Master Thesis

The evolution of the gameplay: what impact on purchase intention and player emotions?

Author : Julien Guillemoto

Academic Director : Catherine Reffet

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Parvis de la defense, 92800 Puteaux

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Thanks

As part of this study, I would like to thank some people who helped and supported me throughout the completion of the thesis.

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A thought for the film "Ready Player One" which I consider as a source of motivation and as the perfect representation of what video games were, what they are today and what they could become.

Finally, I would like to express my gratitude to my sister and my friends for their moral support.

Abbreviations and definitions

Terms	Meaning
Gameplay	Gameplay is the articulation between the game, the structures and rules of the game, and play, the way in which the player appropriates the possibilities of the game by developing his own strategies, to meet the constraints that the "constitutive rules" of the game require him (this set includes the playing experience and qualities related to playability)
Open-World	Virtual world in which the player can move freely and can interact
Cinematic	A cinematic is a video clip that occurs at a particular moment in the game. It is generally used to advance the narrative, the scenario, or to emphasize a specific point in the story.
NPC	Non-player characters
Pathfinding	Planning a path for non-player characters
Cloud Gaming	Gaming experience anywhere, on any device and at any time
VR (Virtual reality)	Technology that simulates the player in a virtual world
E-sport	The set of practices allowing players to confront each other via an electronic medium, and mainly video games, and this be it synchronously (simultaneous confrontation) or asynchronous (deferred confrontation by highscore or interposed time).
Wargames	Strategy games simulating conflict situations

MMORPG (Massive Multiplayer Online-Role Playing Game)	Massively multiplayer network game in which you play through an avatar
AI	Artificial intelligence
Skin	The effects of equipment or clothing on a character
Augmented reality	Technology that makes it possible to integrate virtual elements in 3D (in real time) within a real environment.
Battle royale	The battle royal is a genre of video game mixing survival game and shooting game through a game system based on last man standing mechanics.

Summary

The video game industry in France represents a turnover of 4.8 billion euros, growing by more than 75% over 5 years. The economic potential of this industry is colossal and is still in its infancy. New games appear more and more each year, offering a diversity that allows to reach an ever-wider audience. This opportunity for game publishers is also turning into a threat, the competition is getting tougher. The challenge for publishers is to make their games more attractive in order to increase and sustain their sales. From a publisher's point of view, what are the factors to favor in order to optimize the gameplay of the game? How to evolve positive emotions in the player? From a consumer point of view, what will encourage them to buy a game?

This study aims to provide lines of thought concerning the improvement of gameplay in order to optimize the purchase intentions and the emotions of the players.

1) Introduction

One of the first real video game appearances comes from a nuclear research laboratory in America in 1958 with the game “Tennis for two” by William Higinbotham who wanted to play a game of tennis as a video game on a computer connected to an oscilloscope. (Berry, V., 2008).
Video games were introduced to the general public in the 1970s with the first commercialized computer video game created by MIT students in 1962, titled “Spacewar!” (Steve L KENT, 2001). It stages a clash between two spaceships. In the 1970s, the democratization of video games allowed the introduction of new games, synonymous with business opportunities for brands. The success of the game “Pong”, which consists of returning a ball to each other, allows video games to find a place in cafes and bars (Steve L KENT, 2001).
At that time, video games presented identical gameplay, characterized by a confrontation between two players.
It was the game “Space Invaders” in 1978, inspired by the book “War of the Worlds”, that made video games really popular. It left its mark on the minds of the time and enabled the sector to evolve due to the innovative aspect of the game. References to this game still appear in films today, through graphic representations in cities (graffiti, street art) or in other games (Benj Edwards, 2008).

Originally video games, only two players faced off against each other. Subsequently, as video games were deployed on the market, new elements appeared within games. This is for example the case with artificial intelligence, which has created variety in games and consolidated the experience of players (Yannakakis, Georgios N., Togelius, Julian, 2018).
The first video game to use Artificial Intelligence was Pac Man, in 1980 through its famous characters: ghosts. Thanks to this, the game became interactive, since each of the ghosts adopted a behavior that was dependent or independent of the actions performed by the player.
These new techniques show that a video game is not limited to two rackets that send a ball, but opens a new field of possibilities to the imagination and creativity of developers.

Nintendo's NES console, which, on the strength of its success, will thus allow the appearance and democratization of the game in households and no longer only in closed environments such as bars or arcade machines (Berry, V., 2008).
With the appearance of home consoles, "domestic" games are distinguished from games of arcade machines whose model of identified scores (ranking) corresponds less and less to the desires of console players (Steve L KENT, 2001).
Games with intrigues and a gameplay which is renewed then appear for the consoles. Shigeru Miyamoto's “Super Mario Bros” game will break the codes of video games with the goal of

finishing the game, unlike arcade games that aimed to get the highest score. Through these new games, new sources of motivation to play appear: previously it was having the best score, now it is to finish the story of a game.
A new form of Artificial Intelligence appears with the game “The legend of Zelda” which offers a non-linear game in which the hero is in an open world. It is the concept of the open-world attached to Artificial Intelligence. This allows the player to be immersed in a virtual universe made up of pixels, in which he can move his character and interact through elements of the decor (Yannakakis, Georgios N., Togelius, Julian, 2018). Subsequently, the video game approaches the cinema by introducing cutscenes within these games. These cutscenes allow the game to bring a storyline to life and advance the story of the game (Marida Di Crosta, 2009).

This constant evolution of gameplay prompts us to wonder what impact this evolution of gameplay has on players' purchase intention and their emotions. We can identify three major factors which are: innovation, artificial intelligence and motivation to play. Through an exploratory approach, we will carry out research on the elements allowing the gameplay to evolve and the impact that this generates on the purchase intention and the emotions of the players.
This leads us to pose the following problem:

Problematic : The evolution of gameplay: what impact on purchase intention and player emotions?

In order to answer this problem, we are also asking ourselves questions that will help guide our research and our research model:

Research questions :

1. What are the areas to develop to maximize the gameplay?
2. Does improved gameplay have a positive influence on players' purchase intention?
3. Does gameplay development necessarily lead to positive emotions?

To carry out our research, we will carry out a quantitative study to answer our problem and our research questions.

Our study is made up of four main parts, themselves divided into several sub-parts.

The first part concerns the gathering of information on the subject of the study in order to provide the information necessary to constitute our research base. This is the literature review, broken down into three sub-parts which are: factors indirectly impacting gameplay, factors directly impacting gameplay and the effect of gameplay on purchase intention and emotions.

The second part corresponds to the methodology and allows us to define the structure of our research through our questionnaire.

The third part concerns data analysis and allows to validate or refute the hypotheses established in our research model.

The conclusion and the limits of our research will be the last part of this thesis, the objective of which will be to provide an answer to the problem as well as to the research questions. This will also allow to see the limits and possibilities of future research in relation to our study.

2) Literature review

This literature review aims to provide an overview of academic research on video games: gameplay, purchase intention and player emotions.

First, we'll take a look at the factors that impact gameplay. Next, we will look at the effect of gameplay on purchase intention and the emotions experienced by players. At the end of this literature review, a research model will establish the relationship between all the elements of the gameplay that can influence the purchase intention as well as the emotions.

In this review of the literature, the factors that influence the gaming experience of video game players will be studied, so video game publishers can know what are the main elements to remember to build their games in order to retain players and their players. provide the best possible game.

2.1) Factors indirectly impacting gameplay

Laura Ermi and Frans Mayra (2005) defined gameplay as a set of sensations, thoughts and actions of the player when playing. In other words, gameplay is how much fun, or not, a player takes when playing video games. Many factors therefore have an impact on the player's gaming experience. Among them we find what is linked to motivations, the latest innovations and artificial intelligence.

This first part of the literature will study the elements mentioned below as factors indirectly influencing gameplay. Thus, in this part, the 11 factors having an indirect impact on the gameplay will be examined:

- The competition
- Socialization
- The escape
- Freedom
- Non-player characters
- The pathfinding / behavior tree
- Open-world
- Machine learning

- Additional content
- Cloud gaming
- Virtual reality

2.1.1) The competition

A special feature of the game is to show one's skill in playing through tournaments and other esports competitions. Most games show off your prowess and support that motivation. Many gaming communities sponsor tournaments, the most prominent example being blizzard with its esports league for its “Overwatch” game. Previously, you could find the competitive aspect of games in arcades, the games recorded scores and displayed the names of the best players. The competition is not necessarily found in victory but also in the objective of beating someone. Players playing for competition are found in particular in strategy games such as chess or wargames. This type of players tend to play games in which they can put their skills to the fore and not games of chance over which they have no control. (Crawford, 1984)

The competitive aspect is very powerful when the player is able to achieve a satisfactory balance between challenges and abilities. These challenges and abilities can be related to motor or mental skills such as strategic thinking or logical problem solving, but they usually involve both. (Laura Ermi and Frans Mayra 2005)

H1: Competition positively influences motivation to play

2.1.2) Socialization

Games have the particularity of being able to interact socially with other players. The technical aspect of the gameplay (graphics for example) is not the first criterion of choice for players interested primarily in socialization, in the sense that these players rather seek to meet, socialize and have fun with other people. (Crawford, 1984)

The possibility of playing in a network has multiplied socialization in games. Now players can create teams with unknown people in order to communicate and play together at any time (Serge Tisseron, 2008). A prominent example of this socialization in video games is found in mobile games, so the game “Clash of clans” allows you to create clans with other players in order to attack villages together and make your clan evolve.

H2: Socialization positively influences motivation to play

2.1.3) Escape

A main motivation for playing games is the fulfillment of fantasy. This is found in other artistic fields such as books, films or music. Video games have the ability to disconnect from the real world and join a fantasy world in which the player can forget his torments. The term associated with this flight from reality is escapism. Escapism is a sociological term which designates behavior at odds with society and which means to escape. (Vincent Berry, 2015)

Games have a higher escape potential than other artistic fields because of their participatory aspects. Unlike being an observer in front of a film for example, the player gets involved in the game. It is this need to escape that makes it an important motivation. (Crawford, 1984)

An example of this search for escape is Disneyland. The whole fantasy world created by Disneyland explains its major success. As soon as a person walks into one of the Disney parks, they feel like they are in a different world.

H3: Escape positively influences motivation to play

2.1.4) Freedom

A peculiarity of certain types of games is the possibility of being free to do what one wishes, even to transgress social restrictions. Indeed, some games offer the possibility to play a role of thief or assassin which is acceptable in the game but not in real life. Just as games of the wargames or MMORPG type are games which aim to win wars by engaging in battles. This corresponds to behavior deemed antisocial made acceptable by game safety. (Crawford, 1984)

The GTA (Grand Theft Auto) game in which the player integrates a person with a 3rd person view is the typical example of this freedom allowed by video games. Within a virtual city resembling reality in every way, the player has the possibility of performing all the actions he wishes, whether legal or not.

Another example of a game that suddenly becomes topical again is the game “Plague INC” in which the player aims to destroy humanity as quickly as possible through the contamination of a virus (coronavirus type) or other fatal health factors. Although the goal of the game can be considered immoral, the game is very popular, favorite of the app store and often in the top of the rankings of the most downloaded games.

H4: Freedom positively influences motivation to play

2.1.5) Non-player characters (NPCs)

Non-player characters (NPCs) are individuals in a video game who are not led by human players. Artificial Intelligence gives these individuals a typical behavior to adopt through

programming rules. The goal is to enrich the game and better immerse the player thanks to the NPCs. NPCs can be allies or enemies of the player (Ian Millington & John Funge, 2008).

In games like Assassin's Creed, NPCs have a life in the virtual world, they are created in a way that brings the game to life and makes it as real as possible. (Ashraf Ismail, 2017)

There is one main notion and one influencing factor in defining NPCs: agents and states (Ian Millington & John Funge, 2009).

Agents are virtual players created by Artificial Intelligence who act according to information from the environment in which they are. The agents are not necessarily dependent on the player's actions: their decision-making comes from information received by the environment around them.

States are the parameters of an environment in which the player or an agent is located. States can change when an agent or player takes an action.

In the case of an agent, several states are likely to determine its behavior. We define a reaction to the agent according to the state in which he is: for example, when the player is near him, or if he is injured, or if he does not see the player. For each of these situations, an action will be programmed according to the status in which it is in order to have consistency within the game (Ian Millington and John Funge, 2009).

H5: Non-player characters positively influence artificial intelligence

2.1.6) Pathfinding / Behavior tree

Pathfinding translated into French as “path research” is directly linked to the behavior of NPCs. It corresponds to the modeling of the movement of an NPC within its environment. That is, the path that the NPC will take in the virtual world to get from a certain point to another. Pathfinding, although complex, is fundamental to having a good gaming experience. It is enough that this one is badly programmed for NPCs to find themselves face against a wall, or else blocked in the decorations, thus reducing the experience of player's game (Ian Millington & John Funge, 2009).

The algorithms are necessary for the creation of the pathfinding. To use the algorithms, the pathfinding is based on the modeling of the playing field and the algorithm will decide the optimal path for the NPC to reach its destination. This algorithm generates a path between the target location and the position of the NPC (Korb, KB and Nicholson, A, 2003).

There are two main pathfinding algorithms in video games, they are both modeled on a 2-dimensional playground in order to be able to insert obstacles and other information (Steven M. LaValle, 2004):

- The Dijkstra algorithm: The construction of this algorithm is relatively logical, the algorithm will go through each square of the 2D terrain in the order of the squares from its point of origin to the point of destination.

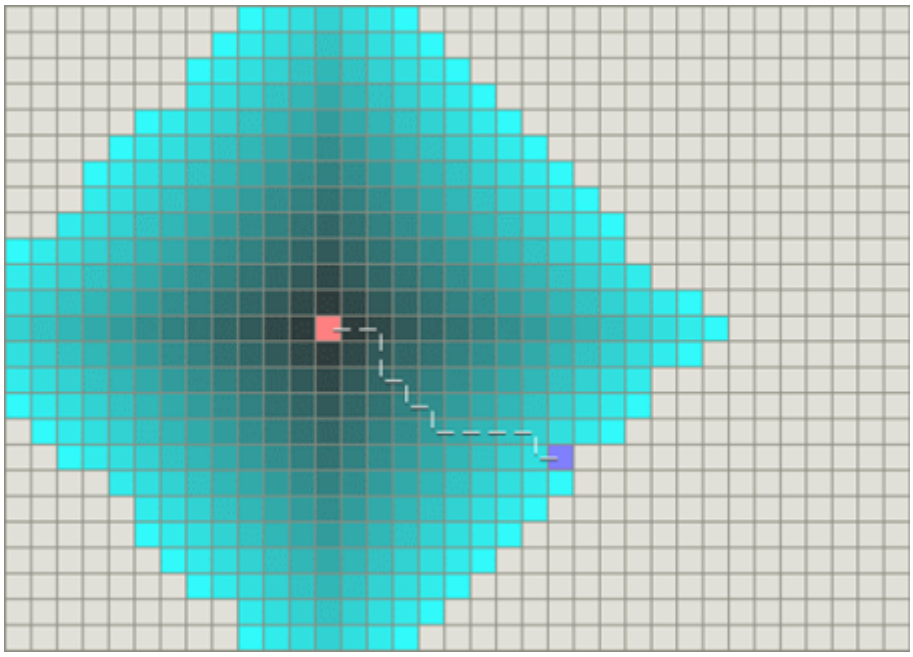

Figure 2.1.6.1 - Dijkstra algorithm

In this example, the algorithm goes over each blue box close to its point of origin until it finds the purple box which is its destination point.

- Algorithm A *: Algorithm more recent than the Dijkstra algorithm, it is also simpler than this one allowing a faster calculation of the possible paths. However, the A * algorithm is more approximate because it traverses fewer cells than the Dijkstra algorithm since it calculates an approximate direction in order to traverse all the cells.

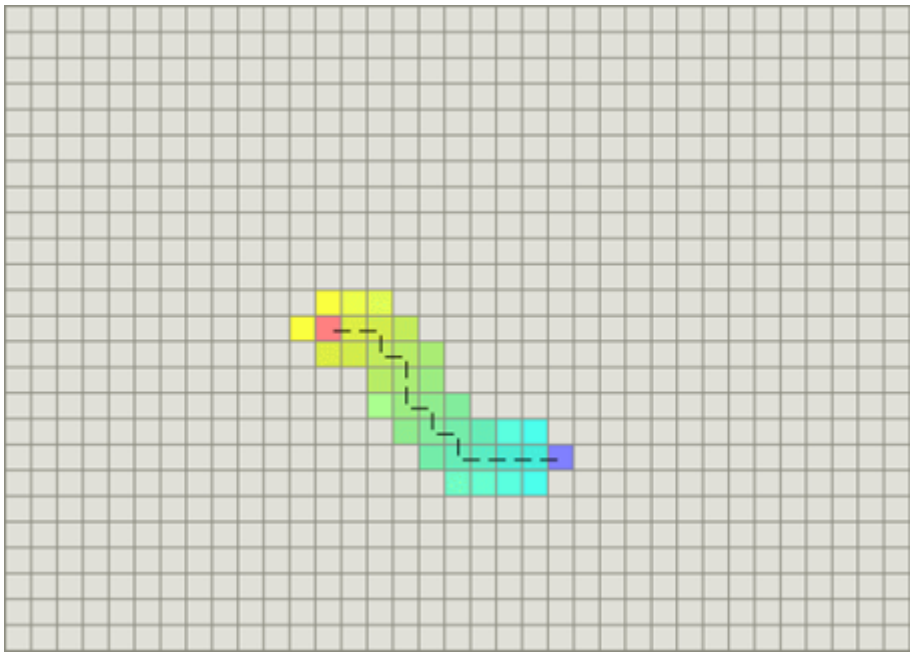

Figure 2.1.6.2 - Algorithm A *

Behavior trees are defined by actions, which makes it possible to differentiate the different possibilities of actions in the form of a tree. The tree representation provides a simplistic view of a complex process. Thanks to this formatting, it allows us to have the behavior of an NPC and the possible actions that he can carry out according to the actions carried out (Herbert Gintis, 2000).

The tree is read from top to bottom. In this way we will have the vision of each possibility of subsequent actions for an action carried out.

Behavior trees make it possible to present in a macro way the predictable behaviors and actions according to the rules which govern the actions beforehand.

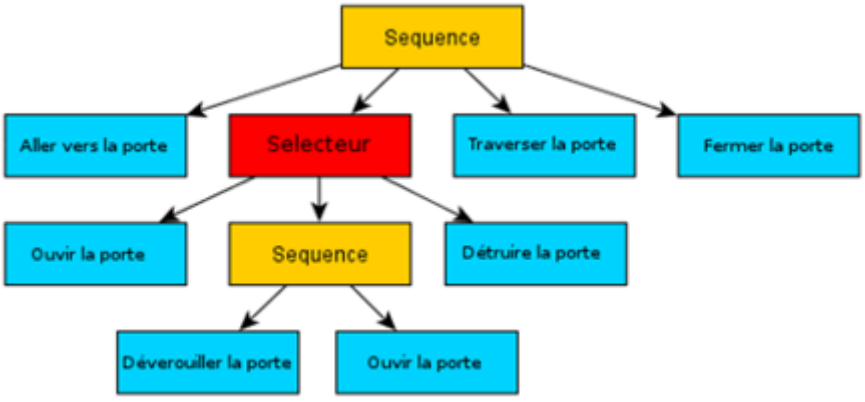

Figure 2.1.6.3 - Behavior tree

There are three types of nodes in a behavior tree (Maria Cutumisu, 2009) :

- Sequence (yellow rectangle): Sequence nodes are parent nodes, if the child node is successful, the sequence continues. If all of the child nodes succeed then the sequence is successful, if a child node fails, it is a failure.
- Selector (red rectangle): The selector nodes have several descendants, it is then necessary to select the child node according to the relevance of the possibilities.
- Child nodes (blue rectangle): These nodes represent raw actions without descendants.
- Decorator (arrows): They are part of the behavior of child nodes. These are attributes indicating the time of the action of the child node for example.

The appearance of behavior trees has its origin with the game “Halo 2” in 2004. The game Halo implemented behavior trees common to each of the NPCs in the game, in this way the articulation of the game allowed the player to experience a responsive game (Maria Cutumisu, 2009).

H6: Pathfinding and behavior trees positively influence artificial intelligence

2.1.7) Open-World

Artificial Intelligence is essential to create “open-world”, what we call open worlds in French. Open-worlds correspond to virtual worlds within games that allow the player to move around freely. In this virtual universe, the player has the possibility of interacting with the elements of the decor (Dan Whitehead, 2008).

There are two types of open world:

- Static open world: This means that the universe is created from scratch in the same way for each player, so there are no differences between the copies.

- Procedural open world: The virtual world is developed using an algorithm. Artificial intelligence bricks allow the manufacture of video games. These open worlds are also defined as infinite worlds because as the player progresses in the universe the environment is generated thanks to the AI.

The open world was very successful with the appearance of the video game “Grand Theft Auto III” in 2001, it changed the video game industry which subsequently applied to produce games with worlds. virtual.

The commercial advantage of the open world is to offer additional content by implementing possible side missions on this open world. The player can in this case be free to go wherever

he wants in this virtual universe and carry out side missions independent of the main story of the game. This also has an influence on the player's playing experience, because it allows to have a longer playing time. If he wants to continue playing after the main missions have been completed, he does not need to start the game all over again (Wookhee Min, Bradford Mott, 2017).

The open world within a game also means colossal production costs for game publishers, in return these are the games that generate the most profit and have been the most successful because of their playing time. and the proposed freedom of action (Wookhee Min, Bradford Mott).

H7: The Open-world positively influences artificial intelligence

2.1.8) Machine learning

Unlike previous methods, machine learning is built through learning. Previously, behaviors were governed by manual rules in relation to an environment or an action. In order to have more developed AIs that adapt to game situations, it is interesting to use machine learning, a game system that learns automatically according to the behavior of the player (Johannes Fürnkranz, 2001).

Machine learning is therefore used when programming NPC behaviors. The NPC has a complex behavior modeled by decision making according to the BDI model (Belief, desire, intention).

This model is split into 3 parts:

- Belief: Beliefs represent the level of information that the agent (NPC) possesses, in terms of the world around him and other agents. The use of the term belief means that what an agent believes may not necessarily be true in the sense that it may change in the future. Beliefs are stored in a database.
- Desire: Desires represent the agent's state of motivation. This corresponds to the objectives that the agents wish to achieve. For example: going to an inn, chasing a thief, etc.
- Intent: Intentions represent the agent's commitment. This means that the agent began to respond to a desire and began to perform it.

This model makes it possible to model the beliefs, desires and intentions that define the decision-making of the NPC (Johannes Fürnkranz, 2001).

H8: Machine learning positively influences artificial intelligence

2.1.9) Additional content

The business model of selling video games has also evolved over time. Previously, it was enough to buy a game in order to be able to access the content of that game in the same way as everyone else. This game was static, that is, once purchased the game could not have additional content. While from now on, the games have many variations with the possibilities of purchasing additional content. The publishers are developing their games through possible additional missions with a view to paying the player for this additional content. Players can buy new maps, skins (personalization of their player), new missions to perform. (Lemoine, Jean-François, 2015)

This aspect of complementary content is a selling point upstream of the purchase of a video game, because game publishers often offer additional content for the purchase of a game in order to retain the player. This also allows us to collect several pieces of information on the players and to better understand their purchasing behavior. The collection of data on the players is fundamental in order to be able to distinguish the different player profiles and to assign a marketing strategy to each of these different profiles. (Lemoine, Jean-François, 2015)

H9: Additional content positively influences innovation

2.1.10) Cloud gaming

Cloud gaming allows players to play their games using accommodation provided by private company servers instead of the computer or game console. After installing software on the platform of their choice, the player can have access to the server on which the game is running and play the game whenever he wants on the device (device) he wants. The competitive advantage of cloud gaming is the incredible quality provided by this solution regardless of the hardware the player is playing on. (Chung-Ying Huang, 2013)

The appearance of cloud gaming nowadays makes it possible to innovate in this sector and to develop this possibility of playing any game on any screen wherever you are. The cloud gaming of the French company Shadow, for example, delivers the possibility of playing on any screen (smartphone, tablet, TV) with the best gaming PCs on the market. This cloud gaming service is developing and meets a need for gamers' freedom to be able to access all games and all consoles without purchasing constraints (one console in particular to play a specific game). (Ryan Shea, 2013)

H10: Cloud gaming positively influences innovation

2.1.11) Virtual reality

Virtual reality, also referred to as virtual environment, is a new interface paradigm that uses computers and interfaces to create the effect of a three-dimensional world in which the user

directly interacts with virtual objects. Virtual reality has received a lot of attention in recent years, especially in the video game industry. (Steve Bryson, 1996)

Virtual reality marks a turning point in the world of video games, the liberation of the screen through virtual reality allows the player to feel an experience at the heart of the virtual world. (Bernard Jolivat, 1994)

Other innovative solutions are coming to the industry to expand the possibilities for gamers' gaming experience. Virtual reality is a prime example of the evolution of player gameplay. Appeared in 2014 in living rooms with Sony's playstation VR, this technique now available on several platforms and under several games allows a player equipped with a virtual headset to play in a virtual environment.

H11: Virtual reality positively influences innovation

2.2) Factors directly impacting the gameplay

In this part, we will describe the factors having an impact on the eleven preceding variables and which have a direct effect on the gameplay of a video game player: motivation, artificial intelligence and innovation.

2.2.1) Motivation

For more than 30 years, motivation has been studied to determine its impact on video games. Malone's (1980) theory of increased motivation takes into account various elements which are competition, curiosity and imagination. Subsequently, other researchers also participated in the aspect of engagement in a game (Prensky 2001). Originally, the concept of commitment comes from the notion of flow emitted by Csikszentmihalyi (1975). We can find the flow in several areas such as sports, work and games. This corresponds to a state of total immersion in such a way that it is physical or mental, the person no longer attaches any importance to what is around him.

There are 4 types of motivations that motivate a person to gamble: the excitement and enjoyment of winning and finishing a game, the social aspect of network gaming, the ability to get away from it all and the fight against boredom. (Kutner and C. Olson, 2008)
Chris Crawford (1984), for his part, emphasizes the fact that the main motivation of all games is to learn, although this is not necessarily perceived by the player. However, according to him, there are secondary motivators that are similar to the research of Kutner and Olson:

- Competition: The high score feature in games motivates players to beat other players' scores or to surpass themselves.

- Escape: The ability to transgress illegal things in real life that are possible in the game. Being able to expel your violence within a video game.
- Imagination and discovery of the virtual world: The player is immersed in a fantasy world in which he can forget the negative elements of his real life.
- The social aspect: Being able to play with other people and fulfill their need for recognition through social interactions.

Thus, we notice that all the players' motivations are linked to emotions. These emotional motivations reveal five categories of players: anguished players who are afraid of abandonment and who never leave their avatar, thrill seekers, creatives who like to manipulate avatars, competitors and finally, players wanting to meet others in the anonymity of the game (Serge Tisseron, 2009)

In the world of video games, the objective is to immerse a player in a universe so well constructed that it seems real to him. A model called the SCI-model makes it possible to differentiate three types of immersion during the gaming experience.

First, sensory immersion, through the senses involved, which allows players to feel their physical presence in the created universe. Then, the "challenge-based" which offers players continuous challenges in order to win trophies. This develops the appeal of players who set themselves personal challenges in order to win these trophies. Finally, immersion through the imagination in which players are free to create what their imagination inspires them. (Laura Ermi and Frans Mäyrä, 2005)

H12: Motivation has a positive impact on gameplay

2.2.2) Artificial intelligence

In this part, we will specify what Artificial Intelligence is and its evolution since its appearance in video games. Artificial Intelligence consists of giving computers the possibility to perform the same actions as a human. Upstream of Artificial Intelligence, there is a lot of human work to conceptualize algorithms and build other mechanisms (relief, realism, scalability) making it possible to make AI work in the game.

The main objective of Artificial Intelligence in video games is to improve the pleasure and the feeling of immersion of the player. For this, the goal is to succeed in designing a virtual universe as close as possible to reality, by improving non-player characters (NPCs) and generating developed universes, in which the characters can move in total freedom (Ian Millington and John Funge, 2009). The games seek to get as close as possible to reality.

In ancient video games, the player controlled a character in a universe with limits. Video game publishers developed games in a way that imposed limits on the character. The hero's progress was limited by missions and tasks to be completed within a given time, with a character's "health" to be maintained. Thanks to the open-world, the game evolves: the player can now explore the universe beyond the initial scenario without movement constraints (Laura Ermi and Frans Mayra, 2005).

Games such as “Minecraft”, “Assassin's Creed” and “Grand Theft Auto” are games known for their backgrounds and non-player characters within their universe. This allows for an immersive gaming experience for the players (Julien Villedieu, 2019).

The main condition for an Artificial Intelligence to be efficient within a game is that it fits well in terms of the design and the frame of the game. In the context of NPCs for example, it is necessary that they behave appropriately for the game, otherwise it will reduce the player's gaming experience. The case of NPCs who are stuck in a setting is an evolved example of Artificial Intelligence that is sought after.

In the early days of Artificial Intelligence, AI research and development by video game developers was very different from the developments seen in classical Artificial Intelligence (Jones, T, 2007).

Since the objectives were not the same, there was a significant difference in knowledge, resources and issues. The primary goal of Artificial Intelligence is to create new algorithms and make them continuously evolve with different objectives (economic, time saving, ergonomics, human substitution) in multiple activities. While in video games, Artificial Intelligence aims to create an evolving space or even a real imaginary world that is nested in the game in order to make it more efficient. For this, it is necessary that Artificial Intelligence is completely complementary with the game (Jones, T, 2007).

It is for this reason that different forms of Artificial Intelligence have appeared throughout the history of games in order to improve the gameplay of players.

H13: Artificial intelligence has a positive impact on gameplay

2.2.3) Innovation

Innovation in the video game genre is defined by the exploration of radically new ground by creating a novelty, a new genre or by refining the current mechanics to a notch (Daniel Cook 2005). The evolution of the video game sector requires addressing the subject of innovation which is at its basis. Innovation is not reduced to a specific model, especially in the video game industry which is a complex ecosystem of gameplay-related features and aesthetic ideas. (Järvinen, 2002).

Our current understanding of gender and innovation, inherited from aesthetic disciplines, is not sufficient to properly analyze innovation in video games. Video games are at the same time an artistic, cultural, aesthetic and expressive object, and a functional and technological construction (Bogost 2008). Innovation processes can be classified according to two modalities: rupture or evolution. As a breakthrough, innovation is mainly represented in the dimension of its results, generally spectacular because it represents novelty. For evolution, this corresponds to adaptations, improvements and optimizations of the existing one. (Creton 2005).

H14: Innovation has a positive impact on gameplay

2.3) The effect of gameplay on purchase intention and emotions

Video games first appeared in the mainstream in the 1970s with arcade machines and delivered a simple, primary emotion of instant pleasure that wore off once the game was over. With the emergence of new ways of entertaining, players are discovering interactivity, which is defined by a relationship between machine and man. (Bernard Jolivalt, 1994)
The different games gradually improved on image quality and developed in diversity in the 1980s but still in fleeting emotion.
The 1990s marked the advent of immersive games with the appearance of personalization within the game through the creation of avatars.
New technologies are constantly appearing in the field of video games. The gaming experience has evolved through the appearance of new consoles and new types of games.
Previously, you had to pay for a game and go directly to a machine that offered a single game. Now we can find the games everywhere, whether on our phone, our console or even at work. Entertainment through games has become a pastime that can be found in all situations: at home, outdoors, alone, with others, while strolling or when a person is traveling to work. Now thousands of applications exist that deliver a gaming experience almost similar to that of a console, while remaining quite often free. (Claudio Feijoo, 2011)

It is with this mindset that gamers are continually discovering new ways to play, making it easier for them to access games and maximize their gaming experiences.

2.3.1) The effect of gameplay on purchase intention

Considering the promising video game market, video game publishers and producers are in fierce competition.

Marketing strategies for the sector are constantly evolving. Artificial Intelligence being an interesting marketing argument, publishers use this innovative aspect to better sell their video games. A prominent example of the use of Artificial Intelligence in the marketing of video games is the company Ubisoft. Through the Instagram social network, Ubisoft used the NPCs from its Assassin's Creed game to communicate about the game before its release. We also notice in addition many celebrities who now appear as the main characters of the games. Keanu Reeves in Cyberpunk 2077 is a prime example of this new style of communication. The modeling of existing people was mainly present in sports games but now it is deployed in other genres of games because it allows to be closer to the consumer and to add a selling point. (Laurence Elisabeth, and Jean-Pierre Dumazert, 2007)

The passage to the act of purchasing a video game consumer is based on several types of motivations that make it possible to reinforce his decision.

The process of triggering a purchase is driven both by the consumer's overall environmental criteria (social class, family) and by individual data (personality, lifestyle, resources). (Jeff Bray, 2008)

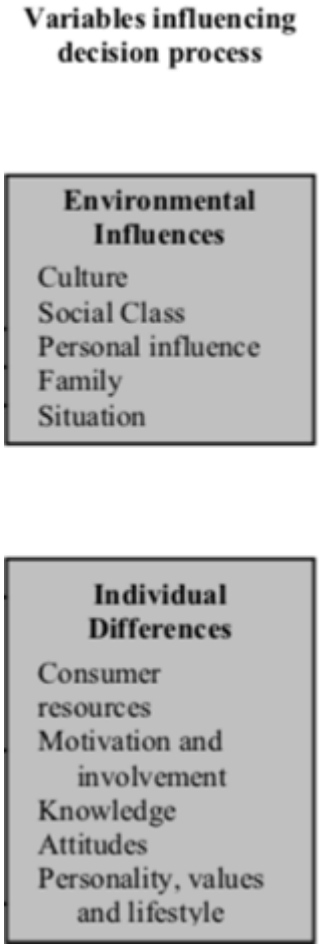

Figure 2.3.1.1 - Consumer Decision Model (Blackwell, Miniard et al. 2001)

In the influences linked to the global environment, we find the culture of the country in which the consumer grew up and which defines his mentality, his barriers, his conditioned reflexes in relation to others. The social class of the consumer is also considered to be a notable influence, as are those around them (friends, acquaintances, professional colleagues). Finally, the social level of an individual and his sensibilities will influence the type of games consumed and the rate of consumption. (VanTonder, 2003)

Regarding individual influences, we find the consumer resource data which allows the budget allocated to video games to be set. There is also the motivation and engagement of consumers through their frequency of purchase and the loyalty that connects them to a particular gaming brand. We can supplement with general knowledge data through monitoring and information on gaming news, as well as the seniority of a player in the practice of video games. In the continuity, the behavior of a player when playing is also defined by the time that he spends there, and the frequency with which he plays. Finally, the last notable influence concerns the player's personality, his personal values and his lifestyle: these criteria will directly affect his sensitivity to the emotional specificities of a game (fear, aggressiveness, calm, stress, pro activity), which go expressing themselves differently when faced with an innovation or a group game (mutual aid, ability to play in a group or on the contrary personal game and search for individual performance). (Blackwell, Miniard et al. 2001)

H15: Gameplay has a positive impact on purchase intention

2.3.2) The effect of gameplay on emotions

The popularity of video games takes into account the emotions that one experiences while playing. The countless options of different games give us the possibility of feeling many emotions in front of a screen. Like a movie or series, the player can experience various emotions such as angst, excitement, frustration, fear, longing, etc. It is therefore important for a video game publisher to take into account the emotional aspect of the player when the game is in production.

Emotions are at the heart of a player's commitment. Understanding the nature and role of emotion is important for video game makers so that they can create immersive environments. There are over 1,500 ways to stir emotion in video games: this is what makes this industry an area of research and development that isn't just about writing a story, but leverages it. of artificial intelligence, psychology and innovation. (Freeman, 2004)

The use of emotion is optimized to describe a large panel of cognitive and physiological states in humans. Emotions are often mentioned when one wishes to express familiar feelings such as happiness and sadness, but also primary needs such as hunger and thirst (Pert, 1997). Emotions are often described as intense feelings. But the emotional degree is proportional

to the purity and intensity felt. We can take the example of a feeling of hunger which does not necessarily limit hunger in itself but which can also be mixed with frustration.

Emotion Generation, also known as Rating Theory, explains this point of view by using situations to categorize affective states that occur. These valuation theories involve grouping emotional states as positive or negative and continue to break them down into substates. The six primary emotions identified are: love, joy, anger, sadness, fear and surprise. Although emotional states can be distinguished in different cultural situations, these six basic emotions are universal in emotion theories. The overlap of these emotions can produce all other emotional states. Such a mixture of emotions, given a set of elementary emotions, enabled the realization of the wheel of emotion. (Plutchik, 1980)

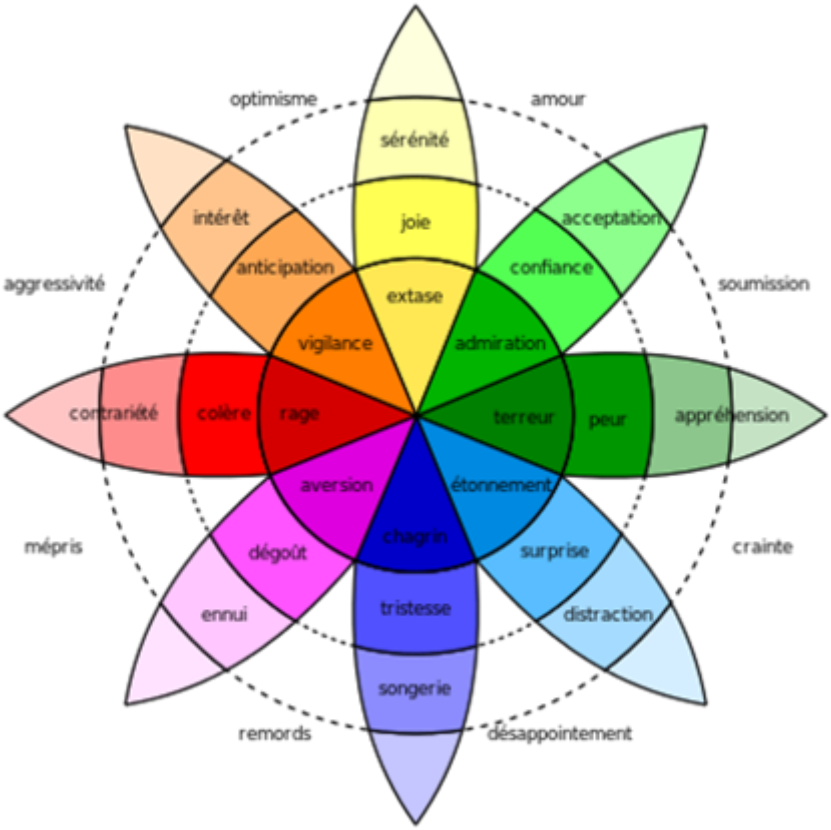

Figure 2.3.2.1 - Wheel of emotion by Robert Plutchik

Due to the multitude of definitions, types and causes of emotion, a "classification" of emotions can be achieved by highlighting categories of emotions based on MacLean's (1958) theories that emotions evolved. with each new layer added to the human brain. The human brain having passed through three main layers which are the reptilian brain first, then the

limbic brain and finally the neocortex brain. This results in an evolution of the emotions that we find below:

- Body-mind emotions: These natural emotions come from human needs governed by bodily needs (Weiner, 1992). We will be able to find hunger for food or sleep by the desire to sleep. These essential emotions remain unchanged during the process of evolution, they make it possible to meet basic survival needs and thus act as physiological motivators to meet these needs.

- Rapid primary emotions: These emotions correspond to the emotions in reaction to an action. This corresponds to effects such as fear and surprise.(Koestler, 1967)

- Emotional experience: These emotions reflect the emotional state of an individual, also called affect (Russell, 2003), emotional experiences are a state of mind. They are always present, and encompass the mood of an individual.

- Cognitive evaluations: Unlike the underlying emotion that lasts, an evaluation is one that results from an activity or a meeting in its simultaneity. Events are evaluated in the moment to determine an appropriate emotional response.

- Emotional behavior: Emotional behavior is defined by motivation. Any emotional response involves a degree of motivation. Weiner's (1986) theory of attributing motivation to emotions suggests that the behavioral consequences of an emotional reaction integrate personal beliefs with personal goals as well as a rational assessment of behavioral consequences. For example, a very justice-loving individual will be hyper motivated and ruthless in the game in response to a situation of aggression coming from a community of villains or enemies.

As can be seen above, emotion is multidimensional and multifaceted. The finesse and acuteness of its application in the research and design of computer games is a major issue for success. The way it is currently viewed and used in computer game studies helps

categorize the key categories of computer game design in which emotion plays the largest role.

H16: Gameplay has a positive impact on emotions

2.4) Definition of factors

Postman	Source	Definition
The competition	Laura Ermi and Frans Mayra (2005)	The competitive aspect is when the player is able to strike a satisfactory balance between challenges and abilities.
Socialization	Serge Tisseron (2008)	Socialization is the ability to communicate and play with other people.
Escape	Vincent Berry (2015)	Escape is the ability to disconnect from the real world and join a fantasy world in which the player can forget their torments.
Freedom	Crawford (1984)	The term freedom in the game corresponds to the possibility of doing whatever the player wishes in a virtual universe.
NPC	Ian Millington and John Funge (2008)	Non-player characters (NPCs) are individuals in a video game who are not led by human players.

Pathfinding	Ian Millington and John Funge (2009)	Pathfinding corresponds to the modeling of the movement of an NPC within its environment. That is, the path that the NPC will take in the virtual world to get from a certain point to another.
The open-world	Dan Whitehead (2008)	Open-worlds correspond to virtual worlds within games that allow the player to move around freely.
Machine learning	Johannes Fürnkranz (2001)	Machine learning is a game system that learns automatically based on player behavior.
Additional content	Lemoine, Jean-François (2015)	The additional content in the games corresponds to the possible purchases to be made in the game.
Cloud gaming	Chung-Ying Huang (2013)	Cloud gaming allows players to play their games through hosting provided by private company servers instead of the computer or game console.

Virtual reality	Steve Bryson (1996)	Virtual reality, also referred to as virtual environment, is a new interface paradigm that uses computers and interfaces to create the effect of a three-dimensional world in which the user directly interacts with virtual objects.
Motivation	Kutner and C. Olson (2008)	There are 4 types of motivations that motivate a person to gamble: the excitement and enjoyment of winning and finishing a game, the social aspect of network gaming, the ability to get away from it all and the fight against boredom.
Artificial intelligence	Ian Millington and John Funge (2009)	Artificial Intelligence consists in giving the possibility to computers to perform the same actions as a human.
Innovation	Daniel Cook (2005)	Innovation in the video game genre is defined by the exploration of radically new ground by creating a novelty, a new genre or by refining the current mechanics to a notch.
Gameplay	Marc Goetzmann and Thibaud Zuppinger (2016)	Gameplay is the articulation between the game, the structures and rules of the game, and play, the way in which the player appropriates

		the possibilities of the game by developing his own strategies, to meet the constraints that the "constitutive rules" »Of the game require him
Purchase intent	Jeff Bray (2008)	The process of triggering a purchase is driven both by the consumer's overall environmental criteria (social class, family) and by individual data (personality, lifestyle, resources).
Emotions	Pert (1997)	Emotions are used to express familiar feelings.

2.5) Research model

The construction of the research model was complex because the subject was a precursor. The literature review allowed us to build a research model based on 16 hypotheses:

H1: Competition positively influences motivation to play

H2: Socialization positively influences motivation to play

H3: Escape positively influences motivation to play

H4: Freedom positively influences motivation to play

H5: Non-player characters positively influence artificial intelligence

H6: Pathfinding and behavior trees positively influence artificial intelligence

H7: The Open-world positively influences artificial intelligence

H8: Machine learning positively influences artificial intelligence

H9: Additional content positively influences innovation

H10: Cloud gaming positively influences innovation

H11: Virtual reality positively influences innovation

H12: Motivation has a positive impact on gameplay

H13: Artificial intelligence has a positive impact on gameplay

H14: Innovation has a positive impact on gameplay

H15: Gameplay has a positive impact on purchase intention

H16: Gameplay has a positive impact on emotions

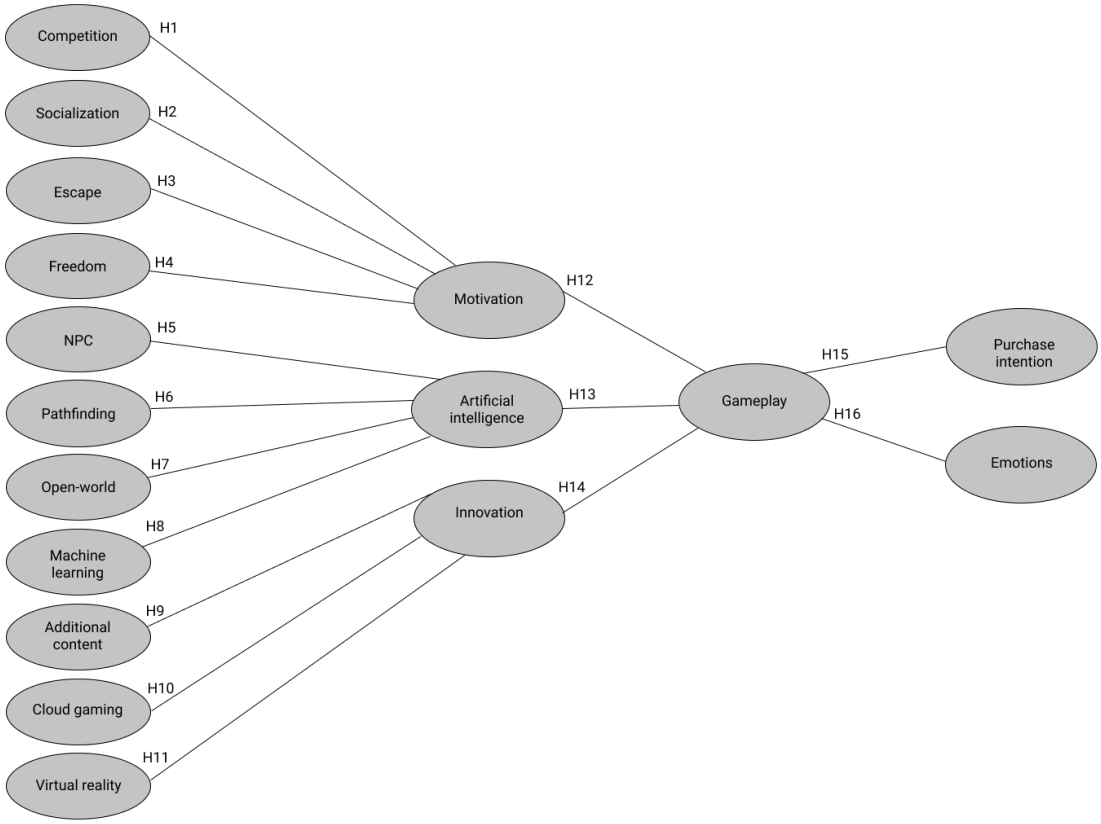

Figure 2.5.1 - Research model

3) Methodology

This part makes it possible to define the environment in which the hypotheses will be tested as well as the way in which the data were collected. In order to verify the hypotheses previously presented in our literature review, we will perform a quantitative analysis using the responses of the people participating in our survey. The objective of this quantitative analysis is to demonstrate the impact of gameplay on purchase intention and player emotions.

3.1) Quantitative analysis

I will carry out a quantitative study in order to test my research model and validate or not my hypotheses. It will also help answer my research questions. The aim of a quantitative study is to collect data in order to analyze them using statistical methods and derive results.

To test the hypotheses, we are doing an exploratory study since there has been no research in the past regarding the impact of Artificial Intelligence in video games.

The data of our quantitative study are collected from an online questionnaire distributed on social networks and more particularly on private Facebook groups bringing together video game players. It was also posted on Discord which is a social network bringing together many video game enthusiasts, by the mail channel and on Linkedin (Appendix).

In order to know the minimum number of respondents for our questionnaire, we will use the sampling formula to determine the size of our minimum sample in order to have significant results:

$n = t^2 \times p \times (1-p) / m^2$

- n: Minimum sample size to obtain significant results for an event and a fixed level of risk
- t: Confidence level (the typical value of the 95% confidence level will be 1.96)
- p: estimated proportion of the population exhibiting the characteristic (Here this corresponds to 0.5 because on average one in two French people play video games)
- m: Margin of error (Here we set it at 7%)

This is equivalent to: $1.96^2 \times 0.5 \times (1-0.5) / 0.07^2 = 196$

So, we need 196 respondents to have a data analysis with a 95% confidence level and a 7% margin of error.

3.2) Choice of variables

The survey is based on elements of scales measuring each construction of the research model. This section defines the construction and questions of the survey.

3.2.1) First part

The first part is composed of questions concerning the playing behavior of the player.

First, an introduction welcomes the respondents and presents the background, purpose and challenges of the research.

3.2.1.1) Competition

Laura Ermi and Frans Mayra (2005) show that the competitive aspect corresponds to a player's satisfaction in achieving a balance between challenges and abilities. Respondents must answer 3 statements on a scale of 1 to 5: going from “Strongly disagree” (1) to “Strongly agree” (5) via “Neutral” (3). The 3 statements are:

1. When I play I want to have the best score
2. I play for the sake of winning against other people
3. These are the challenges that make me wanna play

3.2.1.2) Socialization

Serge Tisseron (2008) indicates that socialization corresponds to the possibility of communicating and playing with other people. Respondents must answer 3 statements on a scale of 1 to 5: going from “Strongly disagree” (1) to “Strongly agree” (5) via “Neutral” (3). The 3 statements are:

1. I play to have a good time with my friends
2. The interest of playing for me is to meet players
3. I prefer to play as a team rather than alone

3.2.1.3) Escape

Vincent Berry (2015) defines escape as the ability to disconnect from the real world in order to reach a fantasy world in which the player can forget his torments. Respondents must answer 2 statements on a scale of 1 to 5: going from “Strongly disagree” (1) to “Strongly agree” (5) via “Neutral” (3). The 2 statements are:

1. I play in order to disconnect from real life
2. When I play I wish to be immersed in the game
3. I sometimes feel less tired, hungry or thirsty when playing

3.2.1.4) Freedom

Chris Crawford (1984) indicates that the term freedom in the game corresponds to the possibility of doing whatever the player wishes in a virtual universe. Respondents must answer 3 statements on a scale of 1 to 5: going from “Strongly disagree” (1) to “Strongly agree” (5) via “Neutral” (3). The 3 statements are:

1. I play so that I can perform in-game actions that I cannot do in real life
2. I prefer games that don't have an action or movement limit
3. I mainly play games that have open worlds

3.2.1.5) Motivation

Kutner and Olson (2008) have shown that there are 4 types of motivation for a person to gamble. Respondents must answer 4 elements concerning motivation on a scale of 1 to 5: going from “Not at all important” (1) to “Very important” (5) via “Neutral” (3). The 4 elements are:

1. The pleasure of winning
2. The social aspect
3. The possibility of escaping
4. The fight against boredom

3.2.1.6) Gameplay

Laura Ermi and Frans Mayra (2005) defined gameplay as a set of sensations, thoughts, feelings and actions of the player when playing. Respondents must meet 5 criteria on a scale of 1 to 5: ranging from “Not at all important” (1) to “Very important” (5) via “Neutral” (3). The 5 criteria are:

1. Visual quality
2. Audio quality
3. The history of the game and the associated missions
4. The challenge through leagues, competitions or other
5. The ability to play locally or in a network with other players

3.2.1.7) Purchase intention

Jeff Bray (2008) indicates that purchase intention is characterized by consumer environmental criteria as well as by individual data. Respondents must meet 10 criteria on a scale of 1 to 5: ranging from “Not at all important” (1) to “Very important” (5) via “Neutral” (3). The 10 criteria are:

1. Novelty
2. Durability
3. Price
4. Quality
5. Developer
6. Game typology
7. History of the game
8. Game characters
9. Note in the press or on gaming sites
10. Possibility to play in multiplayer

3.2.1.8) Emotions

Pert (1997), defines emotion as the expression of familiar feelings. Respondents must meet 10 criteria on a scale of 1 to 5: ranging from “Strongly disagree” (1) to “Strongly agree” (5) via “Neutral” (3). The 10 criteria are:

1. Satisfaction
2. Frustration
3. Pleasure
4. Anger
5. Anguish
6. Excitation

3.2.2) Part two

The second part is composed of questions concerning the opinion of the player on several subjects related to the operation and functionality of video games.

3.2.2.1) Non-player characters (NPCs)

Ian Millington and John Funge (2008) define non-player characters as individuals in a video game who are not led by human players. Respondents should answer the question “Do you

consider non-playing characters to be important in a game?". The possible answers are "Yes" or "No".

3.2.2.2) Pathfinding

Ian Millington and John Funge (2008) define pathfinding as the modeling of the movement of an NPC within its environment. That is, the path that the NPC will take in the virtual world to get from a certain point to another. Respondents should answer the question "Do you consider pathfinding important in a game?". The possible answers are "Yes" or "No".

3.2.2.3) Open-world

Dan Whitehead (2008) indicates that open-world corresponds to virtual worlds within games which allow the player to move freely. Respondents must meet 3 criteria on a scale of 1 to 5: going from "Not at all important" (1) to "Very important" (5) via "Neutral" (3). The 3 criteria are:

1. Being able to move around without restriction
2. The multitude of possible actions in a virtual world
3. The freedom to do what you want

3.2.2.4) Machine learning

Johannes Fürnkranz (2001) defines machine learning as a game system that learns automatically according to the behavior of the player. Respondents should answer the question "Do you consider machine learning important in a game?". The possible answers are "Yes" or "No".

3.2.2.5) Additional content

Jean-François Lemoine (2015) defined additional content in games as the purchases possible to make once the game has been purchased. Respondents must answer 3 criteria on a scale of 1 to 5: going from "Strongly disagree" (1) to "Strongly agree" (5) via "Neutral" (3). The 3 criteria are:

1. I often buy additional content in games to progress faster
2. I often buy additional content in games to have additional missions to complete
3. I often buy additional content in games to improve my character or the game environment

3.2.2.6) Cloud gaming

Chung-Ying Huang (2013) defines cloud gaming as a service allowing players to play their games using accommodation provided by company servers. Respondents must answer the question “Do you consider cloud gaming to be an important innovation in the video game industry?”. The possible answers are “Yes” or “No”.

3.2.2.7) Virtual reality

Steve Bryson (1996) defines virtual reality as a new interface paradigm using computers and interfaces to create the effect of a three-dimensional world in which the user directly interacts with virtual objects. Respondents must answer the question “Do you consider virtual reality to be a real innovation in the video game industry?”. The possible answers are “Yes” or “No”.

3.2.2.8) Artificial intelligence

Ian Millington and John Funge (2009) define artificial intelligence as the ability to empower computers to perform the same actions as a human. Respondents must meet 3 criteria on a scale of 1 to 5: going from “Not at all important” (1) to “Very important” (5) via “Neutral” (3). The 3 criteria are:

1. Non-player characters (NPCs)
2. Pathfinding
3. Open-World

3.2.2.9) Innovation

Daniel Cook (2005) defines innovation in video games as the exploration of radically new ground by creating a novelty, a new genre or by refining the current mechanics. Respondents must answer 4 statements on a scale of 1 to 5: ranging from “Strongly disagree” (1) to “Strongly agree” (5) via “Neutral” (3). The 4 statements are:

1. Cloud gaming meets an expressed need
2. Virtual reality responds to an expressed need
3. Innovation is very present in video games
4. New ways of playing appear frequently

3.2.3) Part Three

The third part is composed of questions with reference to the individual

3.2.3.1) Gender

Respondents must answer the question “What is your gender?”. The possible responses are “Male”, “Female” and “Non-binary”.

3.2.3.2) Age

Respondents must answer the question “How old are you?”. The possible answers are “Under 20”, “Between 20 and 35”, “Between 36 and 50” and “Over 50”.

3.2.3.3) The socio-professional category

Respondents must answer the question “What socio-professional category do you belong to?”. The possible answers are “High school student”, “Student”, “Executive”, “Liberal profession”, “Company manager”, “Employee”, “Worker” and “Unemployed” .

4) Data analysis and results

This part makes it possible to analyze the data that we were able to collect through our questionnaire and to validate or not our 16 hypotheses.

4.1) Database

The number of respondents to this questionnaire was 317. In order for the database to be as meaningful as possible, we removed the responses with missing values as well as the responses with a duration of less than 150 seconds. Responses with a long duration were kept because the respondents were able to return to the questionnaire following a break or other reason that did not exclude them from the questionnaire.

Following the removal of these values, we arrive at 208 valid and exploitable responses within the database.

4.2) Profile of participants

In this part, we will focus on data concerning the profile of participants.

In France, men generally play more than women. Among video game players, 53% are men and 47% are women according to various studies by the leisure software publishers' union (SELL).

Among the respondents to the questionnaire, the distribution of the male gender is slightly higher (127 respondents) than that of the female gender (81 respondents). This can be explained by a low visibility and presence of the female gender in the player communities.

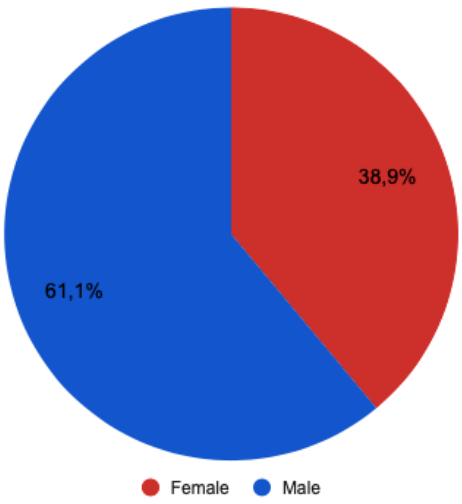

Figure 4.2.1 - Respondent gender diagram

The majority of respondents are between 20 and 35 years old, which makes sense given that most video game players are young people.

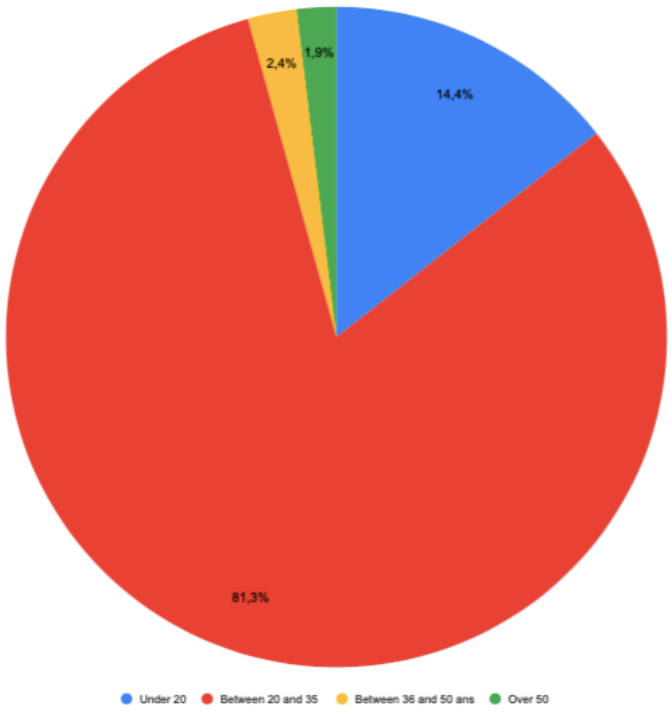

Figure 4.2.2 - Diagram of respondents' age

The majority of respondents belong to the “Students” category (63.9%). This is consistent with the diagram before presenting young people as the majority of respondents to this questionnaire.

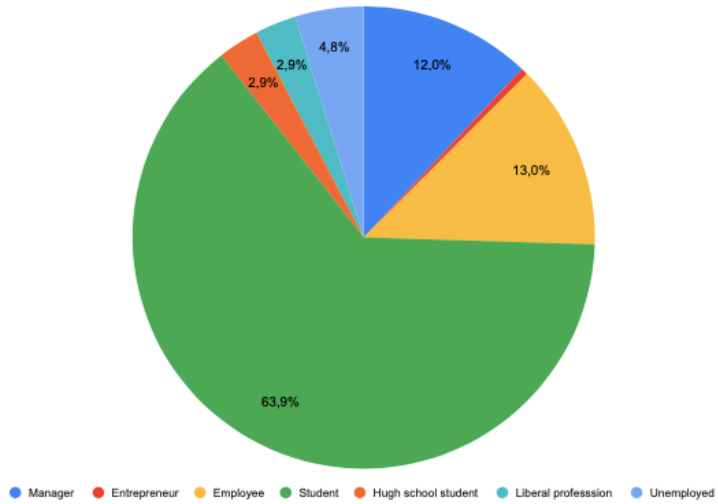

Figure 4.2.3 - Diagram of the socio-professional category of respondents

The table below summarizes all the information previously stated on the profile of respondents.

Gender	Female	38,94%
	Male	61,06%
Age	Under 20	14,42%
	Between 20 and 35	81,25%
	Between 36 and 50	2,40%
	Over 50	1,92%
Socio-professional category	Manager	12,02%
	Entrepreneur	0,48%
	Employee	12,98%
	Student	63,94%
	High school student	2,88%
	Liberal profession	2,88%
	Unemployed	4,81%

Figure 4.2.4 - Respondent information

4.3) Factor analysis

Factor analysis is a method for reducing items into principal variables. This allows us to know if all the variables of our search model can be kept. For this, we use three methods which are:

- The KMO (Kaiser-Meyer-Olkin) is a test that determines the correlations between variables. It is estimated that the variables are sufficiently correlated if the KMO is greater than 0.5.
- Bartlett's sphericity test makes it possible to test whether the correlation matrix is an identity matrix. To ensure the validation of Bartlett's sphericity test, the p-value must be less than 0.05.
- Cronbach's alpha is used to measure the reliability of variables. This must be greater than 0.7 in order to be considered valid.

During the factor analysis we will also be interested in the quality of representations of the items as well as the variance.

The goal of factor analysis is to combine several items into a single variable.

4.3.1) The competition

First of all we will look at the KMO and Bartlett's sphericity test.

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.776, so the items are reliable and we can keep the Competition variable.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,684
Test de sphéricité de Bartlett	Khi-deux approx.	177,611
	ddl	3
	Signification	,000

Qualités de représentation

	Initiales	Extraction
Competition_1	1,000	,726
Competition_2	1,000	,744
Competition_3	1,000	,613

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,776	3

Figure 4.3.1.1 - Factor analysis - Competition

The variance is 69.428, so the competition items account for 69.428% of the variance.

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,083	69,428	69,428	2,083	69,428	69,428
2	,550	18,320	87,748			
3	,368	12,252	100,000			

Figure 4.3.1.2 - Variance - Competition

4.3.2) Socialization

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.741, so the items are reliable and we can keep the Socialization variable.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,669
Test de sphéricité de Bartlett	Khi-deux approx.	145,705
	ddl	3
	Signification	,000

Qualités de représentation

	Initiales	Extraction
Socialisation_1	1,000	,716
Socialisation_2	1,000	,572
Socialisation_3	1,000	,699

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,741	3

Figure 4.3.2.1 - Factor analysis - Socialization

The variance is 66.235, so the socialization items account for 66.235% of the variance.

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	1,987	66,235	66,235	1,987	66,235	66,235
2	,602	20,070	86,304			
3	,411	13,696	100,000			

Figure 4.3.2.2 - Variance - Socialization

4.3.3) Escape

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.754, so the items are reliable and we can keep the Evasion variable.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,642
Test de sphéricité de Bartlett	Khi-deux approx.	179,170
	ddl	3
	Signification	,000

Qualités de représentation

	Initiales	Extraction
Evasion_1	1,000	,779
Evasion_2	1,000	,733
Evasion_3	1,000	,526

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,754	3

Figure 4.3.3.1 - Factor analysis - Evasion

The variance is 67.925, so the Evasion items account for 67.925% of the variance.

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,038	67,925	67,925	2,038	67,925	67,925
2	,644	21,470	89,395			
3	,318	10,605	100,000			

Figure 4.3.3.2 - Variance - Socialization

4.3.4) Freedom

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.744, so the items are reliable and we can keep the variable Freedom.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,652
Test de sphéricité de Bartlett	Khi-deux approx.	161,321
	ddl	3
	Signification	,000

Qualités de représentation

	Initiales	Extraction
Liberté_1	1,000	,534
Liberté_2	1,000	,748
Liberté_3	1,000	,725

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,744	3

Figure 4.3.4.1 - Factor analysis - Freedom

The variance is 66.893, so the freedom items account for 66.893% of the variance.

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,007	66,893	66,893	2,007	66,893	66,893
2	,637	21,222	88,115			
3	,357	11,885	100,000			

Figure 4.3.4.2 - Variance - Freedom

4.3.5) Motivation

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.701, so the items are reliable and we can keep the Motivation variable.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,700
Test de sphéricité de Bartlett	Khi-deux approx.	155,245
	ddl	6
	Signification	,000

Qualités de représentation

	Initiales	Extraction
Motivation_1	1,000	,631
Motivation_2	1,000	,509
Motivation_3	1,000	,452
Motivation_4	1,000	,550

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,701	4

Figure 4.3.5.1 - Factor analysis - Motivation

The variance is 53.538, so the motivation items account for 53.538% of the variance.

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,142	53,538	53,538	2,142	53,538	53,538
2	,813	20,330	73,868			
3	,586	14,656	88,524			
4	,459	11,476	100,000			

Figure 4.3.5.2 - Variance - Motivation

4.3.6) Gameplay

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.727, so the items are reliable and we can keep the Gameplay variable.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,689
Test de sphéricité de Bartlett	Khi-deux approx.	263,888
	ddl	10
	Signification	,000

Qualités de représentation

	Initiales	Extraction
Gameplay_1	1,000	,774
Gameplay_2	1,000	,700
Gameplay_3	1,000	,612
Gameplay_4	1,000	,746
Gameplay_5	1,000	,738

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,727	5

Figure 4.3.6.1 - Factor analysis - Gameplay

The variance is 71.422, so gameplay items account for 71.422% of the variance. However we note that there are two components explaining the gameplay, which means that we must create two variables for the gameplay.

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements			Sommes de rotation du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,430	48,604	48,604	2,430	48,604	48,604	2,061	41,215	41,215
2	1,141	22,819	71,422	1,141	22,819	71,422	1,510	30,207	71,422
3	,596	11,917	83,340						
4	,500	9,995	93,335						
5	,333	6,665	100,000						

Figure 4.3.6.2 - Variance - Gameplay

In the first component we find the items “Visual quality”, “Audio quality” and “History of the game”, this corresponds to players who are looking for a solo game with cinematographic aspects and in which there is a well-constructed scenario with strong cutscenes in the example of “the last of us”, “uncharted” or “Assassin's Creed”. This type of game allows you to experience an adventure through a hero.

In the second component, we have the items “Challenge” and “The possibility of playing with other players”, this corresponds more to players who are looking for a game that combines competition with other players. This type of games like “Warzone”, “Fortnite” or “PUBG”, emphasizes the competitive aspect, the goal of these games is to win a game, it is not to participate in an adventure in a virtual world.

We find the two aspects of the gameplay through these two components.

Rotation de la matrice des composantes[a]

	Composante	
	1	2
Gameplay_1	,855	,207
Gameplay_2	,830	,103
Gameplay_3	,775	,107
Gameplay_4	,140	,852
Gameplay_5	,139	,848

Figure 4.3.6.3 - Component - Gameplay

4.3.7) Purchase intention

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.699, ie below 0.7, however we decide not to remove item 3 “Price” or item 10 “Multiplayer” which would allow it to go above 0.7. The variance losing 6% by removing one of the two items (Appendix), we therefore consider that 0.699 being very close to 0.7 we can continue the analysis.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,698
Test de sphéricité de Bartlett	Khi-deux approx.	349,001
	ddl	45
	Signification	,000

Qualités de représentation

	Initiales	Extraction
IntAchat_1	1,000	,626
IntAchat_2	1,000	,692
IntAchat_3	1,000	,593
IntAchat_4	1,000	,496
IntAchat_5	1,000	,646
IntAchat_6	1,000	,515
IntAchat_7	1,000	,788
IntAchat_8	1,000	,720
IntAchat_9	1,000	,516
IntAchat_10	1,000	,719

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,699	10

Statistiques de total des éléments

	Moyenne de l'échelle en cas de suppression d'un élément	Variance de l'échelle en cas de suppression d'un élément	Corrélation complète des éléments corrigés	Alpha de Cronbach en cas de suppression de l'élément
IntAchat_1	34,01	18,464	,396	,670
IntAchat_2	33,79	17,771	,438	,662
IntAchat_3	33,78	19,970	,152	,711
IntAchat_4	33,19	18,936	,460	,666
IntAchat_5	34,54	17,477	,438	,661
IntAchat_6	33,43	18,681	,364	,676
IntAchat_7	33,47	18,318	,440	,664
IntAchat_8	33,97	17,781	,400	,669
IntAchat_9	34,39	18,259	,351	,678
IntAchat_10	33,98	18,710	,230	,704

Figure 4.3.7.1 - Factor analysis - Purchase intention

The variance is 63.099, so the purchase intention items account for 63.099% of the variance. However, we see that there are four components explaining purchase intention, which means that we must create four variables for purchase intention.

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements			Sommes de rotation du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,881	28,813	28,813	2,881	28,813	28,813	1,720	17,200	17,200
2	1,198	11,975	40,789	1,198	11,975	40,789	1,690	16,900	34,100
3	1,137	11,369	52,157	1,137	11,369	52,157	1,466	14,663	48,762
4	1,094	10,941	63,099	1,094	10,941	63,099	1,434	14,336	63,099
5	,870	8,703	71,802						
6	,795	7,951	79,753						
7	,650	6,501	86,254						
8	,510	5,104	91,358						
9	,504	5,037	96,395						
10	,360	3,605	100,000						

Figure 4.3.7.2 - Variance - Purchase intention

In the first component we find items 7 and 8 which are the “Game scenario” and “Game characters”. In the second component we find items 1, 2 and 9 which are “New”, “Durability” and “Note in the press”. The third component is made up of items 3 and 6 which are the “Price” and “Type of games”. We do not take item 4 “Quality” because it has a correlation of 0.528 to component 3 which is less than 0.6. Finally, the fourth component is made up of items 5 and 10 which are the “Game developer” and the “Possibility of playing in multiplayer”.

We see that the purchase intention is therefore dissociated into 4 variables which are:

- Component 1: The content of the game
- Component 2: New in the game
- Component 3: The price and type of game
- Component 4: The developer of the game with the aspect of single player or multiplayer

Rotation de la matrice des composantes[a]

	Composante			
	1	2	3	4
IntAchat_1	,209	,730	-,124	,184
IntAchat_2	,195	,767	,239	-,092
IntAchat_3	-,144	,069	,748	-,089
IntAchat_4	,345	,173	,528	,259
IntAchat_5	,256	,094	,213	,725
IntAchat_6	,233	,063	,651	,182
IntAchat_7	,839	,136	,246	-,069
IntAchat_8	,816	,141	-,061	,171
IntAchat_9	-,030	,685	,148	,156
IntAchat_10	-,082	,116	-,016	,836

Figure 4.3.7.3 - Component - Purchase intention

4.3.8) Emotions

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.709, so the items are reliable and we can keep the Emotions variable.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,732
Test de sphéricité de Bartlett	Khi-deux approx.	269,613
	ddl	15
	Signification	,000

Qualités de représentation

	Initiales	Extraction
Emotions_1	1,000	,735
Emotions_2	1,000	,602
Emotions_3	1,000	,732
Emotions_4	1,000	,631
Emotions_5	1,000	,536
Emotions_6	1,000	,581

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,709	6

Figure 4.3.8.1 - Factor analysis - Emotions

The variance is 63.623, so the emotion items account for 63.623% of the variance. However, we see that there are two components explaining the emotions, which means that we must create two variables for the emotions.

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements			Sommes de rotation du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,553	42,557	42,557	2,553	42,557	42,557	1,915	31,910	31,910
2	1,264	21,065	63,623	1,264	21,065	63,623	1,903	31,712	63,623
3	,675	11,258	74,881						
4	,602	10,026	84,906						
5	,491	8,180	93,086						
6	,415	6,914	100,000						

Figure 4.3.8.2 - Variance - Emotions

In the first component we find items 1, 3 and 6 which are respectively “Satisfaction”, “Pleasure” and “Excitement”. While in the second component we have items 2, 4 and 5 which are “Frustration”, “Anger” and “Anguish”.

We see two variables for emotion which are on the one hand, in the first component, positive emotions and on the other hand, in the second component, negative emotions.

Rotation de la matrice des composantes[a]

	Composante	
	1	2
Emotions_1	,847	,134
Emotions_2	,151	,761
Emotions_3	,856	-,005
Emotions_4	,173	,775
Emotions_5	,031	,732
Emotions_6	,642	,411

Figure 4.3.8.3 - Component - Emotions

4.3.9) The Open-World

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.788, so the items are reliable and we can keep the Open-World variable.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,694
Test de sphéricité de Bartlett	Khi-deux approx.	186,862
	ddl	3
	Signification	,000

Qualités de représentation

	Initiales	Extraction
OpenWorld_1	1,000	,639
OpenWorld_2	1,000	,742
OpenWorld_3	1,000	,734

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,788	3

Figure 4.3.9.1 - Factor analysis - Open-World

The variance is 70.504, so the Open-World items account for 70.504% of the variance.

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,115	70,504	70,504	2,115	70,504	70,504
2	,517	17,241	87,745			
3	,368	12,255	100,000			

Figure 4.3.9.2 - Variance - Open-World

4.3.10) Additional content

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.764, so the items are reliable and we can keep the Additional Content variable.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,681
Test de sphéricité de Bartlett	Khi-deux approx.	169,782
	ddl	3
	Signification	,000

Qualités de représentation

	Initiales	Extraction
ContSupp_1	1,000	,687
ContSupp_2	1,000	,624
ContSupp_3	1,000	,752

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,764	3

Figure 4.3.10.1 - Factor analysis - Additional content

The variance is 68.787, so additional content items account for 68.787% of the variance.

Variance totale expliquée

	Valeurs propres initiales			Sommes extraites du carré des chargements		
Composante	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,064	68,787	68,787	2,064	68,787	68,787
2	,554	18,469	87,257			
3	,382	12,743	100,000			

Figure 4.3.10.2 - Variance - Additional content

4.3.11) Artificial intelligence

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.781, so the items are reliable and we can keep the Artificial Intelligence variable.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,702
Test de sphéricité de Bartlett	Khi-deux approx.	173,195
	ddl	3
	Signification	,000

Qualités de représentation

	Initiales	Extraction
IA_1	1,000	,667
IA_2	1,000	,714
IA_3	1,000	,709

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,781	3

Figure 4.3.11.1 - Factor analysis - Artificial Intelligence

The variance is 69.683, so the artificial intelligence items account for 69.683% of the variance.

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,090	69,683	69,683	2,090	69,683	69,683
2	,489	16,289	85,972			
3	,421	14,028	100,000			

Méthode d'extraction : Analyse en composantes principales.

Figure 4.3.11.2 - Variance - Artificial Intelligence

4.3.12) Innovation

The KMO is greater than 0.5 and Bartlett's test less than 0.05, so we can keep the variables and continue the factor analysis.

Looking at the table regarding the quality of representation, all the items are greater than 0.4. We can therefore keep all the items.

Cronbach's alpha is 0.787, so the items are reliable and we can keep the Innovation variable.

Indice KMO et test de Bartlett

Indice de Kaiser-Meyer-Olkin pour la mesure de la qualité d'échantillonnage.		,673
Test de sphéricité de Bartlett	Khi-deux approx.	286,054
	ddl	6
	Signification	,000

Qualités de représentation

	Initiales	Extraction
Innovation_1	1,000	,582
Innovation_2	1,000	,553
Innovation_3	1,000	,721
Innovation_4	1,000	,591

Statistiques de fiabilité

Alpha de Cronbach	Nombre d'éléments
,787	4

Figure 4.3.12.1 - Factor analysis - Innovation

The variance is 61.159, so the innovation items account for 61.159% of the variance.

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,446	61,159	61,159	2,446	61,159	61,159
2	,845	21,120	82,279			
3	,431	10,778	93,057			
4	,278	6,943	100,000			

Figure 4.3.12.2 - Variance - Innovation

The Cronbach's alpha being validated, we can proceed to the rest of the analysis concerning the calculation of the average before proceeding to the regression which will validate or not the hypotheses.

4.4) Analysis of the mean

The majority of the questions are of the interval type with a scale ranging from 1 (“Not at all important”, “Not at all agree”) to 5 (“Very important”, “Fully agree”) with a neutral point at 3.

Only questions concerning non-player characters, pathfinding, machine learning, cloud gaming and virtual reality are nominal. The possible answers are either “Yes” or “No”.

The analysis of the means makes it possible to show the feelings of the respondents concerning the variables that were created following the factor analysis carried out.

4.4.1) Factors indirectly impacting gameplay

4.4.1.1) Indirect factors linked to motivation

For “Competition”, the average is around 3.9 (Average = 3.8718), so most respondents tend to agree that in general competition is a motivator to play. Regarding the standard deviation, this is rather low (Standard deviation = 0.72277), this means that the data are rather homogeneous and are relatively dispersed around the mean.

For “Socialization” the average is around 3.4 (Average = 3.4263), so most respondents moderately agree that in general socialization is a motivator to gamble. Regarding the standard deviation, this is moderate (Standard deviation = 0.88278), this means that the data is scattered around the mean in a rather balanced way with both respondents being significantly in disagreement with the fact that the socialization is a motivator, and others appreciably agree.

For “Breakout” the average is around 3.5 (Average = 3.4824), so most respondents moderately agree that in general breakout is a motivator to gamble. Regarding the standard deviation, this is contrasted (Standard deviation = 0.94945), this means that the data is scattered around the mean with both respondents rather disagreeing that the escape is a motivator, and others tend to agree, if not totally agree.

For “Freedom” the average is around 3.3 (Average = 3.2901), so most respondents slightly agree that freedom is generally a motivator to gamble. Regarding the standard deviation, this is contrasted (Standard deviation = 0.94323), this means that the data is scattered around the mean with both respondents rather disagreeing with the fact that the escape is a motivator, and others tend to agree.

In conclusion, “Competition” is considered the most important factor regarding motivation to play in general. While "Freedom" is the factor considered the least important. Respondents are therefore looking for a game in which there is a challenge or competition.

Statistiques descriptives

	N	Minimum	Maximum	Moyenne	Ecart type
COMPETITION	208	1,33	5,00	3,8718	,72277
SOCIALISATION	208	1,00	5,00	3,4263	,88278
EVASION	208	1,00	5,00	3,4824	,94945
LIBERTE	208	1,00	5,00	3,2901	,94323
N valide (liste)	208				

Figure 4.4.1.1 - Descriptive statistics - Indirect factors - Motivation

4.4.1.2) Indirect factors linked to artificial intelligence

For “NPCs,” the average is 1.12, with 1 being considered respondent's agreement that NPCs are important in a game and 2 as respondent disagreement.
The majority of respondents therefore agree that in general NPCs are important in a video game.

For “Pathfinding”, the mean is 1.10, with 1 considered as respondent's agreement that pathfinding is important in a game and 2 as respondent disagreement.
The majority of respondents therefore agree that in general pathfinding is important in a video game.

For "Machine Learning", the average is 1.14, with 1 being considered as respondent's agreement that machine learning is important in a game and 2 as respondent disagreement.
The majority of respondents therefore agree that in general machine learning is important in a video game.

For "Open-World" the average is around 4.4 (Average = 4,4119), so most respondents agree that in general Open-World is important in games. video. Regarding the standard deviation, it is not dispersed (Standard deviation = 0.60657), this means that the data are relatively close to the mean.

In conclusion, all four factors seem to be considered important by respondents in a game.

Statistiques descriptives

	N	Minimum	Maximum	Moyenne	Ecart type
PNJ	208	1	2	1,12	,326
Pathfinding	208	1	2	1,10	,296
MachineLearning	208	1	2	1,14	,352
OPENWORLD	208	1,00	5,00	4,4119	,60657
N valide (liste)	208				

Figure 4.4.1.2 - Descriptive statistics - Indirect factors - IA

4.4.1.3) Indirect factors linked to innovation

For "Cloud gaming", the average is 1.24, 1 being considered as the respondent's agreement that cloud gaming is important for video games and 2 as the respondents' disagreement.
The majority of respondents therefore agree that in general cloud gaming is important for video games, however the standard deviation being 0.425, there is a disparity between respondents who consider cloud gaming important and those who who do not find it important.

For “Virtual Reality”, the average is 1.17, with 1 considered as the respondent's agreement that virtual reality is important for a game and 2 as the respondent's disagreement.
The majority of respondents therefore agree that in general virtual reality is important in a game.

For “Additional Content” the average is around 1.9 (Average = 1.9391), so most respondents somewhat disagree about the importance of additional content in a game. Regarding the

standard deviation, it is rather dispersed (Standard deviation = 0.97170) between people who strongly disagree and people who are neutral on the subject.

In conclusion, "Additional Content" seems to be a non-important factor for video games. While "Cloud gaming" and "Virtual reality" seem to be important factors in video games.

Statistiques descriptives

	N	Minimum	Maximum	Moyenne	Ecart type
CloudGaming	208	1	2	1,24	,425
RealVirtuelle	208	1	2	1,17	,375
CONTSUPP	208	1,00	5,00	1,9391	,97170
N valide (liste)	208				

Figure 4.4.1.3 - Descriptive statistics - Indirect factors - Innovation

4.4.2) Factors directly impacting the gameplay

The mean analysis allows us to look at which direct factors seem to be the most important.

For “Motivation” the average is around 3.9 (Average = 3.9231), so most respondents tend to agree that in general motivation is an important factor in the gaming experience. Concerning the standard deviation, it is low (Standard deviation = 0.5810), this means that the data are rather homogeneous and are relatively dispersed around the mean.

For “AI”, the average is around 3.8 (Average = 3.8141), so the majority of respondents tend to agree about the importance of artificial intelligence in a game. Typically, it is rather moderate (Standard deviation = 0.78338) between people in agreement and people who are neutral on the subject.

For “Innovation”, the average is around 3.7 (Average = 3.7308), so most respondents tend to agree on the importance of innovation. Regarding the standard deviation, it is rather dispersed (Standard deviation = 0.70170) between people in agreement and people who are neutral on the subject.

To conclude, all three factors seem to be important for video games.

Statistiques descriptives

	N	Minimum	Maximum	Moyenne	Ecart type
MOTIVATION	208	1,50	5,00	3,9231	,58160
IA	208	1,00	5,00	3,8141	,78338
INNOVATION	208	1,00	5,00	3,7308	,70170
N valide (liste)	208				

Figure 4.4.2 - Descriptive statistics - Direct factors

4.4.3) “Gameplay”, “Purchase intention” and “Emotions”

The average analysis allows us to see the important criteria during the purchase intention of the players as well as the emotions they feel when they play.

For 'Gameplay_Aventure' the average is around 4.2 (Average = 4.1635), so most respondents agree that in general good quality single player games with a rich history are important for their gaming experience. Regarding the standard deviation, this is moderate (Standard deviation = 0.73702), however the average being high, the respondents are mostly in agreement.

For “Gameplay_Social”, the average is around 3.8 (Average = 3.7837), so most respondents agree that in general multiplayer games with challenges and competitions are important for them. gaming experience. Regarding the standard deviation, this is slightly dispersed (Standard deviation = 0.80387), which means that the respondents are divided between neutral and in agreement.

For “IntPurchase_Contenu”, the average is around 3.9 (Average = 3.8966), so most respondents tend to agree that in general what is related to the content of a game (Scenario, characters) has an importance on their purchase intention. Regarding the standard deviation, this is slightly dispersed (Standard deviation = 0.78336), which means that the respondents are divided between neutral and in agreement.

For "IntPurchase_Newly", the average is around 3.6 (Average = 3.5513), so most respondents slightly agree that in general the release date of a game as well as its ratings have an importance on their intention to purchase. Regarding the standard deviation, it is rather moderate (Standard deviation = 0.67748), which means that the respondents are divided between neutral and rather agree.

For "IntPurchase_Prix", the average is around 4 (Average = 4.0120), so most respondents agree that in general the price and type of game matter in their intention. purchase. Regarding the standard deviation, it is rather balanced (Standard deviation = 0.66746), which means that the respondents are generally in agreement.

For "IntAchat_Developpeur", the average is around 3.4 (Average = 3.3582), so most respondents slightly agree that in general the developer of the game and the possibility of multiplayer are good. importance in purchase intention. Regarding the standard deviation, it is dispersed (Standard deviation = 0.84432), which means that the respondents are divided between rather disagree and rather agree.

For “Emotions_Pos” the average is around 4.2 (Average = 4.2340), so most respondents agree that in general they experience positive emotions when playing. Regarding the standard deviation, it is balanced (Standard deviation = 0.53313), which means that the respondents mostly agree.

For "Emotions_Neg", the average is 3 so most respondents are neutral in saying that in general they feel negative emotions when playing. Regarding the standard deviation, it is dispersed (Standard deviation = 0.80056), which means that the respondents are divided between rather disagree and rather agree.

In conclusion, it seems that respondents prefer to play single player adventure games with a real storyline rather than multiplayer games with competition.
We notice that there are several factors of importance at the level of the purchase intention and that the most important is the "Price" and the one which seems the least important is the factor "Developer".
For emotions, the majority of respondents seem to feel positive emotions stronger than negative emotions.

Statistiques descriptives

	N	Minimum	Maximum	Moyenne	Ecart type
GAMEPLAY_AVENTURE	208	1,00	5,00	4,1635	,73702
GAMEPLAY_SOCIAL	208	1,00	5,00	3,7837	,80387
INTACHAT_CONTENU	208	2,00	5,00	3,8966	,78336
INTACHAT_NOUVEAUTÉ	208	1,33	5,00	3,5513	,67748
INTACHAT_PRIX	208	2,00	5,00	4,0120	,66746
INTACHAT_DEVELOPPEUR	208	1,00	5,00	3,3582	,84432
EMOTIONS_POSITIVES	208	2,33	5,00	4,2340	,53313
EMOTIONS_NEGATIVES	208	1,00	5,00	3,0000	,80056
N valide (liste)	208				

Figure 4.4.3 - Descriptive statistics

4.5) T test for independent sample

In order to test hypotheses H5, H6, H8, H10 and H11, we will have to perform T tests for independent sample, because in each of the hypotheses there is a nominal variable and an interval variable.

4.5.1) Non-player characters have a positive influence on artificial intelligence

In order to validate our hypothesis 5, we will see if the people who answered that the non-player characters were important in a game have the same behavior as the people who answered that they were not important.

In the event that respondents have the same behavior, this refutes the hypothesis that NPCs have a positive influence on artificial intelligence.

H0: The perception of artificial intelligence is the same for respondents who find NPCs important in games and respondents who do not find NPCs to be important in a game.

H1: The perception of artificial intelligence is different for respondents who find NPCs important in games and respondents who do not find NPCs to be important in a game.

We can notice on this first table that among group 1, which corresponds to respondents for whom NPCs are important, the average is about 3.9 (Average = 3.8561), while for group 2 the average is d 'about 3.5 (Average = 3.5067).

So, it seems that NPCs have a positive influence on artificial intelligence. However, this information is not sufficient to conclude.

Statistiques de groupe

	PNJ	N	Moyenne	Ecart type	Moyenne erreur standard
IA	1	183	3,8561	,74079	,05476
	2	25	3,5067	1,00977	,20195

Figure 4.5.1.1 - T Test - Group statistics

Note that the sig on the independent samples test table is 0.032. The sig being <0.05 (0.032) we will look at the bilateral sig of the lower line.

This being greater than 0.025 (0.106), we must validate H0 and refute H1.

Hypothesis 5 that NPCs positively influence AI is therefore rejected.

Test des échantillons indépendants

		Test de Levene sur l'égalité des variances		Test t pour égalité des moyennes						
									Intervalle de confiance de la différence à 95 %	
		F	Sig.	t	ddl	Sig. (bilatéral)	Différence moyenne	Différence erreur standard	Inférieur	Supérieur
IA	Hypothèse de variances égales	4,651	,032	2,109	206	,036	,34944	,16566	,02283	,67605
	Hypothèse de variances inégales			1,670	27,639	,106	,34944	,20925	-,07944	,77831

Figure 4.5.1.2 - T Test - Hypothesis validation

4.5.2) Pathfinding has an impact on artificial intelligence

In order to validate our hypothesis 6, we will look at whether the respondents who answered that pathfinding was important in a game have the same behavior as the respondents who answered that it was not important.

If the respondents have the same behavior, this refutes the hypothesis that pathfinding has a positive influence on artificial intelligence.

H0: The perception of artificial intelligence is the same for respondents who find pathfinding important in games and respondents who do not find pathfinding to be important in games.

H1: The perception of artificial intelligence is different for respondents who find pathfinding important in games and respondents who do not find pathfinding to be important in games.

We can notice on this first table that among group 1 which corresponds to respondents for whom pathfinding is important, the average is approximately 3.9 (Average = 3.8511), while for group 2 the average is d 'about 3.5 (Average = 3.4667). It would therefore seem that pathfinding has a positive influence on artificial intelligence. However, this information is not sufficient to conclude.

Statistiques de groupe

	Pathfinding	N	Moyenne	Ecart type	Moyenne erreur standard
IA	1	188	3,8511	,76560	,05584
	2	20	3,4667	,88125	,19705

Figure 4.5.2.1 - T Test - Group statistics

Note that the sig on the independent samples test table is 0.361. The sig being> 0.05 (0.361) we will look at the bilateral sig of the upper line.

This being between 0.025 and 0.05 (0.037), I decide to partially validate hypothesis 6 according to which pathfinding positively influences AI.

Test des échantillons indépendants

		Test de Levene sur l'égalité des variances		Test t pour égalité des moyennes						
									Intervalle de confiance de la différence à 95 %	
		F	Sig.	t	ddl	Sig. (bilatéral)	Différence moyenne	Différence erreur standard	Inférieur	Supérieur
IA	Hypothèse de variances égales	,838	,361	2,103	206	,037	,38440	,18275	,02410	,74469
	Hypothèse de variances inégales			1,877	22,159	,074	,38440	,20481	-,04018	,80898

Figure 4.5.2.2 - T Test - Hypothesis validation

4.5.3) Machine learning has an impact on artificial intelligence

In order to validate our hypothesis 8, we will look at whether the respondents who answered that machine learning was important in a game behave the same way as the respondents who answered that it was not important.

If the respondents have the same behavior, this refutes the hypothesis that machine learning has a positive influence on artificial intelligence.

H0: The perception of artificial intelligence is the same for respondents who find machine learning important in games and respondents who do not find machine learning important in games.

H1: The perception of artificial intelligence is different for respondents who find machine learning important in games and respondents who do not find machine learning important in games.

We can notice on this first table that among group 1, which corresponds to respondents for whom machine learning is important, the average is about 3.8 (Average = 3.8464), while for group 2 the average is about 3.6 (Mean = 3.6222). It would therefore appear that machine learning has a positive influence on artificial intelligence. However, this information is not sufficient to conclude.

Statistiques de groupe

	MachineLearning	N	Moyenne	Ecart type	Moyenne erreur standard
IA	1	178	3,8464	,79319	,05945
	2	30	3,6222	,70430	,12859

Figure 4.5.3.1 - T Test - Group statistics

Note that the sig on the independent samples test table is 0.228. The sig being> 0.05 (0.228) we will look at the bilateral sig of the upper line.

This being greater than 0.025 (0.147), we must validate H0 and refute H1.

Hypothesis 8 that machine learning positively influences AI is therefore rejected.

Test des échantillons indépendants

		Test de Levene sur l'égalité des variances		Test t pour égalité des moyennes						
									Intervalle de confiance de la différence à 95 %	
		F	Sig.	t	ddl	Sig. (bilatéral)	Différence moyenne	Différence erreur standard	Inférieur	Supérieur
IA	Hypothèse de variances égales	1,461	,228	1,454	206	,147	,22422	,15419	-,07978	,52822
	Hypothèse de variances inégales			1,583	42,406	,121	,22422	,14167	-,06159	,51003

Figure 4.5.3.2 - T Test - Hypothesis validation

4.5.4) Cloud gaming has an impact on innovation

In order to validate our hypothesis 10, we will look at whether the respondents who answered that cloud gaming was important in a game have the same behavior as the respondents who answered that it was not important.

If the respondents have the same behavior, this refutes the hypothesis that cloud gaming has a positive influence on innovation.

H0: The perception of innovation is the same for respondents who find cloud gaming important in games and respondents who do not find cloud gaming important in games.

H1: The perception of innovation is different for respondents finding that cloud gaming is important in games and respondents not finding that cloud gaming is important in a game.

We can notice on this first table that among group 1, which corresponds to respondents for whom cloud gaming is important, the average is about 3.8 (Average = 3.8192), while for group 2 the average is approximately 3.4 (Average = 3.4439). It would therefore seem that cloud gaming has a positive influence on innovation. However, this information is not sufficient to conclude.

Statistiques de groupe

	CloudGaming	N	Moyenne	Ecart type	Moyenne erreur standard
INNOVATION	1	159	3,8192	,63452	,05032
	2	49	3,4439	,82957	,11851

Figure 4.5.4.1 - T Test - Group statistics

Note that the sig on the independent samples test table is 0.004. The sig being <0.05 (0.004) we will look at the bilateral sig of the lower line.

This being less than 0.025 (0.005), we can validate H1.

Hypothesis 10 according to which cloud gaming positively influences innovation is therefore validated.

Test des échantillons indépendants

		Test de Levene sur l'égalité des variances		Test t pour égalité des moyennes						
									Intervalle de confiance de la différence à 95 %	
		F	Sig.	t	ddl	Sig. (bilatéral)	Différence moyenne	Différence erreur standard	Inférieur	Supérieur
INNOVATION	Hypothèse de variances égales	8,552	,004	3,353	206	,001	,37530	,11192	,15466	,59595
	Hypothèse de variances inégales			2,915	66,215	,005	,37530	,12875	,11826	,63235

Figure 4.5.4.2 - T Test - Hypothesis validation

4.5.5) Virtual reality has an impact on innovation

In order to validate our hypothesis 11, we will look at whether the respondents who answered that virtual reality was important in a game have the same behavior as the respondents who answered that it was not important.

If the respondents have the same behavior, this refutes the hypothesis that virtual reality has a positive influence on innovation.

H0: The perception of innovation is the same for respondents who find virtual reality important in games and respondents who do not find virtual reality important in games.

H1: The perception of innovation is different for respondents who find virtual reality important in games and respondents who do not find virtual reality important in a game.

We can notice on this first table that among group 1, which corresponds to respondents for whom virtual reality is important, the average is around 3.8 (Average = 3.8280), while for group 2 the average is of 3.25. It would therefore seem that virtual reality has a positive influence on innovation. However, this information is not sufficient to conclude.

Statistiques de groupe

	RealVirtuelle	N	Moyenne	Ecart type	Moyenne erreur standard
INNOVATION	1	173	3,8280	,63025	,04792
	2	35	3,2500	,83798	,14164

Figure 4.5.5.1 - T Test - Group statistics

Note that the sig on the independent samples test table is 0.023. The sig being <0.05 (0.023) we will look at the bilateral sig of the lower line.

This being less than 0.025 (0.000), we can validate H1.

Hypothesis 11 according to which virtual reality positively influences innovation is therefore validated.

Test des échantillons indépendants

		Test de Levene sur l'égalité des variances		Test t pour égalité des moyennes						
									Intervalle de confiance de la différence à 95 %	
		F	Sig.	t	ddl	Sig. (bilatéral)	Différence moyenne	Différence erreur standard	Inférieur	Supérieur
INNOVATION	Hypothèse de variances égales	5,273	,023	4,662	206	,000	,57803	,12399	,33358	,82249
	Hypothèse de variances inégales			3,866	42,118	,000	,57803	,14953	,27630	,87977

Figure 4.5.5.2 - T Test - Hypothesis validation

4.6) Regression

4.6.1) Multiple linear regression - Effects on motivation

First, we will test the collinearity of the variables on motivation.

We find that all variables have a sig <0.05, so the correlations are significant.

The correlations being significant, we can continue the analysis.

Corrélations

		COMPETITION	SOCIALISATION	EVASION	LIBERTE	MOTIVATION
COMPETITION	Corrélation de Pearson	1	,100	-,143*	-,193**	,191**
	Sig. (bilatérale)		,149	,039	,005	,006
	N	208	208	208	208	208
SOCIALISATION	Corrélation de Pearson	,100	1	,009	,047	,163*
	Sig. (bilatérale)	,149		,897	,502	,019
	N	208	208	208	208	208
EVASION	Corrélation de Pearson	-,143*	,009	1	,320**	,331**
	Sig. (bilatérale)	,039	,897		,000	,000
	N	208	208	208	208	208
LIBERTE	Corrélation de Pearson	-,193**	,047	,320**	1	,245**
	Sig. (bilatérale)	,005	,502	,000		,000
	N	208	208	208	208	208
MOTIVATION	Corrélation de Pearson	,191**	,163*	,331**	,245**	1
	Sig. (bilatérale)	,006	,019	,000	,000	
	N	208	208	208	208	208

Figure 4.6.1.1 - Correlations linked to motivation

Following the “step by step” method, we see that all the variables have a significant contribution. We can therefore keep the 4 variables.

Variables introduites/éliminées[a]

Modèle	Variables introduites	Variables éliminées	Méthode
1	EVASION	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).
2	COMPETITION	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).
3	LIBERTE	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).
4	SOCIALISATION	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).

Figure 4.6.1.2 - “Step by step” method - motivation

In the summary table of models we will focus on the adjusted R squared given that we are on a multiple linear regression.

Here, we can see that the adjusted R squared is 0.203, so we can say that the variables “Escape”, “Competition”, “Freedom” and “Socialization” explain 20.3% of the variance of the variable “Motivation”. .

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,331[a]	,110	,106	,55006
2	,410[b]	,168	,160	,53311
3	,450[c]	,203	,191	,52311
4	,467[d]	,218	,203	,51929

a. Prédicteurs : (Constante), EVASION

b. Prédicteurs : (Constante), EVASION, COMPETITION

c. Prédicteurs : (Constante), EVASION, COMPETITION, LIBERTE

d. Prédicteurs : (Constante), EVASION, COMPETITION, LIBERTE, SOCIALISATION

Figure 4.6.1.3 - Summary of models - motivation

Since all sig are less than 0.05, we can consider the adjusted R-squared value which is 0.203 to be correct.

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	7,691	1	7,691	25,421	,000[b]
	Résidu	62,328	206	,303		
	Total	70,019	207			
2	Régression	11,756	2	5,878	20,682	,000[c]
	Résidu	58,263	205	,284		
	Total	70,019	207			
3	Régression	14,196	3	4,732	17,293	,000[d]
	Résidu	55,823	204	,274		
	Total	70,019	207			
4	Régression	15,279	4	3,820	14,165	,000[e]
	Résidu	54,741	203	,270		
	Total	70,019	207			

a. Variable dépendante : MOTIVATION

b. Prédicteurs : (Constante), EVASION

c. Prédicteurs : (Constante), EVASION, COMPETITION

d. Prédicteurs : (Constante), EVASION, COMPETITION, LIBERTE

e. Prédicteurs : (Constante), EVASION, COMPETITION, LIBERTE, SOCIALISATION

Figure 4.6.1.4 - ANOVA - motivation

The table of coefficients shows us that:

- The impact of the “Evasion” variable on the “Motivation” variable is significant (sig = 0.000) or less than 0.05, so we can accept hypothesis H3, according to which evasion has a positive influence on motivation.
- The impact of the variable “Competition” on the variable “Motivation” is significant (sig = 0.000) or less than 0.05, so we can accept the hypothesis H1, according to which competition has a positive influence on motivation.
- The impact of the variable “Freedom” on the variable “Motivation” is significant (sig = 0.003) or less than 0.05, so we can accept the hypothesis H4, according to which freedom has a positive influence on motivation.
- The impact of the variable “Socialization” on the variable “Motivation” is significant (sig = 0.046) or less than 0.05, so we can accept the hypothesis H2, according to which socialization has a positive influence on motivation.

So thanks to this table, we can see that our dependent variable Y which is the “Motivation” = Y = 1.792 + (0.209 x COMPETITION) + (0.188 x EVASION) + (0.118 x FREEDOM) + (0.083 x SOCIALIZATION)

Thus, we can conclude by giving a classification of the variables having an impact on “Motivation”, from the most impacting variable to the least impacting variable:

1. Competition

2. Evasion
3. Freedom
4. Socialization

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés		
		B	Erreur standard	Bêta	t	Sig.
1	(Constante)	3,216	,145		22,131	,000
	EVASION	,203	,040	,331	5,042	,000
2	(Constante)	2,383	,261		9,116	,000
	EVASION	,224	,039	,366	5,690	,000
	COMPETITION	,196	,052	,243	3,782	,000
3	(Constante)	2,012	,285		7,058	,000
	EVASION	,188	,041	,307	4,631	,000
	COMPETITION	,220	,051	,273	4,275	,000
	LIBERTE	,123	,041	,200	2,986	,003
4	(Constante)	1,792	,304		5,903	,000
	EVASION	,188	,040	,306	4,658	,000
	COMPETITION	,209	,051	,259	4,057	,000
	LIBERTE	,118	,041	,191	2,875	,004
	SOCIALISATION	,083	,041	,125	2,004	,046

a. Variable dépendante : MOTIVATION

Figure 4.6.1.5 - Coefficients - motivation

4.6.2) Simple linear regression - Effect on AI

First, we will test the collinearity of the “Open-World” variable on the AI.

We find that the variable “Open-World” has a sig <0.05, so the correlation is significant. We see that the correlation is 0.384.

The correlation being significant, we can continue the analysis.

Corrélations

		OPENWORLD	IA
OPENWORLD	Corrélation de Pearson	1	,384**
	Sig. (bilatérale)		,000
	N	208	208
IA	Corrélation de Pearson	,384**	1
	Sig. (bilatérale)	,000	
	N	208	208

Figure 4.6.2.1 - Correlations linked to AI

In the summary table of models we are going to focus on R squared given that we are on a simple linear regression.

Here we can see that the R squared is 0.148, so we can say that the variable “Open-world” explains 14.8% of the variance of the variable “IA”.

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,384[a]	,148	,144	,72494

a. Prédicteurs : (Constante), OPENWORLD

Figure 4.6.2.2 - Summary of models - IA

Since the sig is less than 0.05, we can consider the R-squared value which is 0.148 to be correct.

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	18,775	1	18,775	35,725	,000[b]
	Résidu	108,260	206	,526		
	Total	127,034	207			

Figure 4.6.2.3 - ANOVA - IA

The table of coefficients shows us that:

- The impact of the variable “Open-World” on the variable “IA” is significant (sig = 0.000) or less than 0.05, so we can validate the hypothesis H7, according to which the Open-World has an influence. positive on AI.

So thanks to this table, we can see that our dependent variable Y which is the “IA” = Y = 1.624 + (0.496 x OPENWORLD)

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés		
		B	Erreur standard	Bêta	t	Sig.
1	(Constante)	1,624	,370		4,389	,000
	OPENWORLD	,496	,083	,384	5,977	,000

a. Variable dépendante : IA

Figure 4.6.2.4 - Coefficients - motivation

4.6.3) Simple linear regression - Effect on Innovation

First, we will test the collinearity of the variable “Additional content” on Innovation.

We find that the variable “Additional content” has a sig> 0.05 (0.482), so the correlation is not significant. We must reject Hypothesis H9, that additional content positively influences innovation.

Corrélations

		CONTSUPP	INNOVATION
CONTSUPP	Corrélation de Pearson	1	,049
	Sig. (bilatérale)		,482
	N	208	208
INNOVATION	Corrélation de Pearson	,049	1
	Sig. (bilatérale)	,482	
	N	208	208

Figure 4.6.3.1 - Correlations linked to Innovation

4.6.4) Multiple Linear Regression - Effects on Adventure Gameplay

First, we are going to test the collinearity of the variables on the “Gameplay_Aventure” variable.

We find that the variables “Motivation” and “IA” have a sig> 0.05, the correlations are therefore not significant. However, we note that the variable “Innovation” has a sig <0.05, the correlation is therefore significant for this variable.

The correlation being significant, we can continue the analysis.

Corrélations

		MOTIVATION	IA	INNOVATION	GAMEPLAY_AVENTURE
MOTIVATION	Corrélation de Pearson	1	,105	,311**	,102
	Sig. (bilatérale)		,130	,000	,143
	N	208	208	208	208
IA	Corrélation de Pearson	,105	1	,207**	,124
	Sig. (bilatérale)	,130		,003	,075
	N	208	208	208	208
INNOVATION	Corrélation de Pearson	,311**	,207**	1	,155*
	Sig. (bilatérale)	,000	,003		,026
	N	208	208	208	208
GAMEPLAY_AVENTURE	Corrélation de Pearson	,102	,124	,155*	1
	Sig. (bilatérale)	,143	,075	,026	
	N	208	208	208	208

Figure 4.6.4.1 - Correlations linked to Adventure Gameplay

In the summary table of the models we will be interested in the R-squared since we have gone on a simple linear regression following the elimination of the variables “Motivation” and “IA”.

Here we can see that the R squared is 0.024, so we can say that the variable “Innovation” explains 2.4% of the variance of the variable “Gameplay_Aventure”.

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,155[a]	,024	,019	,72990

a. Prédicteurs : (Constante), INNOVATION

Figure 4.6.4.2 - Summary of models - Adventure Gameplay

Since the sig is less than 0.05, we can consider the R-squared value which is 0.024 to be correct.

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	2,694	1	2,694	5,057	,026[b]
	Résidu	109,748	206	,533		
	Total	112,442	207			

a. Variable dépendante : GAMEPLAY_AVENTURE

b. Prédicteurs : (Constante), INNOVATION

Figure 4.6.4.3 - ANOVA - Adventure Gameplay

The table of coefficients shows us that:

- The impact of the “Innovation” variable on the “Gameplay_Aventure” variable is significant (sig = 0.026) or less than 0.05, so we can at this stage partially validate hypothesis H14, according to which Innovation has an influence. positive on Gameplay.

So thanks to this table, we can see that our dependent variable Y which is ”GAMEPLAY_AVENTURE” = Y = 3.557 + (0.163 x INNOVATION)

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés		
		B	Erreur standard	Bêta	t	Sig.
1	(Constante)	3,557	,274		12,961	,000
	INNOVATION	,163	,072	,155	2,249	,026

a. Variable dépendante : GAMEPLAY_AVENTURE

Figure 4.6.4.4 - Coefficients - Adventure Gameplay

4.6.5) Multiple Linear Regression - Effects on Social Gameplay

First we will test the collinearity of the variables on the variable “Gameplay_Social”.

We find that all variables have a sig> 0.05, so the correlations are not significant. However, we decide to continue the analysis with the variable “Motivation” which has a sig close to 0.05 (0.068). Its correlation is 0.127.

Corrélations

		MOTIVATION	IA	INNOVATION	GAMEPLAY_SOCIAL
MOTIVATION	Corrélation de Pearson	1	,105	,311**	,127
	Sig. (bilatérale)		,130	,000	,068
	N	208	208	208	208
IA	Corrélation de Pearson	,105	1	,207**	,020
	Sig. (bilatérale)	,130		,003	,772
	N	208	208	208	208
INNOVATION	Corrélation de Pearson	,311**	,207**	1	,098
	Sig. (bilatérale)	,000	,003		,161
	N	208	208	208	208
GAMEPLAY_SOCIAL	Corrélation de Pearson	,127	,020	,098	1
	Sig. (bilatérale)	,068	,772	,161	
	N	208	208	208	208

Figure 4.6.5.1 - Correlations linked to Social Gameplay

In the picture summary of the models we are going to be interested in the R-squared since we went on a simple linear regression following the elimination of the variables "Innovation" and "IA".

Here we can see that the R squared is 0.016, so we can say that the variable “Motivation” explains 1.6% of thea variance of the “Gameplay_Social” variable.

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,127[a]	,016	,011	,79930

a. Prédicteurs : (Constante), MOTIVATION

Figure 4.6.5.2 - Model Summary - Social Gameplay

Since the sig is 0.068 (sig <0.05 but we decide to continue the analysis given the proximity of the value), we can consider the value of R squared which is 0.016 as correct.

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	2,157	1	2,157	3,376	,068[b]
	Résidu	131,608	206	,639		
	Total	133,764	207			

a. Variable dépendante : GAMEPLAY_SOCIAL

b. Prédicteurs : (Constante), MOTIVATION

Figure 4.6.5.3 - ANOVA - Social Gameplay

The table of coefficients shows us that:

- The impact of the “Motivation” variable on the “Gameplay_Social” variable is significant considering the sig of 0.068, so we can partially validate hypothesis H12, according to which motivation has an impact on gameplay.

So thanks to this table, we can see that our dependent variable Y which is ”GAMEPLAY_SOCIAL” = Y = 3.095 + (0.176 x MOTIVATION)

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés		
		B	Erreur standard	Bêta	t	Sig.
1	(Constante)	3,095	,379		8,171	,000
	MOTIVATION	,176	,096	,127	1,837	,068

a. Variable dépendante : GAMEPLAY_SOCIAL

Figure 4.6.5.4 - Coefficients - Social Gameplay

Following this we can see that:

- We can partially accept hypothesis H12, that motivation has a positive influence on gameplay.
- We cannot accept Hypothesis H13, that Artificial Intelligence has a positive influence on gameplay.
- We can partially accept hypothesis H14, that innovation has a positive influence on gameplay.

4.6.6) Multiple linear regression - Effects on content purchase intention

First, we are going to test the collinearity of the variables on the variable “Purchase intention_Content”.

We find that the variable “Gameplay_Social” has a sig> 0.05, the correlations are therefore not significant. However, we note that the variable “Gameplay_Aventure” has a sig <0.05, the correlation is therefore significant for this variable. The correlation is 0.286.

The correlation being significant, we can continue the analysis.

Corrélations

		GAMEPLAY_AVENTURE	GAMEPLAY_SOCIAL	INTACHAT_CONTENU
GAMEPLAY_AVENTURE	Corrélation de Pearson	1	,325**	,286**
	Sig. (bilatérale)		,000	,000
	N	208	208	208
GAMEPLAY_SOCIAL	Corrélation de Pearson	,325**	1	,053
	Sig. (bilatérale)	,000		,451
	N	208	208	208
INTACHAT_CONTENU	Corrélation de Pearson	,286**	,053	1
	Sig. (bilatérale)	,000	,451	
	N	208	208	208

Figure 4.6.6.1 - Correlations linked to content purchase intention

In the picture summary of the models we will be interested in the R-squared since we have gone on a simple linear regression following the elimination of the variable “Gameplay_Social”.

Here we can see that the R squared is 0.082, so we can say that the variable “Gameplay_Aventure” explains 8.2% of thea variance of the variable “Purchase intention_Content”.

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,286[a]	,082	,077	,75246

a. Prédicteurs : (Constante), GAMEPLAY_AVENTURE

Figure 4.6.6.2 - Summary of models - Content purchase intention

Since the sig is less than 0.05, we can consider the R-squared value which is 0.082 to be correct.

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	10,391	1	10,391	18,352	,000[b]
	Résidu	116,637	206	,566		
	Total	127,028	207			

a. Variable dépendante : INTACHAT_CONTENU

b. Prédicteurs : (Constante), GAMEPLAY_AVENTURE

Figure 4.6.6.3 - ANOVA - Content purchasing intention

The table of coefficients shows us that:

- The impact of the variable “Gameplay_Aventure” on the variable “Purchase intention_Contenu” is significant (sig = 0.000) or less than 0.05, so we can at this stage partially validate hypothesis H15, according to which the Gameplay has an impact on purchase intention.

So thanks to this table, we can see that our dependent variable Y which is ”INTACHAT_CONTENU” = Y = 2.631 + (0.304 x GAMEPLAY_AVENTURE)

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés		
		B	Erreur standard	Bêta	t	Sig.
1	(Constante)	2,631	,300		8,770	,000
	GAMEPLAY_AVENTURE	,304	,071	,286	4,284	,000

a. Variable dépendante : INTACHAT_CONTENU

Figure 4.6.6.4 - Coefficients - Content purchase intention

4.6.7) Multiple linear regression - Effects on purchase intention New

First, we are going to test the collinearity of the variables on the variable “Purchase intention_New”.

We note that the two variables have a sig> 0.05, however the variable “Gameplay_Social” having a sig of 0.051, we decide to continue the analysis on this variable, the correlation being 0.136.

Corrélations

		GAMEPLAY_AVENTURE	GAMEPLAY_SOCIAL	INTACHAT_NOUVEAUTÉ
GAMEPLAY_AVENTURE	Corrélation de Pearson	1	,325**	,098
	Sig. (bilatérale)		,000	,158
	N	208	208	208
GAMEPLAY_SOCIAL	Corrélation de Pearson	,325**	1	,136
	Sig. (bilatérale)	,000		,051
	N	208	208	208
INTACHAT_NOUVEAUTÉ	Corrélation de Pearson	,098	,136	1
	Sig. (bilatérale)	,158	,051	
	N	208	208	208

Figure 4.6.7.1 - Correlations linked to purchase intention New

In the picture summary of the models we are going to be interested in the R square given that we have passed on a simple linear regression following the elimination of the variable “Gameplay_Aventure”.

Here we can see that the R squared is 0.018, so we can say that the variable “Gameplay_Social” explains 1.8% of thea variance of the variable “Purchase intention_Newness”.

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,136[a]	,018	,014	,67283

a. Prédicteurs : (Constante), GAMEPLAY_SOCIAL

Figure 4.6.7.2 - Summary of models - Purchase intention New

Since the sig is 0.051 (sig <0.05 but we decide to continue the analysis given the proximity of the value), we can consider the value of R squared which is 0.018 as correct.

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	1,752	1	1,752	3,870	,051[b]
	Résidu	93,257	206	,453		
	Total	95,009	207			

a. Variable dépendante : INTACHAT_NOUVEAUTÉ

b. Prédicteurs : (Constante), GAMEPLAY_SOCIAL

Figure 4.6.7.3 - ANOVA - Purchase intention New

The table of coefficients shows us that:

- The impact of the variable "Gameplay_Social" on the variable "Purchase intention_New" is significant considering the sig of 0.051, so we can partially validate hypothesis H15, according to which Gameplay has an impact on the intention to buy. purchase.

So thanks to this table, we can see that our dependent variable Y which is "INTACHAT_NOUVEAUTÉ" = Y = 3,118 + (0,114 x GAMEPLAY_SOCIAL)

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés		
		B	Erreur standard	Bêta	t	Sig.
1	(Constante)	3,118	,225		13,859	,000
	GAMEPLAY_SOCIAL	,114	,058	,136	1,967	,051

a. Variable dépendante : INTACHAT_NOUVEAUTÉ

Figure 4.6.7.4 - Coefficients - Purchase intention New

4.6.8) Multiple linear regression - Effects on purchase intention Price

First, we will test the collinearity of the variables on the variable "Purchase intention_Price".

We find that both variables have sig> 0.05, so the correlations are not significant.

Corrélations

		GAMEPLAY_AVENTURE	GAMEPLAY_SOCIAL	INTACHAT_PRIX
GAMEPLAY_AVENTURE	Corrélation de Pearson	1	,325**	,035
	Sig. (bilatérale)		,000	,613
	N	208	208	208
GAMEPLAY_SOCIAL	Corrélation de Pearson	,325**	1	-,015
	Sig. (bilatérale)	,000		,825
	N	208	208	208
INTACHAT_PRIX	Corrélation de Pearson	,035	-,015	1
	Sig. (bilatérale)	,613	,825	
	N	208	208	208

Figure 4.6.8.1 - Correlations linked to purchase intention Price

4.6.9) Multiple Linear Regression - Effects on Developer Purchase Intent

First, we will test the collinearity of the variables on the variable “Purchase intention_Developer”.

We find that the variable “Gameplay_Aventure” has a sig> 0.05 (0.447), the correlations are therefore not significant. However, we note that the variable “Gameplay_Social” has a sig <0.05, the correlation is therefore significant for this variable. The correlation is 0.444.

The correlation being significant, we can continue the analysis.

Corrélations

		GAMEPLAY_AVENTURE	GAMEPLAY_SOCIAL	INTACHAT_DEVELOPPEUR
GAMEPLAY_AVENTURE	Corrélation de Pearson	1	,325**	,053
	Sig. (bilatérale)		,000	,447
	N	208	208	208
GAMEPLAY_SOCIAL	Corrélation de Pearson	,325**	1	,444**
	Sig. (bilatérale)	,000		,000
	N	208	208	208
INTACHAT_DEVELOPPEUR	Corrélation de Pearson	,053	,444**	1
	Sig. (bilatérale)	,447	,000	
	N	208	208	208

Figure 4.6.9.1 - Correlations linked to Developer purchasing intention

In the picture summary of the models we are going to be interested in the R square given that we have passed on a simple linear regression following the elimination of the variable “Gameplay_Aventure”.

Here we can see that the R squared is 0.197, so we can say that the variable “Gameplay_Social” explains 19.7% of thea variance of the variable “Purchase intention_Developer”.

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,444[a]	,197	,193	,75841

a. Prédicteurs : (Constante), GAMEPLAY_SOCIAL

Figure 4.6.9.2 - Summary of models - Developer purchase intention

Since the sig is 0.00, we can consider the R-squared value which is 0.197 to be correct.

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	29,079	1	29,079	50,556	,000[b]
	Résidu	118,487	206	,575		
	Total	147,566	207			

a. Variable dépendante : INTACHAT_DEVELOPPEUR

b. Prédicteurs : (Constante), GAMEPLAY_SOCIAL

Figure 4.6.9.3 - ANOVA - Developer purchase intention

The table of coefficients shows us that:

- The impact of the variable “Gameplay_Social” on the variable “Purchase intention_Developer” is significant (sig <0.05), so we can partially validate hypothesis H15, according to which Gameplay has an impact on the intention of 'purchase.

So thanks to this table, we can see that our dependent variable Y which is ”INTACHAT_DEVELOPPEUR” = Y = 1.594 + (0.466 x GAMEPLAY_SOCIAL)

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés		
		B	Erreur standard	Bêta	t	Sig.
1	(Constante)	1,594	,254		6,285	,000
	GAMEPLAY_SOCIAL	,466	,066	,444	7,110	,000

a. Variable dépendante : INTACHAT_DEVELOPPEUR

Figure 4.6.9.4 - Coefficients - Developer purchase intention

In summary :

- The variable “Gameplay_Aventure” has an impact on the variable “Purchase intention_Content”
- The “Gameplay_Social” variable has an impact on the “Purchase intention_New” and “Purchase intention_Developer” variable

4.6.10) Multiple linear regression - Effects on positive emotions

First, we will test the collinearity of the variables on the variable “Emotions_positives”.

We find that the two variables “Gameplay_Aventure” and “Gameplay_Social” have a sig <0.05, the correlation is therefore significant. Their correlations are between (270 and 307).

The correlations being significant, we can continue the analysis.

Corrélations

		GAMEPLAY_AVENTURE	GAMEPLAY_SOCIAL	EMOTIONS_POS
GAMEPLAY_AVENTURE	Corrélation de Pearson	1	,325**	,270**
	Sig. (bilatérale)		,000	,000
	N	208	208	208
GAMEPLAY_SOCIAL	Corrélation de Pearson	,325**	1	,307**
	Sig. (bilatérale)	,000		,000
	N	208	208	208
EMOTIONS_POS	Corrélation de Pearson	,270**	,307**	1
	Sig. (bilatérale)	,000	,000	
	N	208	208	208

Figure 4.6.10.1 - Correlations linked to positive emotions

Following the “step by step” method, we see that all the variables have a significant contribution. We can therefore keep the 2 variables.

Variables introduites/éliminées[a]

Modèle	Variables introduites	Variables éliminées	Méthode
1	GAMEPLAY_SOCIAL	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).
2	GAMEPLAY_AVENTURE	.	Pas à pas (Critère : Probabilité de F pour introduire <= ,050, Probabilité de F pour éliminer >= ,100).

a. Variable dépendante : EMOTIONS_POS

Figure 4.6.10.2 - "Step by step" method - Positive emotions

In the picture summary of the models we will be interested in the fitted R-squared given that we are on a multiple linear regression.

Here, we can see that the adjusted R squared is 0.118, so we can say that the variables "Gameplay_Aventure" and "Gameplay_Social" explain 11.8% of thea variance of the variable "Positive emotions".

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,307[a]	,094	,090	,50869
2	,355[b]	,126	,118	,50075

a. Prédicteurs : (Constante), GAMEPLAY_SOCIAL

b. Prédicteurs : (Constante), GAMEPLAY_SOCIAL, GAMEPLAY_AVENTURE

Figure 4.6.10.3 - Summary of models - Positive emotions

Since the sig is 0.00, we can consider the value of the adjusted R-squared which is 0.118 to be correct.

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	5,529	1	5,529	21,367	,000[b]
	Résidu	53,306	206	,259		
	Total	58,835	207			
2	Régression	7,431	2	3,716	14,818	,000[c]
	Résidu	51,404	205	,251		
	Total	58,835	207			

a. Variable dépendante : EMOTIONS_POS

b. Prédicteurs : (Constante), GAMEPLAY_SOCIAL

c. Prédicteurs : (Constante), GAMEPLAY_SOCIAL, GAMEPLAY_AVENTURE

Figure 4.6.10.4 - ANOVA - Positive emotions

The table of coefficients shows us that:

- The impact of the variable “Gameplay_Aventure” on the variable “Positive emotions” is significant (sig = 0.000) or less than 0.05, so we can partially accept hypothesis H16, according to which gameplay has a positive influence on emotions.
- The impact of the variable “Gameplay_Social” on the variable “Positive emotions” is significant (sig = 0.006) or less than 0.05, so we can partially accept the hypothesis H16, according to which the gameplay has a positive influence on the emotions.

So thanks to this table, we can see that our dependent variable Y which is ”EMOTIONS_POS” = Y = 3.047 + (0.162 x GAMEPLAY_SOCIAL) + (0.138 x GAMEPLAY_AVENTURE)

In addition, we can see that the effect of the variable “Gameplay_Social” on the variable “Positive emotions” is greater than the effect of the variable “Gameplay_Aventure”.

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés		
		B	Erreur standard	Bêta	t	Sig.
1	(Constante)	3,465	,170		20,367	,000
	GAMEPLAY_SOCIAL	,203	,044	,307	4,622	,000
2	(Constante)	3,047	,226		13,490	,000
	GAMEPLAY_SOCIAL	,162	,046	,245	3,546	,000
	GAMEPLAY_AVENTURE	,138	,050	,190	2,754	,006

a. Variable dépendante : EMOTIONS_POS

Figure 4.6.10.5 - Coefficients - Positive emotions

4.6.11) Multiple linear regression - Effects on negative emotions

First, we will test the collinearity of the variables on the variable “Negative emotions”.

We find that the variable “Gameplay_Aventure” has a sig> 0.05 (0.315). However, we note that the variable “Gameplay_Social” has a sig <0.05, the correlation is therefore significant for this variable. The correlation is 0.186.

The correlation being significant, we can continue the analysis.

Corrélations

		GAMEPLAY_AVENTURE	GAMEPLAY_SOCIAL	EMOTIONS_NEG
GAMEPLAY_AVENTURE	Corrélation de Pearson	1	,325**	-,070
	Sig. (bilatérale)		,000	,315
	N	208	208	208
GAMEPLAY_SOCIAL	Corrélation de Pearson	,325**	1	,186**
	Sig. (bilatérale)	,000		,007
	N	208	208	208
EMOTIONS_NEG	Corrélation de Pearson	-,070	,186**	1
	Sig. (bilatérale)	,315	,007	
	N	208	208	208

Figure 4.6.11.1 - Correlations linked to negative emotions

In the picture summary of the models we are going to be interested in the R square given that we have passed on a simple linear regression following the elimination of the variable “Gameplay_Aventure”.

Here we can see that the R squared is 0.035, so we can say that the variable “Gameplay_Social” explains 3.5% of thea variance of the variable “Negative emotions”.

Récapitulatif des modèles

Modèle	R	R-deux	R-deux ajusté	Erreur standard de l'estimation
1	,186[a]	,035	,030	,78844

a. Prédicteurs : (Constante), GAMEPLAY_SOCIAL

Figure 4.6.11.2 - Summary of models - Negative emotions

Since the sig is 0.00, we can consider the value of the adjusted R-squared which is 0.035 to be correct.

ANOVA[a]

Modèle		Somme des carrés	ddl	Carré moyen	F	Sig.
1	Régression	4,610	1	4,610	7,416	,007[b]
	Résidu	128,056	206	,622		
	Total	132,667	207			

a. Variable dépendante : EMOTIONS_NEG

b. Prédicteurs : (Constante), GAMEPLAY_SOCIAL

Figure 4.6.11.3 - ANOVA - Negative emotions

The table of coefficients shows us that:

- The impact of the “Gameplay_Social” variable on the “Negative Emotions” variable is significant (sig <0.05), so we can partially validate hypothesis H16, according to which Gameplay has an impact on emotions.

So thanks to this table, we can see that our dependent variable Y which is ”EMOTIONS_NEG” = Y = 2.298 + (0.186 x GAMEPLAY_SOCIAL)

Coefficients[a]

Modèle		Coefficients non standardisés		Coefficients standardisés		
		B	Erreur standard	Bêta	t	Sig.
1	(Constante)	2,298	,264		8,714	,000
	GAMEPLAY_SOCIAL	,186	,068	,186	2,723	,007

a. Variable dépendante : EMOTIONS_NEG

Figure 4.6.11.4 - Coefficients - Positive emotions

4.7) Moderation

We end the analysis with a section on moderation. The interest of moderation is to know whether, on the links previously established, variables such as the sex of the respondent or the appetite for innovation can have an impact on these links.

We will be interested in the differences that can be through:

- The sex of the respondents (Men and Women)
- Appetite for innovation (Innovation less than 3 and Innovation greater than 3)

4.7.1) Gender of respondents

4.7.1.1) Influence on motivation

We will look at whether the competition, socialization, escape and freedom that have a positive influence on the motivation of respondents to play is different between men and women.

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,7249	,5222	7,1327	,0000	2,6952	4,7545
SOCIAL	,0247	,1450	,1706	,8647	-,2612	,3106
Sexe	-,1331	,3264	-,4078	,6838	-,7767	,5105
Int_1	,0641	,0938	,6833	,4952	-,1209	,2491

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,5595	,6885	5,1703	,0000	2,2021	4,9169
COMPET	,0722	,1735	,4161	,6778	-,2700	,4144
Sexe	-,1657	,4366	-,3795	,7047	-1,0265	,6951
Int_1	,0589	,1115	,5284	,5978	-,1609	,2788

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,1949	,4424	7,2224	,0000	2,3227	4,0670
EVAS	,2252	,1233	1,8272	,0691	-,0178	,4682
Sexe	,0084	,3198	,0264	,9790	-,6220	,6389
Int_1	-,0138	,0866	-,1591	,8738	-,1846	,1570

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,0508	,4354	7,0062	,0000	2,1922	3,9093
LIBERTE	,2699	,1287	2,0965	,0373	,0161	,5237
Sexe	,2651	,2964	,8943	,3722	-,3194	,8495
Int_1	-,0828	,0853	-,9705	,3330	-,2510	,0854

Figure 4.7.1.1.1 - Moderation - Motivation

We can see that all the p-values are greater than 0.05, so there are no differences noted between men and women.

4.7.1.2) Influence on gameplay

We are going to see if the innovation that has an impact on adventure gameplay is different between men and women.

Model

	coeff	se	t	p	LLCI	ULCI
constant	1,9296	,8183	2,3581	,0193	,3162	3,5429
INNOV	,5596	,2159	2,5926	,0102	,1340	,9852
Sexe	1,2235	,5776	2,1182	,0354	,0847	2,3623
Int_1	-,2986	,1514	-1,9722	,0499	-,5970	-,0001

Figure 4.7.1.2.1 - Moderation - Adventure Gameplay

We can see that the p-value is less than 0.05 (0.0499), so there is a difference between men and women regarding the impact innovation can have on adventure gameplay.

Coefficients[a,b]

Modèle		Coefficients non standardisés B	Coefficients non standardisés Erreur standard	Coefficients standardisés Bêta	t	Sig.
1	(Constante)	3,153	,336		9,397	,000
	INNOV	,261	,089	,254	2,931	,004

a. Variable dépendante : GAMAV

b. Sélection exclusive des observations pour lesquelles Sexe = 1

Coefficients[a,b]

Modèle		Coefficients non standardisés B	Coefficients non standardisés Erreur standard	Coefficients standardisés Bêta	t	Sig.
1	(Constante)	4,377	,469		9,336	,000
	INNOV	-,038	,122	-,035	-,307	,759

a. Variable dépendante : GAMAV

b. Sélection exclusive des observations pour lesquelles Sexe = 2

Figure 4.7.1.1.2 - Difference Men / Women - Adventure Gameplay

On the left graph which corresponds to men, we notice that the equation is positive: Gameplay_Aventure = 3.153 + 0.261 x Innovation

While for women, the equation is negative: Gameplay_Aventure = 4.377 - 0.038 x Innovation

We can therefore say that the innovation that has an impact on the adventure gameplay is different between men and women.

We will now see if the motivation that impacts social gameplay is different between men and women.

Model

	coeff	se	t	p	LLCI	ULCI
constant	4,7734	1,1107	4,2976	,0000	2,5834	6,9634
MOTIV	-,1250	,2802	-,4460	,6560	-,6774	,4275
Sexe	-1,2579	,7789	-1,6149	,1079	-2,7936	,2779
Int_1	,2287	,1961	1,1661	,2449	-,1580	,6154

Figure 4.7.1.1.3 - Moderation - Social Gameplay

We can see that the p-value is greater than 0.05, so there are no differences noted between men and women.

4.7.1.3) Influence on purchase intention

We are now going to see if the Adventure gameplay that has an impact on content purchase intention is different between men and women.

Model

	coeff	se	t	p	LLCI	ULCI
constant	1,8748	,9056	2,0703	,0397	,0893	3,6603
GAMAV	,4709	,2147	2,1932	,0294	,0476	,8942
Sexe	,5610	,6294	,8914	,3738	−,6799	1,8019
Int_1	−,1235	,1479	−,8351	,4046	−,4152	,1681

Figure 4.7.1.3.1 - Moderation - Content purchasing intention

We can see that the p-value is greater than 0.05, so there are no differences noted between men and women.

Now we will see if the Social gameplay that has an impact on the Novelty and Developer purchase intention is different between men and women.

Model

	coeff	se	t	p	LLCI	ULCI
constant	2,7850	,7035	3,9589	,0001	1,3980	4,1719
GAMSOC	,2290	,1802	1,2708	,2053	−,1263	,5843
Sexe	,2601	,4646	,5599	,5762	−,6559	1,1762
Int_1	−,0892	,1226	−,7279	,4675	−,3309	,1525

Model

	coeff	se	t	p	LLCI	ULCI
constant	1,8072	,7846	2,3032	,0223	,2601	3,3542
GAMSOC	,5026	,2010	2,5007	,0132	,1063	,8989
Sexe	−,0666	,5182	−,1285	,8979	−1,0884	,9552
Int_1	−,0499	,1367	−,3650	,7155	−,3195	,2197

Figure 4.7.1.3.2 - Moderation - Novelty and Developer purchase intention

We can see that all the p-values are greater than 0.05, so there are no differences noted between men and women.

4.7.1.4) Influence on emotions

We will now see if the Adventure gameplay which has an impact on positive emotions is different between men and women.

Model

	coeff	se	t	p	LLCI	ULCI
constant	4,7440	,6077	7,8065	,0000	3,5458	5,9422
GAMAV	−,0694	,1441	−,4817	,6305	−,3535	,2147
Sexe	−,9921	,4223	−2,3491	,0198	−1,8249	−,1594
Int_1	,1991	,0993	2,0058	,0462	,0034	,3949

Figure 4.7.1.4.1 - Moderation - Positive emotions

We can see that the p-value is less than 0.05 (0.0462), so there is a difference between men and women regarding the impact adventure gameplay can have on positive emotions.

Coefficients[a,b]

Modèle		Coefficients non standardisés B	Coefficients non standardisés Erreur standard	Coefficients standardisés Bêta	t	Sig.
1	(Constante)	3,752	,240		15,642	,000
	GAMAV	,130	,057	,198	2,263	,025

a. Variable dépendante : EMOPOS

b. Sélection exclusive des observations pour lesquelles Sexe = 1

Coefficients[a,b]

Modèle		Coefficients non standardisés B	Coefficients non standardisés Erreur standard	Coefficients standardisés Bêta	t	Sig.
1	(Constante)	2,760	,364		7,591	,000
	GAMAV	,329	,085	,400	3,884	,000

a. Variable dépendante : EMOPOS

b. Sélection exclusive des observations pour lesquelles Sexe = 2

Figure 4.7.1.4.2 - Difference Men / Women - Positive emotions

On the left graph which corresponds to men, we notice that the equation is: Positive emotions = 3.752 + 0.130 x Gameplay_Aventure

While for women the equation is significantly lower: Positive Emotions = 2.760 + 0.329 x Gameplay_Aventure

We can therefore say that the gameplay_Aventure which has an impact on positive emotions is different between men and women.

Now we will see if the Social gameplay that has an impact on positive and negative emotions is different between men and women.

Model

	coeff	se	t	p	LLCI	ULCI
constant	4,3134	,5293	8,1498	,0000	3,2699	5,3570
GAMSOC	,0019	,1356	,0141	,9888	−,2654	,2692
Sexe	−,5802	,3496	−1,6599	,0985	−1,2695	,1090
Int_1	,1391	,0922	1,5080	,1331	−,0428	,3209

Model

	coeff	se	t	p	LLCI	ULCI
constant	2,1219	,8246	2,5732	,0108	,4960	3,7479
GAMSOC	,2669	,2112	1,2637	,2078	−,1496	,6834
Sexe	,1561	,5447	,2866	,7747	−,9178	1,2300
Int_1	−,0674	,1437	−,4693	,6393	−,3508	,2159

Figure 4.7.1.4.3 - Moderation - Positive and negative emotions

We can see that all the p-values are greater than 0.05, so there are no differences noted between men and women.

4.7.2) For or against innovation

First, we will split the variable into two groups, people not finding innovation to be important in video games (Innovation less than 3) and people finding innovation to be important in video games (greater than 3).

4.7.2.1) Influence on purchase intention

We will now look at whether the Adventure gameplay that has an impact on content purchase intent is different between people for innovation and people against.

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,0492	1,2389	2,4613	,0147	,6066	5,4919
GAMAV	,0701	,3093	,2266	,8209	−,5398	,6800
INNOV	−,2048	,6889	−,2973	,7665	−1,5631	1,1535
Int_1	,1205	,1700	,7084	,4795	−,2148	,4557

Figure 4.7.2.1.1 - Moderation - Content purchasing intention

We can see that the p-value is greater than 0.05, so there are no differences noted between the people for innovation and people against.

Now we will see if the Social gameplay that has an impact on the Novelty and Developer purchase intention is different between people for innovation and people against.

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,7247	1,2772	2,9164	,0039	1,2065	6,2428
GAMSOC	−,0777	,3502	−,2219	,8246	−,7683	,6128
INNOV	−,3183	,6727	−,4732	,6366	−1,6446	1,0080
Int_1	,1009	,1833	,5503	,5827	−,2605	,4623

Model

	coeff	se	t	p	LLCI	ULCI
constant	2,1980	1,4354	1,5313	,1272	−,6321	5,0281
GAMSOC	,2121	,3936	,5388	,5906	−,5640	,9882
INNOV	−,3037	,7560	−,4018	,6883	−1,7943	1,1868
Int_1	,1306	,2060	,6341	,5267	−,2755	,5368

Figure 4.7.2.1.2 - Moderation - Novelty and Developer purchase intention

We can see that all the p-values are greater than 0.05, so there are no differences observed between thepeople for innovation and people against.

4.7.2.2) Influence on emotions

We will now look at whether the Adventure gameplay that impacts positive emotions is different between people for innovation and people against.

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,7363	,8436	4,4292	,0000	2,0731	5,3995
GAMAV	,0085	,2106	,0403	,9679	−,4068	,4238
INNOV	−,1512	,4691	−,3223	,7475	−1,0760	,7737
Int_1	,0956	,1158	,8261	,4097	−,1326	,3239

Figure 4.7.2.2.1 - Moderation - Positive emotions

We can see that the p-value is greater than 0.05, so there are no differences noted between the people for innovation and people against.

Now we will see if the Social gameplay that has an impact on positive and negative emotions is different between people for innovation and people against.

Model

	coeff	se	t	p	LLCI	ULCI
constant	4,0234	,9510	4,2309	,0000	2,1484	5,8984
GAMSOC	−,0752	,2608	−,2883	,7734	−,5894	,4390
INNOV	−,2718	,5009	−,5426	,5880	−1,2593	,7157
Int_1	,1417	,1365	1,0382	,3004	−,1274	,4108

Model

	coeff	se	t	p	LLCI	ULCI
constant	3,7817	1,4943	2,5307	,0121	,8354	6,7280
GAMSOC	−,2244	,4098	−,5476	,5845	−1,0324	,5835
INNOV	−,7918	,7870	−1,0061	,3156	−2,3436	,7599
Int_1	,2179	,2145	1,0160	,3108	−,2049	,6407

Figure 4.7.2.2.2 - Moderation - Positive and negative emotions

We can see that all the p-values are greater than 0.05, so there are no differences observed between the people for innovation and people against.

To conclude, we can see that women are less sensitive to innovation than men in the case of single player games. In addition, we see that the positive emotions they feel when playing this type of game are weaker than men.

Regarding people for and against innovation, we notice that this has no impact in terms of purchase intention and emotions.

4.8) Analysis report

Hypotheses	Details	Result	Specifications
H1	Competition positively influences motivation to play	**Accepted**	-
H2	Socialization positively influences motivation to play	**Accepted**	-
H3	Escape positively influences motivation to play	**Accepted**	-
H4	Freedom positively influences motivation to play	**Accepted**	-
H5	Non-player characters positively influence artificial intelligence	**Rejected**	-
H6	Pathfinding and behavior trees positively influence artificial intelligence	**Partially accepted**	*P-value between 0.025 and 0.05 (0.037)*
H7	The Open-world positively influences artificial intelligence	**Accepted**	-
H8	Machine learning positively influences artificial intelligence	**Rejected**	-
H9	Additional content positively influences innovation	**Rejected**	-
H10	Cloud gaming positively influences innovation	**Accepted**	-
H11	Virtual reality positively influences innovation	**Accepted**	-
H12	Motivation has a positive impact on gameplay	**Partially accepted**	*Motivation* -> Adventure gameplay = **Rejected** *Motivation* -> Social gameplay = **Accepted**
H13	Artificial intelligence has a positive impact on gameplay	**Rejected**	-
H14	Innovation has a positive impact on gameplay	**Partially accepted**	*Innovation* -> Adventure gameplay = **Accepted** *Innovation* -> Social Gameplay = **Rejected**
H15	Gameplay has a positive impact on purchase intention	**Partially accepted**	*Adventure gameplay* -> Content Purchase Intent = **Accepted** *Adventure gameplay* -> Novelty purchase intention = **Rejected** *Adventure gameplay* -> Intent to purchase price = **Rejected** *Adventure gameplay* -> Developer purchase intent = **Rejected** *Social Gameplay* -> Content Purchase Intent = **Rejected** *Social gameplay* -> Novelty purchase intention = **Accepted** *Social gameplay* -> Intent to purchase price = **Rejected** *Social gameplay* -> Developer purchase intent = **Accepted**
H16	Gameplay has a positive impact on emotions	**Partially accepted**	*Adventure gameplay* -> Positive emotions = **Accepted** *Adventure gameplay* -> Negative emotions = **Rejected** *Social gameplay* -> Positive emotions = **Accepted** *Social gameplay* -> Negative emotions = **Accepted**

Table 4.8.1 - Summary of assumptions

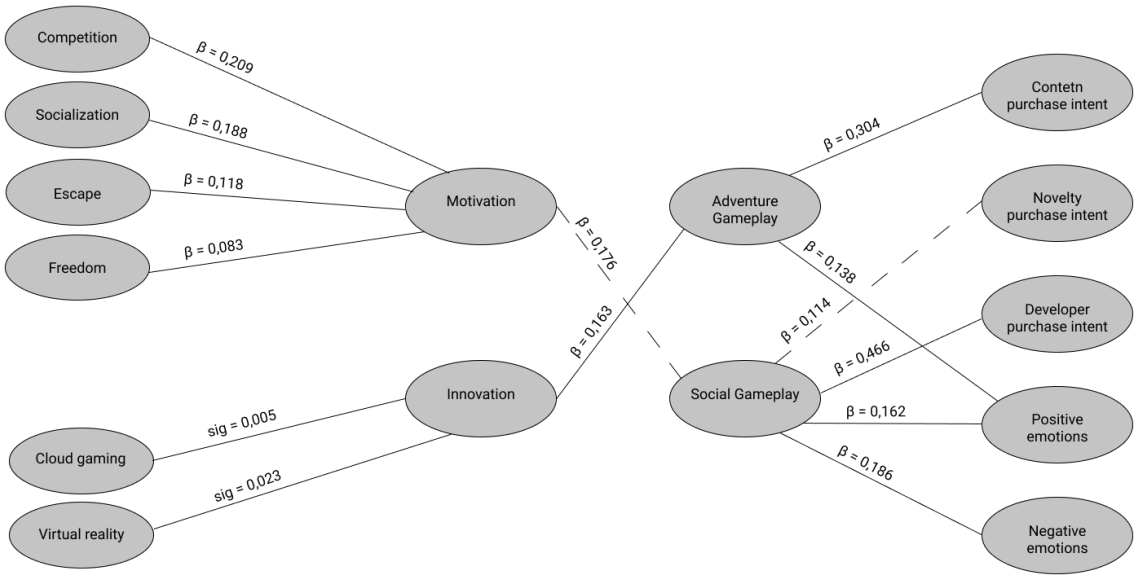

Table 4.8.2 - Validated research model

5) Observations and recommendations

5.1) Gameplay

In the case of gameplay, we have observed a distinction between the gameplay of adventure games which are usually played more solo, and the gameplay of multi-player games (called social gameplay) which mix more competitions and challenges between players or between groups.

5.1.1) Adventure Gameplay

Regarding Adventure gameplay, we find that innovation in general has a significant impact on the appeal of this type of gameplay. Within the innovation aspect, we note that cloud gaming and virtual reality, in particular, significantly improve the gaming experience.

Cloud gaming allows the player to continue their adventure in the game through any medium, and in a synchronized manner. Without cloud gaming, the fact of being geographically located elsewhere (holidays, business travel) without having the appropriate console, causes a break in the game, and therefore a less attraction or even a virtual abandonment of the adventure through the game. Conversely, being able to continue the

adventure anywhere and on any medium (such as a very addicting suspense book) allows intermittent and even frequent nomadism.

With this in mind, I strongly recommend that developers make their games accessible on platforms like Google Stadia, Shadow or Geforce now, which are today three very important players in cloud gaming. A very telling parallel can be drawn with the producers of cinema films and series, which can be compared to game developers, and the booming arrival of Netflix, which can be compared to a cloud gaming platform: for a monthly subscription, players benefit from unlimited and permanent access to excellent quality games, with automatic updates, on tablet, smartphone, PC or TV. Gambling, like the movie on Netflix, can be stopped at some point in the story, and resumed anywhere at any time at that point.

The next step is for the developer to create its own cloud gaming platform (like Disney with Disney + in the cinema): Ubisoft is on the way to taking this step with its uplay service.

Our results show that virtual reality also has an important influence on adventure gameplay. I recommend that developers devote a significant budget to research and creativity in the field of virtual reality. We can identify 2 areas to focus on: creating new games, and modernizing the great classics of successful games.

The game “Lone Echo”, one of the first to use VR, was a great success and marked the real debut of the concept. This game consists of helping astronauts in a space station. The player becomes a robot placed at the disposal of the astronaut: the players have the feeling of evolving in weightlessness in a universe apart. The success of Lone Echo should encourage developers to create other games that could put the player in a very “real” situation and attract many followers: in sensational sports (climbing, formula 1, wingsuit), in futuristic universes. (live in the future, rub shoulders with extraterrestrials) or on the contrary go back to the past (prehistory, middle ages).

Several video games are big hits, with many fans. These games are often based on the same formula and the same technologies, improved or updated but without revolution. The players remain faithful to it but many would like to relive the beloved game differently, especially in an almost real version. Giving a Mario Kart fan the chance to feel like stepping into the screen and feeling all the pitfalls of the game would give the classic version a serious boost. Why not imagine a “switch” option allowing you to switch alternately from the classic game to VR for example with a game like “Assassin's Creed”, in order to have the possibility of completing certain quests in VR.

Players who enjoy more solo adventure games are looking for innovation. Developers of this type of game like Ubisoft, Naughty Dogs or Bungie for example, who are used to creating action / adventure type game suites (like a new season in a movie series), must take into account the innovation aspect in their games. New features are appearing little by little, such

as the insertion of famous characters as avatars in the game, such as Keanu Reeves in “Cyberpunk 2077” or Willem Dafoe in “Beyond two souls”. In addition, the adaptation of certain cinema games such as “Assassin's Creed” or “Tomb raider”, reinforces the scenario of the games. Many variations appear (series, comics, films) which improve the gaming experience.

Virtualization of famous people, variation of the game in film or series, use of VR, distribution in cloud gaming: developers must invest in innovation. This can correspond to virtual reality like “Ready Player One”, a must, or even augmented reality like what Niantic did with “Pokemon Go”, but also meet famous actors / athletes or even the possibility of putting oneself as the main hero of the game through techniques of virtualization of human persons.

5.1.2) Social Gameplay

Regarding social gameplay, we see that the concept of motivation has a strong impact. Let us recall here that by motivation we mean the strong desire to find a group (to be confronted in competition, team spirit by socialization), or a haven of peace (escape, freedom), in order to cut oneself from the worries of life daily. The more accomplished the main motivators, the better the gaming experience.

The main objective of a player attracted to competition is to win. Developers must offer more and more competitive games. Over the past 3 years, games such as “PUBG”, “Apex”, “Fortnite” and “Warzone” have developed what is called “Battle Royale”. 100 or more players compete against each other, and to win you have to be the last survivor. This type of game quickly aroused a very strong enthusiasm and the concept became very popular. Developers of this style of play must be constantly creative to find new areas of motivation. This may correspond, for example, to declining variants: being the first to eliminate 30 opponents, classifying the players according to their past performances and assigning them a value (the best is not the one who kills the most but who kills the best), etc. A multitude of ideas are possible to strengthen competition within games.

The objective of escape is also very interesting in motivation in order to maximize the gaming experience. The game “Pokemon Go” was thus a revolution by creating virtual arenas everywhere and Pokemon (at home, at the office, in a industrial site) that the player must capture with his support (smartphone, tablet). We evoked with this game the idea of augmented reality, so much the player managed to detach himself from real life. The game “Clash of clans”, which consists of setting up and developing a village (managing resources, building armies), and which pushes to forge multiple alliances to attack other villages or defend their own, encourages players to s 'immerse very regularly to develop their resources or not to have them plundered. This very addicting game has a very strong escape component, but also has a competitive side.

Another facet of motivation in social gameplay is socialization, which develops and improves the social bond between players. New players such as Twitch, a streaming platform that allows you to watch several esports competitions, to integrate into communities around a game, or to watch friends or professional players in game action, reinforces this socialization. Socialization is a motivator that is seeing a lot of new advances in video games. I recommend game developers to reinforce this socialization in their games with ever improving social gameplay by complementing them with new features, such as the ability to see teammates' screen on their screen to really have a sense of belonging. visual and not just audio. A community of players who bring advice, information and scoops about a game can only help develop it. Why not imagine a social gameplay tinder where the algorithm identifies our ideal alter ego in the game to team up?

Our coded, demanding society generates frustrations and consequently needs to escape, to breathe: in a word, need for Freedom! Video games that manage to instill this feeling of total emancipation or autonomy in players are very successful. The Animal Crossing game is the perfect example: each player is assigned an island whose geography and size they choose, build their house there, choose the season according to their mood (summer in the sun, winter in the snow), can fish. fish in the river to eat, or sharks in the sea for sport, invite friends or family for all kinds of game, live a night by the fireside with the northern lights in the sky. This game is so successful that players compare their island to that of other players and exchange ideas between them, hence meetings on the theme of the ideal island. A developer who achieves this feeling of freedom for any game, coupled with a rich volume of exchanges between players, significantly increases the potential success of his creation.

The game experience that succeeds in combining the 4 identified components of the motivation concept will be very successful. Clash of Clans succeeds in this challenge: the player completely escapes his daily life by building his village, is completely free to choose to develop it according to his preferences, forges social alliances with other players by making a pact with their villages, and must be very competitive to defend your Clan when it is attacked or on the contrary go on the offensive to plunder other Clans.

5.2) Purchase intention

5.2.1) Content purchase intention

We have noticed that people who are attached to an adventure-related game experience attach a lot of importance to the content (game history, characters, etc.) when they want to buy a game.

There is therefore a huge stake from a marketing point of view for a developer to communicate on the content of the game. More and more, video games are inspired by cinema to promote their creations through trailers. very high quality produced in synthetic

images and presenting the events of history. Now, game makers don't just release a product in which the player experiences an enjoyable adventure, for a few years now, game developers have been creating a real story in their games. There are therefore many very elaborate scenarios, intriguing characters, twists and turns, which lead to adaptations to the cinema such as “Assassin's Creed” with Michael Fassbender and Marion Cotillard for example. The players are looking for more than a game, they are looking for meaning in the game, with a plot, a well-constructed plot and rich characters.

The latest example is the release of the “Assassin's Creed Valhalla” trailer. The game is inspired by the real story of the Vikings invasion of England. Multiplayer games are also starting to add this dose of content and rich storyline to strengthen the bond between the game and the player. This is the case with the competitive game “Overwatch” for example, which is known for its scenes and stories of very good quality, as a result: its film adaptation is in progress.

It would be interesting to develop communication through interactive trailers. For example, for “Assassin's creed Valhalla”, the possibility of choosing the gender of the main character “Eivor” in order to teaser in an optimized way the male or female player: the potential buyer has the option to decide when viewing the trailer to see the hero or heroine in action! In the continuity, it would be interesting to leave some possibilities of decisions of the character in the trailer on two or three spectacular scenes. This would involve the player in “playing” a certain way right from the trailer, and it would increase attention to the content of the game.

There is also a strong interest in communicating about the content of the game by talking about the characters present in the game. For example in “Halo” we follow the story of the major accompanied by a fictional character: Cortana, who is a virtual AI . Cortana gives indications to the character played by the player throughout the game. She has become an iconic figure in the video game industry, so it is important to communicate on Cortana to encourage a player to buy the game. change his voice assistant like “Siri” or “Alexa” by Cortana, by putting the voice of Cortana and being called the “Major” for example as in the game!

In conclusion, a game that sells its rich content very well and that makes the player want to become his (her) Eivor or his Major will have succeeded in convincing and making the purchase a reality.

5.2.2) Intention to purchase Novelty

We noticed in the data analysis part that social gameplay had a significant impact on novelty purchase intention.

It is indeed logical to say that players who favor the experience of multiplayer are looking for the very latest games. Most of them are competitive players who buy recent games in order to prove to themselves that they are the best players always at the top level.

This type of game needs to be hosted on servers allowing several players located in different places to compete. In order to entice players to buy recent games, it would be interesting if the developers offered limited time challenges. For example, the first 100 winners of the battle royale may have a unique icon in their nickname distinguishing them from other players for a specified period (or not!). This would motivate players to be the first to buy the game. It could also be, for example, the possibility of having a challenge tournament in the first month, rewarding the best players with exclusive weapons and other prizes.

Game developers can also make their games want to be played through exclusive betas. By releasing their games for pre-test a few months before the official release, and only for a small portion of players, it would generate a powerful teasing and increase player interest in the game when it officially released.

In conclusion, we must succeed in targeting and reaching people who are looking for multiplayer experiences and offer innovative communications in order to highlight the recency of the game and immerse potential buyers from the trailer.

5.2.3) Developer purchase intention

We noticed in the data analysis part, that the social gameplay had an impact on the purchase intention linked to the developer.

This means that gamers looking for the multiplayer gaming experience are interested in the reputation of the game developer when they purchase it. There is therefore a stake for the developer to retain and not disappoint the players. Especially since developers specializing in multiplayer games such as Electronic Arts or Activision for example, each year release new versions of their flagship games: “FIFA”, “NBA 2K” or “Call of duty”.

In order to retain their players, developers have several options:

- Organize tournaments every year with endowments at the end of their games. The very successful examples of the FIFA tournaments of the developer Electronic Arts or the competitions of the game Fortnite demonstrate its effectiveness.
- Create e-sport through leagues and competitions within the game. This is already the case with the “Overwatch” game which brings together several teams of professional players within the framework of the overwatch league. E-sport is a dazzling success and allows the image of the developer to shine. The game “League of legends” has been a resounding success for many years, notably thanks to e-sport.
- The cross device allowing console players to play on a network with PC players.

- A platform like Ubisoft's "Uplay", allowing you to find the developer's catalog of games, access rewards, promotions and other advantages.

To conclude, developers have every interest in retaining their players in order to maintain a permanent relationship with them. Do like the Apple addicts who buy only Apple.

5.3) Emotions

5.3.1) Positive emotions

In the Data Analysis section, we found that within Social and Adventure gameplay, players feel positive emotions during their gaming experience.

In order to reinforce these positive emotions, the games should make betas of their games available before the official releases, which is already done now, so that the various bugs or other problems are removed before the final release. In this way, players will be able to have a gaming experience that is not disrupted by long and repeated game updates.

In the case of adventure gameplay games, we can notice in the moderation part that women feel less strong positive emotions than men for these types of games. It would be a good idea to allow the player to have the option of choosing whether to perform the game with a male or female hero. By offering this perspective, women could then identify more with the hero, and in this way feel stronger emotions. Ubisoft in its game "Assassin's creed Valhalla" has rightly indicated that the player has the possibility to define at the beginning of the game if he wants to play with the female hero or the male hero.

5.3.2) Negative emotions

In the Data Analysis part, we found that for social gameplay, players experience negative emotions during their gaming experience.

This can be explained by the fact that, unlike in adventure gameplay, the players play in order to win, while in adventure gameplay there is no victory or defeat, it is only a matter of experiencing the game. adventure of a hero. It therefore seems logical that victory brings positive emotions and defeat negative emotions. The player is only satisfied if he wins.

In order to limit the negative emotions of the players which can cause in some of the nervousness and the frustration towards the game or the criticisms, it is necessary to succeed in rebounding on this feeling to revive the player. In the case of battle royale, the game "Warzone" has developed the "gulag" which allows a player once eliminated to return to the game if he succeeds in his "gulag". That is to say to succeed in a confrontation in 1 VS 1. This system of second chance allows, in my opinion, to reduce this feeling of frustration or anger when one is eliminated.

There is an opportunity for developers to succeed in offering this “second chance” to players as if it were a gift given to them. This can take the form, for example, in the case of a game like “Mario Kart”, the possibility of seeing the shortcuts on the map during the last lap if you are the last in the race.

6) Limitations and future research

During the given analysis, we were able to identify some limitations to our study.

The first and main limitation of the study concerns the number of respondents. The number of respondents means that our analysis potentially lacks representativeness with a margin of error of 7%. It would have been necessary to have 392 respondents in order to achieve a margin of error of 5% and therefore better representativeness.

The second limit of the study corresponds to the male / female distribution of the study. There were more men than women to answer the questionnaire, which means that the representation of the sample vis-à-vis the population is not balanced. In the context of new research, it would therefore be necessary to have a sample that is better distributed by gender.

The third limitation concerns the behavior of respondents towards video games. The respondents are all video game players but it is not known how often and how much time they spend watching games. It would be interesting for a future study to know the influence that this can have on the links previously identified.

The fourth and final limit concerns purchase intention. From now on it is possible to buy the games in physical in stores or by Internet order, and also in dematerialized on for example the “Playstation store”. It would have been interesting to know if the fact of buying in dematerialized or in physical has an impact on our validated hypotheses.

As part of future research, it would also be interesting to carry out a quantitative study on a video game sequel, in particular “Assassin's Creed”, “Halo” or “Far Cry” for example. It would be interesting to identify the evolution of the gameplay between the first Halo game and Halo 5 and to know what impact this had on the player and their playing experience.

It would also be interesting to cross-check, through a qualitative study of video game developers, the market information they hold concerning new gameplay evolutions, purchase intentions and emotions in games.

7) Conclusion

The first objective of this study is to determine which factors have a positive impact on gameplay. On this point, we could observe that both innovation and motivation have a

positive impact on gameplay. On the one hand, the motivation which positively influences multiplayer games through specific factors such as competition, socialization, escape or even freedom. On the other hand, innovation which significantly optimizes the gameplay in the context of adventure games thanks to cloud gaming support solutions and the development of virtual reality. It is therefore these two main axes that must be developed in order to maximize the gameplay of the players.

The second objective of this study concerns the positive influence that improved gameplay can have on the purchasing intention of players. We have seen that the intention to purchase is differentiated into several categories that are related to the content of the game, the novelty of the game, the price and the developer of the game. It appears that the gameplay is linked to the quality and the The richness of adventure game content has an impact on the purchase intention of the single player, while the novelty at large and the reputation of the developer clearly influence the purchase intention of players drawn to social gameplay. Overall, we can see that improving gameplay has a positive influence on purchase intention.

The third and final objective of this study is to find out whether improving gameplay automatically leads to positive emotions in the player. The first observation was that the improvement of the gameplay, whether it is a question of single player or multiplayer adventure type games, made it possible to reinforce the player's positive emotions. However, this evolution of the gameplay also leads to a reinforcement of negative emotions within the framework of the social gameplay. We conclude that for this type of game, the impact on emotions is twofold.

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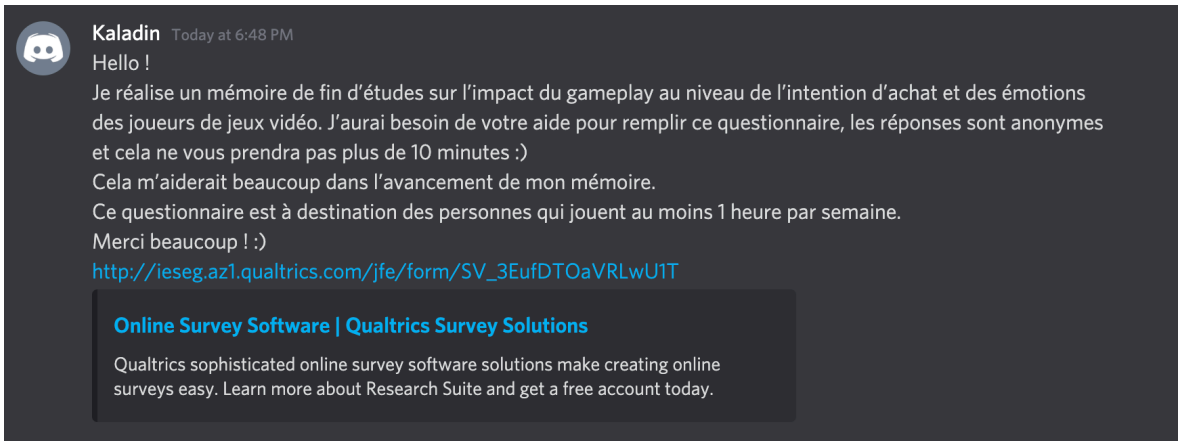
Annex

Variance totale expliquée

Composante	Valeurs propres initiales			Sommes extraites du carré des chargements			Sommes de rotation du carré des chargements		
	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé	Total	% de la variance	% cumulé
1	2,841	31,571	31,571	2,841	31,571	31,571	2,042	22,684	22,684
2	1,192	13,243	44,814	1,192	13,243	44,814	1,698	18,869	41,553
3	1,110	12,333	57,147	1,110	12,333	57,147	1,403	15,594	57,147
4	,977	10,858	68,005						
5	,847	9,410	77,415						
6	,650	7,224	84,639						
7	,512	5,694	90,333						
8	,504	5,601	95,934						
9	,366	4,066	100,000						

Variance Purchase intention without the item Price

Facebook post



Discord Post

Hello, My name is Julien and I am currently a student in a Master 2 Digital Marketing and Innovation. I am writing a thesis on gameplay in video games. The goal of my study is to determine the impact of gameplay on purchase intention and player emotions. I would like to ask you a few questions, it will only take a few minutes :)

Q1 Could you, according to the scale below, give your opinion on the following statements (For each row below, tick a number between 1 and 5; 1 = strongly disagree; 5 = strongly Okay)

	Strongly disagree (1)	Tend to disagree (2)	Neutral (3)	Somewhat agree (4)	Strongly agree (5)
When I play I want to have the best score (1)	○	○	○	○	○
I play for the sake of winning against other people (2)	○	○	○	○	○
These are the challenges that make me want to play (3)	○	○	○	○	○

Q2 Could you, according to the scale below, give your opinion on the following statements (For each row below, tick a number between 1 and 5; 1 = strongly disagree; 5 = strongly Okay)

	Strongly disagree (1)	Tend to disagree (2)	Neutral (3)	Somewhat agree (4)	Strongly agree (5)
I play to have a good time with my friends (1)	○	○	○	○	○
The interest of playing for me is to meet players (2)	○	○	○	○	○
I prefer to play as a team (3)	○	○	○	○	○

Q3 Could you, according to the scale below, give your opinion on the following statements (For each row below, tick a number between 1 and 5; 1 = strongly disagree; 5 = strongly Okay)

	Strongly disagree (1)	Tend to disagree (2)	Neutral (3)	Somewhat agree (4)	Strongly agree (5)
I play in order to disconnect from real life (1)	○	○	○	○	○
When I play I wish to be immersed and involved in the game (2)	○	○	○	○	○
Sometimes I feel less tired, hungry or thirsty when playing (3)	○	○	○	○	○

Q4 Could you, according to the scale below, give your opinion on the following statements (For each row below, check a number between 1 and 5; 1 = strongly disagree; 5 = strongly Okay)

	Strongly disagree (1)	Tend to disagree (2)	Neutral (3)	Somewhat agree (4)	Strongly agree (5)
I play so that I can perform in-game actions that I cannot do in real life (1)	○	○	○	○	○
I prefer games that have no action or movement limit (2)	○	○	○	○	○
I mainly play games that have open worlds (3)	○	○	○	○	○

Q5 Could you, according to the scale below, rate the importance you give to the criteria of motivations to play (For each row below, tick a number between 1 and 5; 1 = not at all important; 5 = very important)

	Not at all important (1)	Rather not important (2)	Neutral (3)	Rather important (4)	Very Important (5)
The pleasure of winning (1)	○	○	○	○	○
Team play (2)	○	○	○	○	○
The possibility of getting away from it all (3)	○	○	○	○	○
The fight against boredom (4)	○	○	○	○	○

Q6 What do you think defines good gameplay? (For each row below, tick a number between 1 and 5; 1 = not at all important; 5 = very important)

	Not at all important (1)	Rather not important (2)	Neutral (3)	Rather important (4)	Very Important (5)
Visual quality (1)	○	○	○	○	○
Audio quality (2)	○	○	○	○	○
In-game story and related missions (3)	○	○	○	○	○
The challenge through leagues, competitions or other (4)	○	○	○	○	○
The ability to play locally or in a network with other players (5)	○	○	○	○	○

Q7 When you buy a game for yourself, there are a number of criteria you take into account. Could you, according to the scale below, rate the importance you attach to the following criteria (For each row below, tick a number between 1 and 5; 1 = not at all important; 5 = very important)

	Not at all important (1)	Rather not important (2)	Neutral (3)	Rather important (4)	Very Important (5)
New (1)	○	○	○	○	○
Durability (time to finish the game) (2)	○	○	○	○	○
Price (3)	○	○	○	○	○
Quality (4)	○	○	○	○	○
Developer (5)	○	○	○	○	○
Type of game (6)	○	○	○	○	○
Game Scenario (7)	○	○	○	○	○
Game characters (8)	○	○	○	○	○
Note in the press or on gaming sites (9)	○	○	○	○	○
Possibility to play in multiplayer (10)	○	○	○	○	○

Q8 What feeling do you get when you play? (For each row below, tick a number between 1 and 5; 1 = strongly disagree; 5 = strongly agree)

	Strongly disagree (1)	Tend to disagree (2)	Neutral (3)	Somewhat agree (4)	Strongly agree (5)
Satisfaction (1)	○	○	○	○	○
Frustation (2)	○	○	○	○	○
Pleasure (3)	○	○	○	○	○
Anger (4)	○	○	○	○	○
Anguish (5)	○	○	○	○	○
Excitement (6)	○	○	○	○	○

Q9 Do you consider non-player characters to be important in a game? (Non-player characters are in-game characters that are not led by human players)

○ Yes (1)

○ No (2)

Q10 Do you consider pathfinding to be important in a game? (Pathfinding corresponds to the modeling of the movement of a non-player character within his environment)

○ Yes (1)

○ No (2)

Q11 What do you think defines a good open-world? (Open-worlds correspond to virtual worlds within games that allow the player to move around freely)

	Strongly disagree (1)	Tend to disagree (2)	Neutral (3)	Tend to agree (4)	Strongly agree (5)
To be able to move without restrictions (1)	○	○	○	○	○
The multitude of possible actions in a virtual world (2)	○	○	○	○	○
The freedom to do whatever you want (3)	○	○	○	○	○

Q12 Do you consider machine learning important in a game?

○ Yes (1)

○ No (2)

Q13 Could you use the scale below to rate the importance you attach to the following statements (For each row below, tick a number between 1 and 5; 1 = strongly disagree; 5 = Totally agree)

	Strongly disagree (1)	Tend to disagree (2)	Neutral (3)	Tend to agree (4)	Strongly agree (5)
I often buy additional content in games to progress faster (1)	○	○	○	○	○
I often buy additional content in games to have additional missions to complete (2)	○	○	○	○	○
I often buy additional content in games to improve my character or the game environment (3)	○	○	○	○	○

Q14 Do you consider cloud gaming to be an important innovation in the video game industry? (Cloud gaming is a way to provide a gaming experience for gamers no matter where and when)

○ Yes (1)

○ No (2)

Q15 Do you consider virtual reality to be a real innovation in the video game sector?

○ Yes (1)

○ No (2)

Q16 To what extent do you attach importance to the different criteria of artificial intelligence in video games? (For each row below, tick a number between 1 and 5; 1 = strongly disagree; 5 = strongly agree)

	Not at all important (1)	Rather not important (2)	Neutral (3)	Rather important (4)	Very Important (5)
Non-player characters (PNG) (1)	○	○	○	○	○
Open-World (2)	○	○	○	○	○
Pathfinding (3)	○	○	○	○	○

Q17 How much do you agree with the following statements about innovation in video games? (For each row below, tick a number between 1 and 5; 1 = strongly disagree; 5 = strongly agree)

	Strongly disagree (1)	Tend to disagree (2)	Neutral (3)	Somewhat agree (4)	Strongly agree (5)
Cloud gaming meets an expressed need (1)	○	○	○	○	○
Virtual reality responds to an expressed need (2)	○	○	○	○	○
Innovation is very present in video games (3)	○	○	○	○	○
There are often real novelties in video games (4)	○	○	○	○	○

Q18 What is your gender?

- ○ Male (1)
- ○ Female (2)
- ○ Non Binary (3)

Q19 How old are you?

- ○ Under 20 (1)
- ○ Between 20 and 35 years old (2)
- ○ Between 36 and 50 years old (3)
- ○ Over 50 (4)

Q20 What socio-professional category do you belong to?

- ○ High school student (1)
- ○ Student (2)
- ○ Frame (3)
- ○ Liberal profession (4)
- ○ Company manager (5)
- ○ Employee (6)
- ○ Worker (7)
- ○ Unemployed (8)

Thank you for taking this survey and wish you a good day! :)

Survey