# Abstract

* Summary of the whole report

# Introduction

* Introduction to project

# Literature Review

## Review of Domain

Having a deep understanding of the project is crucial for any project or software development, especially for developers, therefore a literature review is needed to ensure that the domain knowledge is deep enough to develop and create an as good as possible outcome of the project.

In this case, having understanding of the domain of the project can allow me to have effective communication with my professors, tutors that I will present my final product to, I will be able to explain to them complex concepts and ideas clearly in the project as well as answering given questions correctly. For personal benefits, better understanding of the domain will lead to a better understanding of the project requirements, which eventually will lead to a better final result of the project that can satisfy not only me but also the stakeholders.

What the domain review of my project will cover can be scaled from general to specific, as said, some of the things I will discuss are the video game industry, types of games, player’s behavior and preferences, the game development trends and finally lead to market analysis.

All of the topics I considered including in this domain review section will help me broaden my domain knowledge and effectively develop.

Most of us might have already known that video games have served as a driving force behind the development of numerous technologies ever since they first emerged as a new platform for imagination and ingenuity. The video game business has grown from obscurity to a multibillion dollar behemoth in the forty years since its inception. Worldwide, players of all ages, both male and female, are playing games more quickly than ever before. The ability of a business to succeed in a market that is rapidly changing will depend on how well it can keep up with the ongoing changes in the market environment. It can be feasible to understand the industry's history and future course by looking at historical patterns and technological developments. "Video games" have transformed into interactive works of art that inspire users to make discoveries and come up with new ideas. Games appeal to us because they are enjoyable, social, and competitive, which is why they have gained so much popularity in recent years.

* Before

The first game was played in ancient Egypt around 3500 BC. A game is something you can play. Everyone around us is constantly having fun playing games. Everywhere we look, there is a game to be found. Why do we want to spend time with them? What is it about them that draws us in? They force us to act, engage in competition, and work together in order to exist. Given that we constantly try to convert everything into a game, it is not surprising that our excitement for gaming has spilled over into the virtual world. Video games have advanced for a variety of reasons ever since they were first created. (Liang, 2022) [1]

Going back to when video games actually came from and it was the aftermath of World War II, “video games” then were not on a console or any handheld device but only a weapon created by the United States to serve the US Navy during the World War II, the Torpedo Data Computer in 1938 utilizing trigonometry for calculating information on hitting a moving target. Around 1947, Estle Ray Mann and Thomas T. Goldsmith filed a patent for the “Cathode ray tube Amusement Device”, this invention laid the foundation for the future of gaming with a simple gameplay of aiming a missile at a target, played on a small box. It was not until 1962 when a group of MIT students created a computer game called “Spacewar” that gaming would pick up. Later on the early 1970s a game called “The Odyssey” developed by Sanders Associates served as the inspiration of Atari’s Pong, released in 1972 captured the audience’s interest with simple gameplay mechanics and it became one of the iconic games in the video games history. Following are the creation of other notable video games which are Space Invaders, Pac-man, Donkey Kong that led to the establishment of arcades for those named games to be played in. Overtime, companies realized that gaming was not just an entertainment activity but also a profitable industry. However, due to an abundance of oversaturation, similar and poorly made games that nearly led to the demise of the industry in 1983 and Nintendo’s release of the Nintendo Entertainment System in 1985 revived gaming, with the implementation of regulations on developers to prevent the issues that almost destroyed the industry before while releasing iconic titles like Megaman, Super Mario and The Legend of Zelda, Nintendo secured a high position in the industry. Furthermore, Nintendo’s Game Boy also expanded the company’s influence, laid the foundation of a gaming empire and later on more big companies that we know today came into the industry, with Sony’s Playstation, Microsoft’s Xbox, Sega’s Dreamcast, etc. (Brian Pineiro, Steven Keehner, 2018) [3]

* Now

At the moment, video games has changed more than we can ever imagined if we were there when it was first created, many new genres, can be played online, cross-platform on many types of devices, etc… Nowadays, mobile phones have developed into an essential component of our daily life, providing a wealth of entertainment and information. These gadgets have developed from straightforward communication tools into complete entertainment hubs, offering accessibility to music, internet surfing, chat, and a wide variety of games, all of which are readily available whenever and wherever.

A yearly study by the Entertainment Software Association (ESA) found that 35% of frequent gamers now prefer using their cellphones than traditional gaming consoles. This change is partly attributable to how handheld and mobile technology has changed how individuals interact with games. Gamers are no longer need to purchase specialized gaming consoles like the GBA and PSP or to play exclusively on a TV or computer screen. (wrappz, 2016) [2]

Sales of Sony's and Nintendo's most current portable consoles were poor, and both firms blamed the drop on a rise in smartphone gaming. In an effort to revolutionize the market, Sony replied by producing the PS Vita Slim. While mobile game makers prosper, major console video game firms struggle to compete. With 430 different games being downloaded everyday from the App Store, the mobile gaming market is fast growing. This trend is supported by Konami Corporation's transition from AAA games to smartphone gaming. The CEO of Konami believes that smartphones and mobile devices will play a major role in gaming in the future since they enable multiplayer games, connect players throughout the world, and complicate conventional market segmentation. However, according to Peter Warman, CEO of Newzoo, mobile gaming will not take the place of PC or console gaming. According to surveys, devoted players prefer to keep their consoles. According to Newzoo Research, mobile games accounted for roughly 30% of the market in 2016 , while console games continued to hold a sizable market share, accounting for about 46% of revenues. Companies were producing smartphone apps alongside their games in order to maintain the appeal of PC and console gaming. By permitting the integration of mobile and console gaming, this technique gives players additional alternatives and improves the entire gaming experience. (wrappz, 2016) [2]

* Future

The video game industry's future has never seemed more rosy. The creative landscape is changing as a result of technological advancements. The business is changing due to a new generation of platforms that let users assume the role of artists. Despite long-standing dominance by Sony, Nintendo, and Microsoft in the "console war," PC and mobile gaming are now posing a threat to console gaming's future. The three major console makers need to act to stop the rise of PC and mobile gaming due to the ongoing platform battle. However, since the release of Sony's PS4 and Microsoft's Xbox One, PC gaming has dominated the market. Moreover, the future of video games might not only about PC or console and mobile games, there would also include the presence of Virtual Reality, Augmented Reality, Metaverse, etc.. the three mentioned were only ideas, concept that developers, scientists, engineers would said before that they would arrive in the near future, and now they are already and being implemented, VR has been used in various fields not only for entertainment which is gaming, it is being used for education, healthcare, military, etc.. Augmented Reality with PokemonGo as a famous example, a game with global popularity around 5 years ago and Metaverse, ideally the combine of both VR and Augmented Reality, is best understood as an online cyberspace, the hints are increasingly evident from Roblox, Fortnite though we may be a long way off from that and just like virtual and augmented reality, it will be used for more than just gaming. (Koss, 2023) [4]

As said about the rising pace of diffenrent gaming devices besides consoles at the moment, there isn’t just some notable names from the past decades, Tencent, Sony, Apple, Microsoft, NetEase, Google, Activision Blizzard, Electronic Arts, Nintendo, and Take-Two Interactive were the top 10 gaming firms by revenue in the first quarter of 2023. Tencent produced revenues of $7,556 million, while Sony came in second with $4,380 million (Newzoo, n.d) [5].

People have been playing electronic games since they first appeared, regardless of the type of console. The gaming business has progressed to this point using a variety of platforms, and it is now clear that games (in any form) will survive. As for the platforms, it is expected that console manufacturers will take action to meet modernity's demands. Gaming will continue to develop, become more sophisticated, and provide greater enjoyment. The platform on which games are played today won't matter in the future. Newer trends, integration, and innovation are the key to the gaming industry's future. The platforms will just increase the entertainment value. Games on consoles and smartphones will only be able to come together as a single entity with the help of interactive devices that can communicate with one another and other technology. Only innovative businesses will continue to be successful in maintaining their market share since gaming is here to stay and players will expect change. (wrappz, 2016) [2]

So, from its inception to its conclusion, the video games industry is being revolutionized with competitive companies, challenging one another to create innovative game equipments, devices, ideas and the technology they can bring to the market will eventually aid society in many ways just like those discussed.

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* ESports and the diverse types of games, player’s preferences.

After discussing with statistics about the industry history and nowadays, we should also step further to why the gaming industry grow. It isn’t only the forward march of technology which has been a major contributing factor to its success but also the community, eSports and the diverse types of games, player’s preferences.

* Esports

With video games becoming widely available and recognizable as the industry is prosperous, Esports is also a rising worldwide phenomenon. ESports is a type of sport where the main features of the sport are facilitated by electronic technology. In more concrete terms, eSports is the term used to describe professional and amateur competitive video gaming that is frequently organized by various leagues, ladders, and tournaments, and where players typically belong to teams or other'sporting' organizations that are sponsored by different business organizations. Electronic sports, or eSports, have experienced one of the fastest rates of growth in recent years thanks to the development of online gaming and broadcasting technologies. (Juho Hamari, Max Sjöblom, 2017) In 2023, it is anticipated that the global esports market would generate US$3.8 billion in revenue. By 2027, it is anticipated that this market would have grown by 9.54% per year, reaching a projected market size of US$5.4 billion (Statista, 2023) [7].

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Description automatically generated

In the upcoming years, eSports will inevitably draw a growing number of spectators because to its accessibility. There were slightly about 400 million eSports fans and casual watchers worldwide in 2019. By 2024, it is anticipated that there would be over 285 million regular viewers of eSports worldwide as well as about 291.6 million occasional viewers, assuming the current growth rate continues. Battle royale games like Fortnite and Call of Duty: Warzone are among the most played by eSports players and spectators.

The greatest players in the world are now able to make a livelihood playing video games thanks to the growing market, which was almost unimaginable in previous decades. Therefore we will also need to discuss about the player’s behaviour and preferences towards video games beside entertainment. (Statista, 2023) [7]

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* Types of gamers and types of games

The Games User Research (GUR) community is very interested in learning why individuals play games and what kinds of games or mechanics they prefer. This information is crucial since it enables player-centric design and aids in my creation of games that are better suited to the needs of the modern audience. Based on Bartle’s work, early studies about what players enjoyed on Multi-User Dungeons and BrainHex project we have the Player Traits Model, there are 5 player traits which are Aesthetic oriented, player with this attribute value the aesthetic and auditory components of games, including world exploration and the appreciation of graphics, sound, and art. Narrative players, players who score highly on this metric favor games with complicated plots, Goal oriented players are those who find satisfaction in completing quests, missions, and collections, they strive to complete everything, furthermore players with a high level of Social orientation favor playing games with others, whether in-person or online. They appreciate competitive and multi-player gaming communities and Challenge oriented players, they look for demanding and intense gameplay in difficult games. (Gustavo F. Tondello, Lennart E. Nacke, 2019) [8]

So for now I have known that the type of players, gamers that I aim to provide my game for are the Aesthetic and Goal oriented ones.

* Types of games -> My type of game

Although video game genres used to be highly distinct, this isn't the case now. Understanding different genres and subgenres is becoming more and more important, especially as game developers continue to mix and match various game kinds in novel and surprising ways.

As a result, the video gaming industry and the game genres are continually changing and updating and I will only name the most relevant ones, which are Sandbox, FPS, RTS, Moba, RPG, simulation and sports, puzzlers, action-adventure, survival, horror and platformer.

* My Type :

My type in general is a combination of platformer and action-adventure with puzzlers, however, to be specific we will need to discuss more.

Link : <https://www.statista.com/statistics/421848/game-revenues-global-companies/>

## Review of Technologies

* Review related technologies
* Compare, pros / cons

(Don’t use the section name as “Review of Technologies”. Change to your specific problem)

## Review of Methodologies

* Review related methodologies
* Compare, pros / cons

## Choosing solutions

* Discussion of your chosen technologies / methodologies

# Requirement Analysis

## Similar application 1

## Similar application 2

## Conclusion

* Confirm your application features
* What is your improvements / modification / localization / …?

# Software design

## Architecture (optional)

## GUI (optional)

## DB (optional)

## UML (optional)

# Software implementation

## Development environment

## Important technical problems & solutions

## Test (optional)

## Results

# Evaluation and conclusion

## Evaluation of results

* Pros / Cons of your application

## Conclusion

* Lessons learnt
* Problems / difficulties
* Future improvements
* Conclusion

# Appendix

* Final plan
* Screenshots (optional)