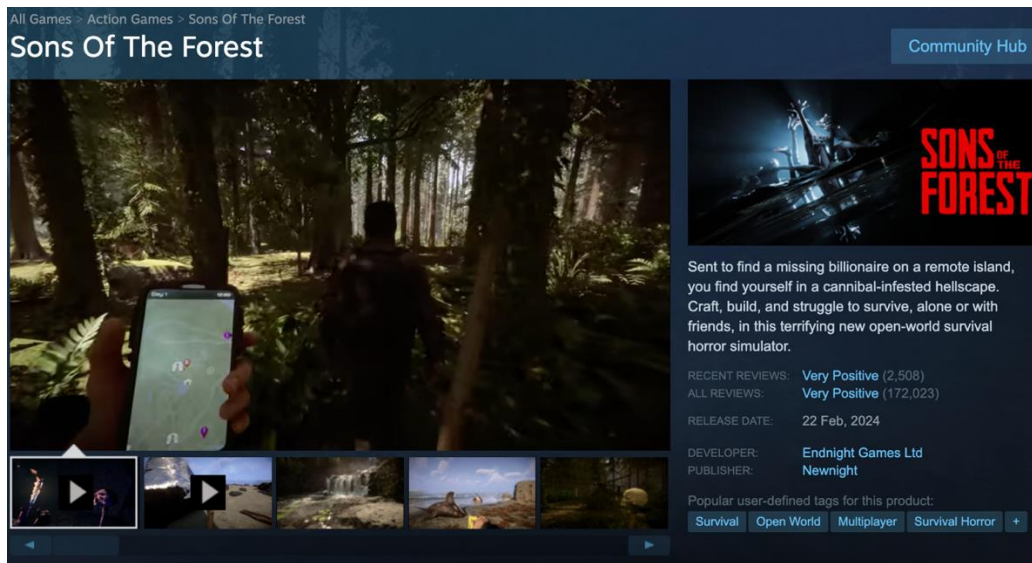
d.   Sons of the Forest

Figure 17 – Screenshot from Sons of The Forest on Steam

Sons of the Forest is horror survival game that follows the story of the main character which is sent on an island to find a missing billionaire. The island is infested with cannibals and the player should craft and built some structures and weapons in order to survive. This game can be played alone or could be played with a friend.

The cover art from "Sons of the Forest" is designed to help the player understand the game's vision, focusing on the mysterious and unsettling atmosphere. The style adopted by the designers is a gritty, realistic style, focusing on creating a dark atmosphere. The details capture the tension of the game, using the light elements and the color red for the title. The color palette is also very important here, because the horror games all should reflect some sense danger and unknown. In this game, the color palette is predominated by shades of gray, brown, black and blue. These colors are combined in different scenes to create a somber mood, fitting for this type of game. The contrast is also very important here because the dark background, the designers can use the light to highlight some key elements of the game. In general, the designer used the light to highlight some elements that should be more visible. In this cover, the light helps the player understand the idea of the game and focus on some pair of hands that are rising from the ground. This image symbolizes the danger of this game and highlights the survival aspect of the game. Moreover, this element creates a specific atmosphere for a horror game, creating a sense of fear and anticipation.

Sons of the Forest was released on 22 February 2024, but it has an early access release date in 23 February 2023 and it was developed by Endnight Games Ltd as a sequel to the "*The*

Forest" by the same developer. The game was published by Newnight and this is one of their most popular games. In terms of reviews, the game is well regarded in the eyes of players, receiving mostly positive feedback. The game has "Very Positive" reviews both from recent reviews (2,442 reviews) and all reviews (172,071 reviews). The most popular tags associated by the players are: "Survival", "Open World", "Multiplayer", "Survival Horror". Here, we can observe that the main features of this game in the eyes of the players are focused on the gaming experience, rejecting the quality of the graphics or the performance. All tags mentioned above are related to the game's genre, including key words, such as: "survival", "horror" and "open world". In the lower part of the page, the publishers included the genre for this game, including the following key words: "Action, Adventure, Indie, Simulation".

The visuals are well chosen by the publisher and reflect the main aspects of the game. The publisher uploaded 15 screenshots and videos from the game. These visuals reflect the main aspects of the game, including: the story, the plot, some building and hunting scenes and some screenshots of the environment, characters, weapons, inventory and special effects.

Below this initial part, on the right sidebar we can observe the Steam functionalities of the game. Here, the player can watch and see if the game is suitable for his interests and desires. This game can be played as a single-player game or as an online co-op game. In addition, the game has full controller support for Xbox and PlayStation and the game can be family shared. As for the Steam feature, we can observe that there are only two options available, Steam Achievements and Steam Cloud. The game supports 16 languages for interface and subtitles, but only English for the audio.

The players interested in buying this game should take a look on the System Requirement section where the minimum and recommended operating systems are presented. This game only works on Windows and the computer should have a minimum of Windows 10, with Intel Core i5, 12 GB RAM and at least 20 GB available space.

e.	PUBG: BATTLEGROUNDS

Figure 18 – Screenshot from PUBG: BATTLEGROUNDS on Steam

PUBG: BATTLEGROUNDS is a battle royale game that was developed and published by KRAFTON, Inc. The game was released in 21 December 2017 and has received many updated since then. The idea behind the game is that 100 players jump from a plane and land on various locations where they find weapons, ammunitions and other resources. With those resources, the player should eliminate the others and remain the last one alive. The publisher defined this game genre using the following tags "Action, Adventure, Massively Multiplayer, Free to Play". The most used user-defined tags for this game are: "Survival", "Shooter", "Battle Royale" and "Multiplayer".

The cover of the game combines different elements and create an overview of the game, preparing the player for a typical battle royale. The style of the cover features gritty and realistic elements suitable for the gameplay mechanics. The image is detailed and has a central character surrounded by an explosion that evoke a sense of combat and survival. The design aims to create a sense of action and adrenaline that prepare the player and introduce them to the PUBG's scenes. The color palette combines some muted colors with a high-contrast in order to draw player's attention to certain elements. The designer mixed neutral colors, such as gray and brown with blue and orange to create an impression of military realism with natural environments where battles take place. Gray and black are used to create a sense of tactical game, military oriented and the battle-royale style. The yellow and oranges

that can be observed in the explosion highlight key details and creating a sense of urgency and the competitive spirit of the game. The contrast is used to highlight the central character and important elements to make them stand out against the background. Elements such as the helmet or the weapon draw's player's attention and help them understand the general idea of the game. The following symbols can be observed in the cover: the central character, his weapon and gear, the background, the game logo and the explosion. The central character is iconic and he is represented as a soldier, wearing a weapon and tactical gear, but he is dressed up with a shirt and a tie. This aspect is iconic because it represents the idea of the game that anyone can play this game. The weapons and gear symbolize the game's focus on combat and the importance of weapons and gear in order to survive. These elements are also part of the military theme games. The background contains elements such as: buildings and landscapes, showing that the game has diverse scenes and creates some sense of realism. The logo is important because it is prominently displayed and it is instantly recognized by the players. The explosion creates a high-stake atmosphere suggesting the action of the game and the chaotic nature of battle royale.

Regarding the reviews, PUBG: BATTLEGROUNDS has mixed reviews, which mean that the numbers of positive and negative reviews are almost equal. This game has a total of 19,347 recent reviews and 2,361,793 all-time reviews.

In the right sidebar, the player can see the main functionalities of the game, including some Steam features and some playing aspects. Here, the player can observe that the game in an online PvP and it can be remotely played from a phone or tablet. In addition, Steam offers stats feature that let the player observe their progression in the game. This game supports 17 languages for the interface.

On the lower part of the page, in the System Requirements section we can observe that the game is only playable from Windows devices that has a minimum of Windows 10, Intel core i5, 8 GB RAM and at least 40 GB available space.

The game won an award from Steam for being the "Game of the year" in 2018.
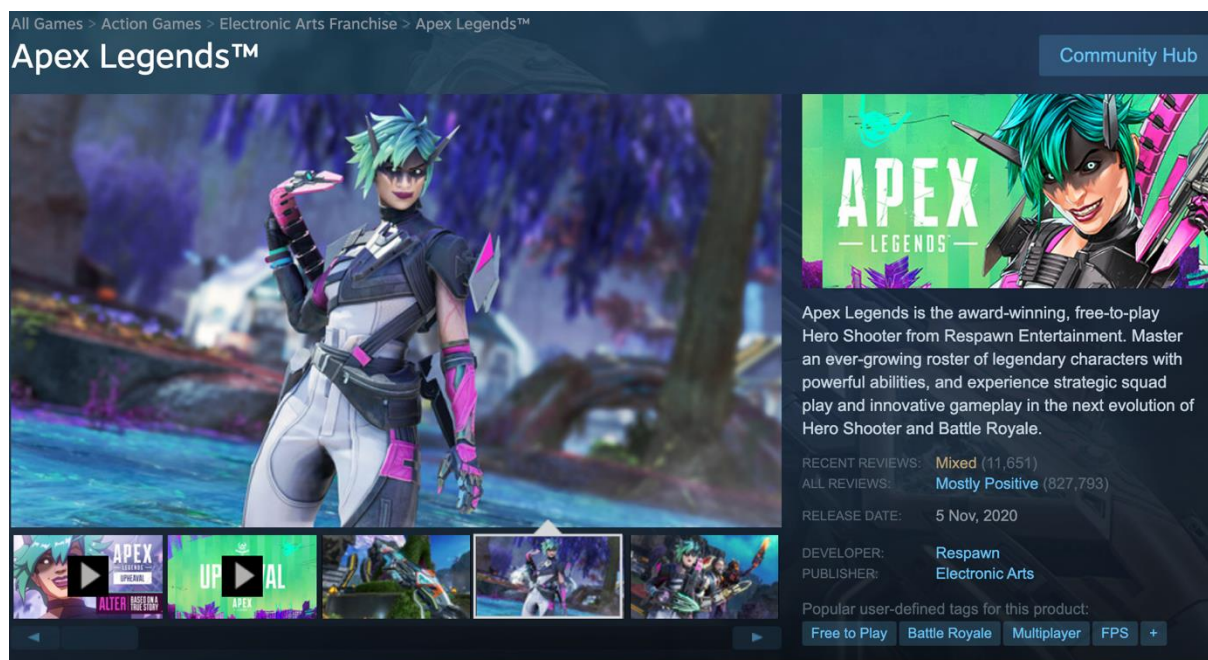
Figure 19 – Screenshot from Apex Legends on Steam

Apex Legends is a battle royale-hero shooter game which was developed by the Respawn Company and it was published by Electronic Arts on Steam in 5 November 2020. The idea behind this game is that the player choses a character to play with and use his power, strengths and weapons to fight with other players for fame and fortune. The developers defined the genres of this game including the following key words: "Action, Adventure, Free to Play". The most used user-defined tags for this game are: "Free to Play", "Battle Royale", "Multiplayer" and "FPS". Almost all these tags refer to the gaming experience and just one of them at the genre ("Battle Royale").

The cover of Apex Legends is designed to reflect its dynamic character and the fast-paced gameplay. The designers adopted a vibrant, stylized style and the characters are designed in detail, reflecting different personalities. This is a hero-based game and the designers build them so that the player can relate to the hero personality and his abilities. The color palette is appropriate for the theme, using bold bright colors, mixing pink, white and green. These colors help to create an eye-catching and energetic design, creating an overview of the game. The high-contrast is used to make the character and some objects to stand out against the background. The pink color symbolizes energy and excitement and combined with purple create a sense of action and adrenaline. The white color helps the design look

clean and it offer a modern look making the title stand out against the background. The green is the predominant color and it helps in creating some sort of dimension and emphasize the diversity and uniqueness of the game. The key elements of the cover are: the character (legend), the weapons, the logo and the background. The main element that is remarkable in the cover is the character (legends) that holds a weapon in her backpack and has a fighting face. Each character has another aspect, ability and weapon, making the game suitable for every player. The weapons and the gear show the player that the focus in this game is on combat and strategy. The logo is displayed using a modern font and a white color to stand out in the background. In addition, it is the most visible element when a player sees the cover.

The all-time reviews for this game are "Mostly Positive" by examining the reviews of 827,793 players. However, the recent reviews are "Mixed" by examining the reviews of 11,651 players. Some of the top negative reviews refers to the playing experience and describe the experience of playing with bots or with cheaters. This game received a score of 88 points on Metacritic.

Looking at the right sidebar, the player can observe some main functionalities of the game and some Steam features that are important for the gaming experience. Apex Legends can be played online PvP or online co-op. The game offers a full controller support for Xbox, Dual Shock and Dual Sense Controllers. There are some Steam features available, including steam achievements, steam trading cards and in-app purchases. The game received a PEGI rating that recommends that the game should be played only by players over 16 years old because of the violence and in-game purchases.

In the lower part of the page, the developers included the minimum system requirements section where the players can observe if the game can be played on his device. Apex Legends can only be played on Windows computers that have a minimum of Windows 10, Intel Core i3, 6 GB RAM and 75 GB available space.

In 2020, Apex Legends received the "Best game you suck at" award and received other 50 awards and nominations, including "Best multiplayer game" in 2019 and 2020 and Best Shooter game in 2019 by multiple companies.
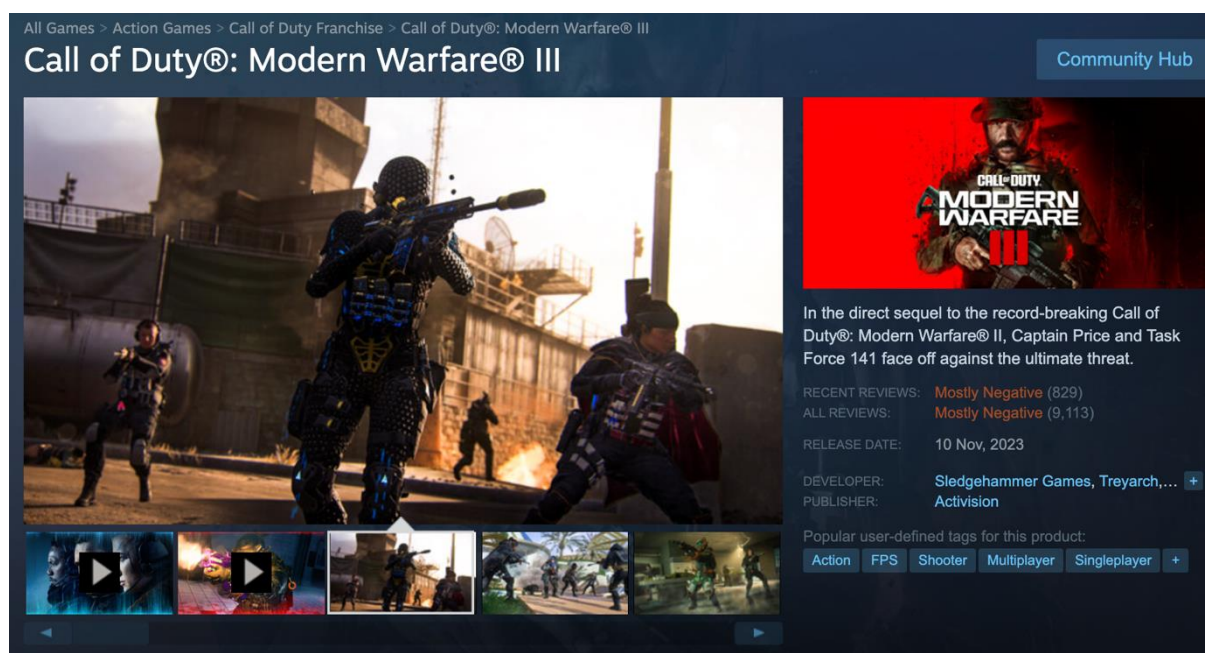
Figure 20 – Screenshot from Call of Duty: Modern Warfare on Steam

Call of Duty: Modern Warfare III is the third game in the series Call of Duty: Modern Warfare and it was developed by Sledgehammer Games, Treyarch, Infinity Ward, Beenox, Raven Software, Highs Moon Studios, Demonware companies. The game was published in 10 November 2023 on Steam by Activision. The idea behind the game is that the player is a part of a multi-national special operation unit that wants to track down a terrorist Russian man called Vladimir Makarov that wants to start a third World War. The publisher defined the game's genre using the tag "Action". The most used user-defined tags are: "Action", "FPS", "Shooter", "Multiplayer" and "Single player". The tag "action" and "shooter" refers to the game's genre and the others focus more on the playing experience. This game received a rating for PEGI which recommends that only players over 18 should play this game because of the violence, bad language and in-game purchases.

The cover of this game is designed to show the action nature of the game, using a hyper-realistic style, focusing on combat and military theme. The design is highly detailed and it features a lifelike character that is holding a realistic gun in his hands. He is standing in a dynamic pose emphasizing the idea of action and urgency. The color palette came to highlight more the urgency idea and setting the scene for the player. The color red highlights the survival aspect and the combat between the players than can spill blood. The black represents the serious and tactical nature of the game, emphasizing the gravity of actions. The

white color from the title provides a rich contrast against the darker background, making the title more observable and it ensure the brand recognition. The symbols that are used in this cover are: the main character, weapons and gears and game title. The character is in the middle of the cover, in a dynamic pose and equipped with modern military gear, including armor, helmet and an assault rifle. The realistic representation of the soldier emphasizes the game's focus on military tactics and combat. Moreover, the attention to details in the weapons and gear design highlight the game's theme and the importance of equipment in the game. The title is prominently displayed in a bold white text and it stand out from the background make it very noticeable by players.

In terms of reviews, the game is not so popular amongst the players because both reviews (recent reviews and all-time reviews) are defined as "Mostly Negative", which means that the majority of the players gave a negative review for this game. However, only 829 players left a recent review and only 9,113 players left a review.

On the right sidebar, the developer published some game functionality and some Steam features that are supported by this game. Here, we can observe that this game can be played in a single-player mode, an online PvP mode, an online Co-op mode and also cross-platform multiplayer. In addition, the game has a partial controller support, allowing the players to play from an Xbox controller. In addition, there are some Steam features that are supported by this game, including: Steam achievements, captions and in-app purchases. This game supports 15 languages for interface and subtitles and only 11 languages for the whole gaming experience, including interface, audio and subtitles.

In the lower part of the page, the developer included the minimum system requirements for the game. Thus, the Call of Duty: Modern Warfare III can only be played from a Windows computer that has the following system requirements: Windows 10, Intel Core i5, 8GB RAM and 149 GB available space.
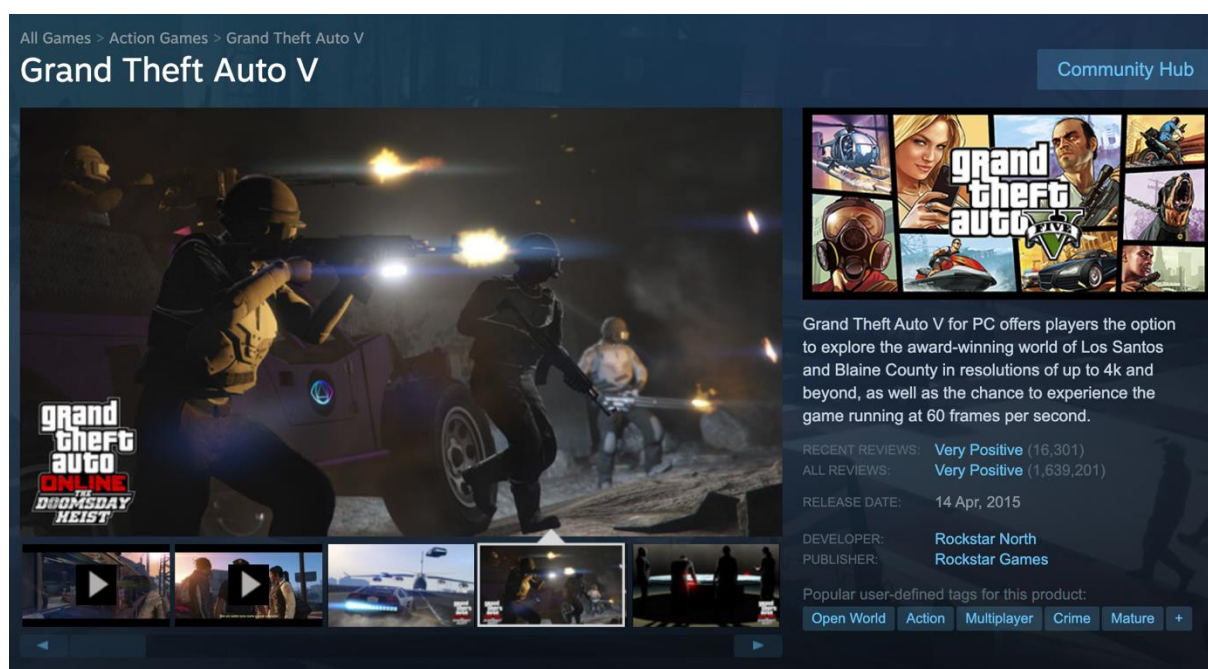
h.   Grand Theft Auto V

Figure 21 – Screenshot from Grand Theft Auto V on Steam

Grand Theft Auto V is an action-adventure game developed by Rockstar North and published on Steam by the rockstar Games Company on 14th April 2015. The story follows the journey of a fictional character of San Andreas called Michael De Santa who works together with a drug dealer and a street gangster for robbing banks and fight against the corrupted system. The publisher defined this game's genre using the following tags: "Action" and "Adventure". The most popular user-defined tags for this game are: "Open World", "Action", "Multiplayer", "Crime" and "Mature".

The cover of the game is constructed like a collage, in a comic-book style and it combines different aspects of the game, including characters, weapons, environments and activities. This style creates a sense of action and chaotic nature of the game. Moreover, this cover indicates that the game has a lot to offer, regarding the experience and storylines. The color palette was well chosen, using a variety of colors and a high contrast between them. The game designers did intentionally choose a range of colors because they wanted to reflect the dynamism of the game and the diverse nature of the gameplay. The contrast is well defined using the white grid lines, offering some sense of power to each scene. In addition, these gridlines offer a well-fitted overall design. The use of bright and bold colors was used to represent action, energy, danger and excitement. These feelings are all associated with different activities that are represented in the cover, such as: piloting a helicopter, driving a

car or a motorcycle. The use of orange, green and blue on each image background reflect the game's environments, including: urban, suburban and rural environments. The symbols presented in this cover are: characters, vehicles, weapons and environment. The cover features the three protagonists of the game: Michael, Franklin and Trevor in different places and perspectives. This method highlights the unique narrative structure where the players can choose to play with a different character, following their story and using their abilities. The use of vehicles, including car, motorcycles, helicopters and sky jets highlight the diversity in the game and the important role of transportation through the game. The use of weapons in the cover is also important because it highlights the action and crime of the game, inducing a survival theme. The use of urban and rural landscapes in the cover offers a wide-ranging opportunity of exploration and the diversity of the game. Overall, the cover of the GTA V game is well-constructed, focusing on action and diversity. The combination of the key symbols: protagonists, vehicles, weapons and environments highlight the core themes of action, adventure, survival and open-world.

In terms of reviews, Grand Theft Auto V is very popular amongst the players and it received a total number of 1,639,201 reviews since its launch in 2015 and they are defined as "Very Positive" which means that the majority of the players left a positive review. Moreover, the recent reviews are also "Very Positive" and a total number of 16,301 reviews were analyzed. On Metacritic, this game obtained a 96 score. This game obtained a rating for PEGI which recommends that only players over 18 should play this game because of the violence, bad language and online play.

In the right sidebar, the developer published some game functionalities and Steam features that are available for this game. Here, we can see that the game can be played in a single-player mode, an online PvP mode and an online Co-op mode. In addition, the game offers a full controller support for Xbox controllers. Moreover, this game can be remotely played from a phone, tablet or TV. There are also some Steam achievements available for this game. This game support 13 languages for interface and subtitles and only English for the full gaming experience, including the interface, audio and subtitles.

In the lower part of the page the developer included the minimum system requirements for a good gaming experience. Thus, Grand Theft Auto V can be played only from a Windows computer with a minimum of Windows 10, Intel Core 2, 4 GB RAM and 120 GB available space.

This game received the same award twice from Steam, one in 2018 and one in 2019, called "Labor of Love Award".
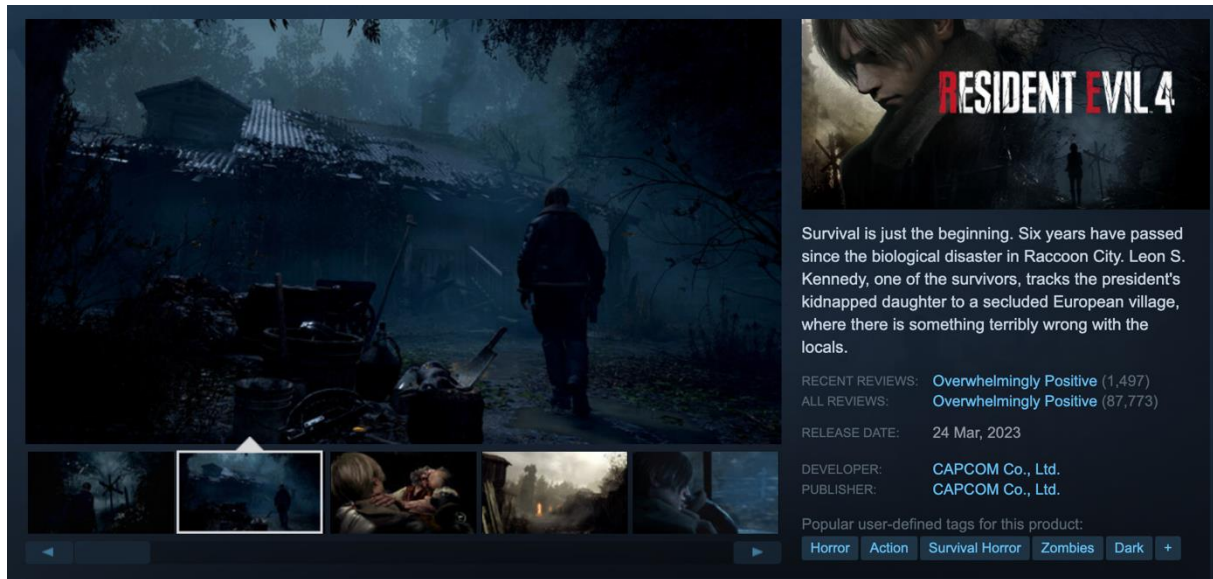
i.   Resident Evil 4

Figure 22 - Resident Evil on Steam

Resident Evil 4 is a survival horror game developed by Capcom and published on Steam by the Capcom Company on March 23, 2023. The story follows Leon Kennedy, a former police officer from racoon City who is on a mission to rescue the U.S. President's daughter, Ashley Graham, from a strange European village plagued by a violent cult known as Los Illuminados. The publisher defined this game's genre using the following tags: "Action" and "Adventure". The most popular user-defined tags for this game are: "Horror", "Survival", "Third-Person Shooter", "Remake" and "Single player".

The cover of the game features a dramatic and atmospheric design, emphasizing the tense nature of the game. The visual style is realistic and it reflects the horror theme of the game. The cover displays the protagonist, Leon S. Kennedy, standing resolutely with a determined look and a weapon in his hand. The background showcases the scary village, shrouded in mist and shadows, which hints at the lurking dangers and the game's dark tone. This cover style effectively sets the mood for a thrilling and suspenseful experience. The color palette uses dark and muted tones, with flashes of red and orange to symbolize danger and action. The design choices convey a sense of foreboding and intensity, fitting for a horror game. The symbols presented in this cover are: the protagonist, weapons, and the hostile environment. The cover highlights Leon, underscoring his role as the central character whose journey players will follow. The inclusion of weapons like Leon's handgun and the menacing backdrop of the village emphasizes the survival and action elements of the game. The use of

the misty and shadowy village setting indicates the game's focus on exploration and the constant threat of danger.

In terms of reviews, Resident Evil 4 is highly acclaimed among players and has received a total number of 45,321 reviews since its launch in 2023, with the overall reception defined as "Very Positive", indicating that the majority of players left favorable reviews. Moreover, the recent reviews are also "Very Positive", with a total number of 2,301 reviews analyzed. On Metacritic, this game obtained a score of 93, reflecting its critical success. The game has a PEGI rating of 18, recommending that only players over 18 should play this game due to intense violence and strong language.

In the right sidebar, the developer published some game functionalities and Steam features that are available for this game. Here, we can see that the game can be played in a single-player mode only. It also offers full controller support for Xbox controllers, allowing for a flexible gaming experience. Moreover, this game supports Steam achievements and Steam Cloud, enabling players to save their progress across different devices. The game is available in 12 languages for interface and subtitles, with full audio available in English, Japanese, French, German, and Spanish.

In the lower part of the page, the developer included the minimum system requirements for a good gaming experience. Thus, Resident Evil 4 can be played on a Windows computer with a minimum of Windows 10, Intel Core i5-7500, 8 GB RAM, and 50 GB available space.

This game received the "Best Remake Award" from Steam in 2023, acknowledging its successful update and reimagining of the classic horror title.
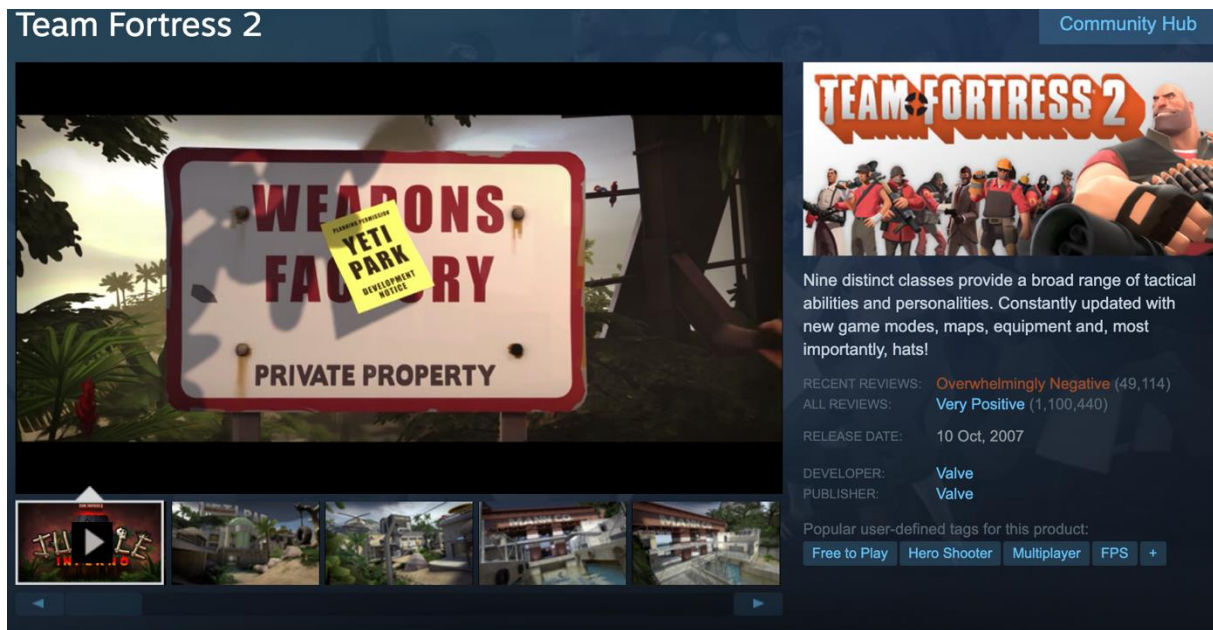
Figure 23 – Team Fortress 2 on Steam

Team Fortress 2 is a team-based first-person shooter game developed and published by Valve on Steam on October 10, 2007. The game revolves around two opposing teams, RED and BLU, competing in various game modes such as Capture the Flag, Control Point, Payload and more. The publisher defined this game's genre using the following tags: "Action", "Free to Play", and "Multiplayer". The most popular user-defined tags for this game are: "Team-Based", "Shooter", "Class-Based", "Cartoony", and "Competitive".

The cover of the game features a colorful and stylized art design, capturing the game's unique and humorous tone. It prominently displays the nine iconic characters, each representing a different class, standing together in a dynamic pose. The background showcases various elements of the game's industrial and battlefield environments. This cover style effectively highlights the game's chaotic nature. The color palette uses bold and vibrant colors, with a strong contrast between the characters and the background. The design choices emphasize the diversity and individuality of each class, while also highlighting the team-based aspect of the game.

The symbols presented in this cover are: characters, weapons, and environments. The cover highlights the diverse cast of characters, underscoring the importance of teamwork and class selection in the game. The inclusion of various weapons and equipment carried by each character emphasizes the game's action and strategic elements. The use of industrial and

battlefield settings in the background indicates the wide variety of maps and scenarios players will encounter.

In terms of reviews, Team Fortress 2 is immensely popular among players and has received a total number of 842,531 reviews since its launch in 2007, with the overall reception defined as "Very Positive", indicating that the majority of players left favorable reviews. Moreover, the recent reviews are also "Very Positive", with a total number of 12,304 reviews analyzed. On Metacritic, this game obtained a score of 92, reflecting its critical acclaim. The game has a PEGI rating of 16, recommending that only players over 16 should play this game due to its cartoon violence.

In the right sidebar, the developer published some game functionalities and Steam features that are available for this game. Here, we can see that the game can be played in a multiplayer mode only. It also offers full controller support for Xbox controllers, allowing for a flexible gaming experience. Moreover, this game supports Steam achievements, Steam Trading Cards, and Steam Cloud, enabling players to save their progress across different devices and trade items within the Steam community. The game is available in 25 languages for interface and subtitles, with full audio available in English.

In the lower part of the page, the developer included the minimum system requirements for a good gaming experience. Thus, Team Fortress 2 can be played on a Windows computer with a minimum of Windows 7, Intel Core 2 Duo 2.4 GHz, 2 GB RAM, and 15 GB available space.

This game has received several awards over the years, including the "Best Multiplayer Game" award from various gaming publications and the "Choice of the Year Award" from Steam in 2010.

7.	Analyzing results

Following the analysis, we discovered several interesting things about the games analyzed and about players' gaming tendencies. In the next part of the analysis, I will present some of the findings that I found more interesting in the quantitative and qualitative research.

In the next part of the paper, I will focus on answering the research questions chosen for this study. Thus, we will see in perspective which games are preferred by players and why. The first research question I wrote was "What visual styles dominate the most popular games on the Steam platform, and how has this trend evolved over time?" After analyzing the most popular games on the steam platform according to the number of concurrent users, I

noticed that there are several recurring styles that are adapted according to the theme of each game. Thus, the most common visual styles are: fantasy, realistic and stylized. The fantasy style is found in Hogwarts Legacy and Dota 2. The realistic style is found in Counter Strike Global Offensive, Sons of the Forest, PUBG: BATTLEGROUNDS, Call of Duty: Modern Warfare III, Grand Theft Auto V and Resident Evil 4. The stylized style can be found in the following games, being combined with other styles: Apex Legends, Dota 2 and even Team Fortress 2. Each of these styles reflect the theme and the main idea of the game, introducing the player to the game and giving them the first essential things they need to know about the gameplay. Thus, we can see that some games that are part of franchises or from bigger companies keep a certain style in order to be consistent and maintain the main idea of the game. Games such as Counter-Strike Global Offensive, PUBG: BATTLEGORUNDS, Call of Duty Modern Warfare III, Grand Theft Auto V or Resident Evil 4 are included into this category. The evolution of these visual styles is best seen in these games, as they are part of a category of several games with the same theme and style. However, we can see that other games also use styles that are quite popular in the gaming industry and we can see an evolution over time. In the next part I will detail these changes. Hogwarts Legacy features a detailed, immersive, and realistic depiction of the Harry Potter universe, combining high-fidelity graphics with fantastical elements. Over time, games have increasingly leveraged advanced graphics technologies to create more immersive fantasy worlds. Counter Strike: Global Offensive maintains a consistent realistic visual style, focusing on detailed environments and realistic weapon models. The evolution has seen improvements in texture quality and lighting effects while maintaining a performance-friendly approach for players, ensuring them a good competitive experience. Dota 2 employs a vibrant, stylized aesthetic with exaggerated characters and colorful environments. Over time, the game has enhanced its visual clarity and effects to improve readability and appeal without deviating from its stylized roots. Sons of the Forest uses highly detailed, realistic graphics to create an immersive and terrifying experience. The trend in survival horror games has moved towards more lifelike visuals to enhance the fear factor and immersion. PUBG: BATTLEGROUNDS started with a relatively realistic visual style and has gradually improved in terms of textures, lighting, and environmental detail. The trend has focused on realism to enhance the tactical gameplay experience. Apex Legends combines realistic elements with a stylized, slightly cartoonish approach, creating a unique blend that appeals to a broad audience. The trend here reflects a balance between visual appeal and performance optimization. The Call of Duty series has consistently pushed the boundaries of realistic military visuals, with each iteration bringing

more advanced graphics, including detailed character models and realistic environments. The trend continues to emphasize cinematic realism. Grand Theft Auto V features a highly detailed and realistic depiction of urban environments. The evolution has included enhancements in textures, lighting, and weather effects, maintaining Rockstar's commitment to creating lifelike open worlds. The Resident Evil series, particularly with its remakes, has evolved to adopt highly realistic graphics to amplify the horror experience. The trend has moved towards greater realism to increase immersion and terror. Team Fortress 2 distinct cartoonish and exaggerated visual style has remained largely unchanged, which helps it stand out. This approach has influenced other games to embrace stylized visuals to create a unique identity. As a conclusion to this question, many games adhere to more realistic graphics driven by the advancements in hardware and graphics technologies, enhancing visual fidelity. Although, there are some games like Team Fortress 2 and Dota 2 that maintained the stylized aesthetics to create a unique and distinctive identity and improve performance, ensuring accessibility to a wider audience of players.

The second research question was „How do different genres of games on Steam utilize visual elements such as illustration, graphics, and animations to attract and retain users?". All the games analyzed in detail from the top most popular games use some common visual elements, including: screenshots from the games, cinematic presentation videos, images of different essential aspects of the game, such as: characters, weapons, locations, etc. The first analyzed game was Hogwarts Legacy which is an action and adventure game which used a number of 6 images, screenshots and cinematic videos from the game to present it to the players. It is important to observe how all these visual elements were arranged and what they present. For this game, the publisher chose to begin with an introductive cinematic video presenting the game's story. The other 5 visual elements are all images from the game, showing different aspect of the game. The first image presents the first environment, the Hogwarts castle in which the main character will study and learn the magical spells. The second image represents the second environment which is somewhere outside. In this image, the main character is represented flying on a dragon. The third image presents some characters in the school's library using some spells. This image presents the weapons that are included in the game. The last two images present some mobs from the game, respectively a dragon and a gnome. Each of these images present a certain aspect of the game whether character design, environment or weapons. The second analyzed game was Counter Strike: Global Offensive which is a first-shooter action game. Thew publishers decided to use 23 visual elements to present the game to the players. The first two visual elements are cinematic

video that presents the story of the game and the mission of it. The next 19 visual elements are images that presents the gaming experience in the following order: the first three images present the characters and enhances the multiplayer mode, the next 6 images present the weapons, explosions and the shooting experience, the next 3 images present the different environments (maps) from the game and the least visual elements presents some important details, such as inventory, visual effects or awarding system. The third game on the popular games scale was Dota 2, which is an action game. The game's publishers chose to present the gaming experience using 15 visual elements, including cinematic videos and images. The first two visual elements were cinematic videos introducing the player to the game's story and environment. The next 10 visual elements are images or screenshots from the game showing the characters, map design, inventory and weapons. The last three visual elements are videos that presents some mobs and combat experiences. The next game on the scale was Sons of the Forest which is also an action game that follow a horror theme. The publishers chose to present the story of the game using two cinematic videos in which the player gets to familiarize with the game's story and get to know how will the gaming experience be. The next 11 visual elements are images that represent the environment, the characters, weapons and some combat scenes. The last two visual elements are cinematic videos showing some scenes from the game. The next game on the popularity scale was PUBG: BATTLEGROUNDS which is also an action game. This game is presented by the publishers using 24 visual elements. The first visual element is a video that showcase the story of the game and present the game in an artistic way, using a K-pop song. The next 23 elements are images and screenshots from the game that highlight some important aspect, such as: characters, weapons, environments, combat scenes, visual effects and vehicles. The sixth game on the popularity scale was Apex Legends which is also an action game. This game is presented by the publishers using 8 visual elements, including videos and images. The first two visual elements are cinematic videos presenting the game's story. The next 5 visual elements are images from the game showcasing the characters design, combat experience and the weapons. The last visual element is like an outro of the game highlighting the key elements of the game and the unique gaming experience. The next game on the scale is Call of Duty: Modern Warfare III which is also an action game. The publishers decided to present the game using 20 visual elements, including videos and images, The first two visual elements are cinematic videos that showcase the story of the game. The next 10 visual elements are screenshots from the game that showcase the characters, weapons, environment and combat experience. The last 8 visual elements are video that presents different aspect and details from

the game. The next game on the scale is Grand Theft Auto V which is also an action game. The publishers decided to present the game using 105 visual elements, including 29 videos and 76 images and screenshots from the game showcasing the characters design, environments, weapons, vehicles and combat experience. The ninth game from the scale is Resident Evil 4 which is also an action game. The publishers decided to present this game by 17 images and no videos. These images present the main characters, the combat experience and the environments details. The last game on the scale is Team Fortress 2 which is also an action game. The publishers decided to present this game by using 32 visual elements, including 17 video and 15 images. The first visual element is a cinematic video presenting the game and introducing the player in the gaming universe. The next images present some details from the game, including characters, weapons and more. Concluding this answer, the analyzed games were all action games, highlighting different themes and stories. After this analysis, we can observe that there are some aspects regarding the visual elements that keep repeating on the most games. These elements include: cinematic videos to present the game and the story, screenshots and images from the game presenting the environment, the characters, the monsters, the weapons, the combat experience and some visual details. Each company decide what they want to put in the presentation and in which order, but we can observe that these elements are presents in almost all of the analyzed games.

The third research question was "Which are the most used color palletes and font designs for the presentation of the most popular games?". To answer this question, we should take a look at the qualitative research part at each of the games from the top 10 most popular games based on the Concurrent user. For each one of them, I have already observed the dominant colors from the cover and the style of the title. Thus, I will summarize in the next part the results of the analysis for a better perspective using a table. The table can be observed in the *Figure 24*.

Game name	Color Palette	Title color and style	Symbol
Hogwarts Legacy	Blue, green, gray	Gold	Yes
Counter-Strike: Global Offensive	Gray, orange, brown, black	Black & White	No
Dota 2	Red, blue, green, gold	White	Yes
Sons of the Forest	Gray, brown, black, blue	Red	No

PUBG: BATTLEGROUNDS	Gray, black, orange, yellow	White	No
Apex Legends	Pink, white, green	White	No
Call of Duty: Modern Warfare III	Red, black, white	White	No
Grand Theft Auto V	A large variety	White	No
Resident Evil 4	Blue, orange, black	Red & white	No
Team Fortress 2	Red, gray, white	Orange	No

Figure 24 – Popular game's most used colors in cover design and title

Taking a look at this table we can observe that there are some visual aspects that keep repeats. A first element is the white title which repeats on 7 out of those 10 analyzed games. Another important aspect to mention here is that the color palettes are chose to highlight the theme of the game and to transmit a certain feeling to the player. For example, this aspect can be observed on the horror games Sons of The Forest and Resident Evil 4 in which black and blue has an important role introducing the player to the gaming atmosphere and inducing a feeling of mystery and fear.

As future improvements or additions to this study, the chosen analyzed period could be longer, such as the last 5 years, in order to observe some trends in the industry. Furthermore, for qualitative analysis, user comments can be analyzed, using a KH Coder to analyze the frequency of good and bad comments and which are the most used words to describe a game. This would be interesting because we would see what aspects are most targeted when a user likes or dislikes a game. Furthermore, for a better understanding of the differences, a comparative analysis can be made between two video game platforms to see if user preferences are different and if they are influenced by platform strategies such as launch events, game discounts, seasonal promotions or others.

8. Conclusions

In conclusion, the video game industry has undergone many changes over the years and is constantly evolving, improving the gaming experience for players. It is to be appreciated that game developers are diverse and are aiming to create games of the highest quality and performance that allow all gamers to play on any operating system. As we could observe in this study, developers prefer to create games that are part of the action games

category and opt for Windows operating systems. However, they try to create games that are accessible to everyone, in terms of price and quality/performance ratio. On the visual design side, publishers have tried to choose color palettes to resonate with the theme of the game. Furthermore, we saw that in the 10 games analyzed there was a preference for titles that use the color white and for a simple and modern design for them. The colors were chosen in a suggestive way, designed to suggest the theme of the game and to introduce the player into their universe, conveying certain moods. As popular visual ways of presenting the game, we notice that in most cases they opt for cinematic videos that introduce the theme of the game and present its story, using screenshots from the game to show some key elements, such as: inventory layout, images from the player's perspective, combat scenes, environmental details, weapons design and more. Furthermore, the publishers have added suggestive screenshots of the game, giving more details of the game, such as: travel alternatives (vehicles, mythical creatures) or detailed character design for the protagonists or for the enemies, which are usually monsters.

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