

INSTITUTO UNIVERSITÁRIO DE LISBOA

ONLINE GAMING PLATFORM CHOICE AS A MODERATOR BETWEEN SOCIAL INTERACTION OR TIME FLEXIBILITY AND CONTINUOUS PURCHASE INTENTION: THE CASE OF FORTNITE

Philippe Coulombier

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Supervisor: Professor Maria da Conceição Santos, ISCTE-IUL Business School, Department of Marketing, Operations and General Management

Co-Supervisor: Professor Graça Trindade, ISCTE-IUL Business School, Department of Quantitative Methods for Management and Economics

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## Abstract

The video game industry has grown exponentially in the last decades. The emergence of Freeto-Play games and the ability to play the same game with friends, while being on different gaming platforms have been a tremendous help to the industry's growth. Until now, much research has been published regarding the players' motivations to play or spend money on ingame virtual items. However, in a day where players' loyalty is more than ever important, none has focused on cross-platform games to understand the impact the specific choice of a gaming platform might have over the players' continuous purchase intentions. Filling this literature gap is the objective of this study by focusing on the game Fortnite.

A questionnaire was distributed in Fortnite online communities on Reddit and Discord. With a total of 278 responses obtained, a Partial Least Squares Structural Equation Modelling (PLS-SEM) bootstrapping technique, was conducted and showed that gaming chosen platform is a moderator between time flexibility or social interaction and continuous purchase intentions to play on consoles or PC, compared to mobile devices. The model also confirms that the variable continuous play is a mediator between (1) Competition, (2) Diversion, (3) Fun, (4) Social interaction or (5) Time flexibility and the variable continuous purchase intentions.

The implications of developing new game profitability cycles based on free-to-play games as well as incorporating new social interactions between players during games must also be considered.

Keywords: free-to-play, continuous purchase, cross-platform, online games, Fortnite

JEL Classification: M30; M31

#### Resumo

A indústria de videogames cresceu exponencialmente nas últimas décadas. O crescimento da indústria foi muito impulsionado pelo lançamento de jogos Free-to-Play, assim como pela possibilidade em jogar o mesmo jogo em simultâneo com amigos a partir de diferentes plataformas de jogos. Até hoje, muitos estudos foram publicados sobre as motivações dos jogadores para jogar ou gastar dinheiro em itens virtuais do jogo. No entanto, apesar da elevada importância da lealdade dos jogadores, nenhum dos estudos se concentrou em jogos multiplataforma para entender o impacto que a escolha específica de uma plataforma de jogos pode ter sobre as intenções de compra contínuas de bens virtuais relacionados com o próprio jogo. Preencher essa lacuna da literatura é o objetivo deste estudo ao focar no jogo Fortnite.

Um questionário foi distribuído nas comunidades online do Fortnite no Reddit e no Discord. Com um total de 278 respostas obtidas, as relações entre construtos latentes foram estimadas a partir do método Partial Least Squares Structural Equation modeling (PLS-SEM) com recurso ao software SmartPLS). Esta estimação confirmou que a plataforma em que se joga o Fortnite é uma variável moderadora entre a variável Flexibilidade do tempo para jogar ou a Interação social e a variável dependente Intenção contínuas de compra durante o jogo consoante se jogue em consolas ou portáteis quando comparados com dispositivos móveis. Também se concluí que a variável jogar continuadamente é mediadora entre (1) Competição, (2) Distração, (3) Diversão, (4) Interação social ou (5) Flexibilidade do tempo e a variável dependente Intenção de compra contínua durante o próprio jogo.

Devem ser ainda consideradas as implicações de se desenvolverem novos ciclos de rentabilidade de jogos baseados em jogos free-to-play e de se incorporarem novas interações entre os jogadores durante os jogos.

Palavras-chave: jogos gratuitos online, compra contínua, multiplataforma, jogos online, Fortnite

Classificação JEL: M30; M31

# **Chapter 1 - Introduction**

In 2020, Microsoft announced the acquisition of Zenimax Media for an outstanding amount of \$7.5 billion (Microsoft News Center, 2020). For many people Zenimax Media is a company that they have never heard of, however within the gaming industry and for players this has been received as a huge news. Indeed, this company is the owner of the game publisher Bethesda Softworks, which published the 19th most sold video game in the history of gaming, *The Elder Scrolls V: Skyrim*, which shipped around 30 million copies worldwide since its release in 2011. Not even two years later, in January 2022, Microsoft announced the acquisition of Activision Blizzard, famous for having published games such as *Call of Duty, World of Warcraft* or even *Candy Crush*, for \$68.7 billion and with this, "signed the most expensive acquisition of its history" (Gaudiaut, 2022). More than being just figures, such high amounts of money are more than anything showing to the world the importance the video game industry has taken over the last few decades within the entertainment industry, and our lives.

When it comes to evolution, the video game industry never ceased to evolve over the past 40 years. Indeed, it kept on evolving in all forms and shapes, whether we are talking about softwares, hardwares or business models. Additionally, as the number of people getting internet within their homes keeps on increasing rapidly every year, the number of video games players is doing the same and reached a total amount of 3.2 billion video game players worldwide in July 2022 (Newzoo, 2022). Such a high number of players worldwide in 2022, can be explained by a multitude of factors and one of them being accessibility in terms of hardware, software, and pricing. Firstly, more and more games are releasing on multiple gaming platforms at their launch, as the latest LEGO Star Wars game did in April 2022 when it was released on a total of six platforms: Windows, Nintendo Switch, PlayStation 4, PlayStation 5, Xbox One and Xbox Series (LEGO, 2022). Such wide coverage is allowing video game companies to hit as many players as possible and gaining extra coverage. Secondly, more and more online games are becoming "cross-play" games, meaning that players can play together no matter what the platform they may have. As an example, a Nintendo Switch player can play a game of Dauntless with a friend playing the same game on its computer (Roach, 2020). Finally, the gaming accessibility has been heavily encouraged and enhanced by the emergence of the freeto-play model, allowing players to experience a fully operational game, with no stopping as it would be the case on a demo version, at absolutely no cost. In this case the companies are making money by selling virtual items to players to enhance their experiences with the game.

With this new accessibility and the storm that was caused by the emergence of free-toplay games, academics have been more and more analysing this phenomenon and especially the reasons why players would play video games and spend money in video games that do not require them to. However, it would appear most likely that even though many results have been discovered as to what is motivating players to play, pay or keep on spending money in video games, a gap can be found within the literature. Indeed, as Boric and Strauss (2022) published an article regrouping the literature regarding the paying drivers which turn a free-to-play player into a paying player, it appeared in previous studies no distinction was made regarding the gaming platform used by players, or game genre. However, the typology of players can widely vary depending on the platform we are studying, whether it is mobile, console, or PC. Furthermore, as the revenue generated by free-to-play games is done through a minority of users (Sinclair, 2014), video game companies need to attract and retain a maximum of these paying users in order to generate a higher amount of revenue. Thus, it becomes more and more important for marketers nowadays to have a clear understanding of what is motivating all players to play, pay and keep spending money within free-to-play games, when it comes to gaming platforms.

# **Research Objective**

Addressing the literature gaps, the goal of this study is to understand the impact the choice of a gaming platform might have over the continuous pay drivers in free-to-play games. To do so, the free-to-play game Fortnite will be used as it is a cross-play game, meaning that it is available on consoles, computers and mobile devices. Indeed, the results from an analysis could vary widely depending on if we regroup the data no matter the platform, or game genre, or if we divide them. Therefore, it is essential to understand what is motivating Fortnite players to continuously purchase virtual items in the game and assess the impact the gaming platform might have.

## Structure of the study

This study will be divided into multiple sections as follows. Firstly, we will be tackling the main topics of this study as we will be reviewing and defining the video game industry and the Free-to-play business model, with what is motivating players to play and purchase virtual items through the literature review. Secondly, with the objective of answering the identified literature limitations, we will be formulating hypotheses before organising a theoretical framework based on existing studies. Thirdly, the methodology used for this study will be developed as well as its data collection, and both playing profile and paying habits of the respondents. Finally, after analysing the empirical data gathered, the key findings of this study will be discussed in relation to existing studies, followed by a discussion of the limitations of this study, as well as potential improvements for future research.

# **Chapter 2 - Literature Review**

# 2.1 Video Games Industry Overview

### 2.1.1 Current state of the industry

In 2019, Newzoo declared that gaming was the "*most lucrative entertainment industry by far*" with a global revenue of \$145.7 billion, versus the box office and music industries, which respectively generated \$42.5 and \$20.2 billion. Today, with a revenue generated in 2021 of roughly \$176 billion, the global games market is expected to "*grow with a healthy CAGR* (2019 to 2024) of +8.7% to reach \$218.7 billion in 2024", according to Newzoo. Additionally, if we take a closer look at the refered Newzoo's study, it will appear that mobile gaming represented the main revenue share among the industry with \$65.5 billion (45%) against console (32%) and PC (23%). Those facts demonstrate that in less than 15 years of existence, mobile gaming took over the gaming industry is showing that more than anything it is here to stay and it would appear that the number of gamers keeps on increasing every year globally. Such phenomenon is not limited to highly developed countries but truly reaches the entire world. Additionally, the COVID pandemic had a great impact over the entire industry in both financial and development aspects.

### 2.1.2 The impact of the COVID pandemic

In 2020, the COVID pandemic impacted the entire world, industries, and people. The video game was not different regarding it. However, in terms of raw figures, the impact has been more profitable than negative. As many countries were going under lockdown and people were forced to stay at home, many people turned to video games to pass the time or escape their daily routine. Indeed, according to Statista (2021), in 2020 the global time spent playing video games increased by 39% during the COVID pandemic. While many games in preparation got delayed because of the pandemic, the companies' sales increased and players spendings in free-to-play games did so. Moreover, the streaming platform Twitch recorded its all-time viewers record which clearly is showing an overwhelming interest for video games during the pandemic without ever having played a video game. Indeed, as an example, within the increase of mobile players in 2020, 6% of users had not played mobile games before.

Additionally, studies have shown that playing video games during these periods had a positive impact on children's well-being (Barr & Copeland-Stewart, 2021). Indeed, within their study they found that time spent playing video games increased in 71% of the cases, and that through gaming, most respondents said their well-being was positively impacted by it. Furthermore, according to Ward's analysis (2021), a correlation has been found between "increased gaming activity and higher in-country mortality rates that are linked to the pandemic".

To conclude, we can see that the pandemic certainly had deep impacts on both players and their playing habits. Additionally, it is commonly acknowledged that many of such impacts will pursue beyond the pandemic's end (Barr & Copeland-Stewart, 2021).

## 2.2 The Emergence of the Free-to-Play Business model

### 2.2.1 The major evolutions within the gaming industry

In order to fully understand video games, it is important to have a definition of what makes a video game. According to Zimmerman (2004), a game can be defined as "a voluntary interactive activity, in which one or more players follow rules that constrain their behaviour, enacting an artificial conflict that ends in a quantifiable outcome". Thus, to have a short but clear definition, we need to add one factor, the audiovisual aspect. Indeed, according to Esposito (2005:02), "a videogame is a game which we play thanks to an audiovisual apparatus and which can be based on a story". Having stated all this, we can acknowledge that video games have been around since 1947 with the first trace of a simile video game by Thomas T. Goldsmith Jr. and Estle Ray Mann, and issued on 14 December 1948, as U.S. Patent 2455992. Ever since the arrival of consumer video games with the arcade games in the early 1970's, the video game industry has come to know many major evolutions and changes in order to become what it is today. Indeed, according to Chikhani (2015), we can describe seven main changes which caused gaming to be such a big part of our lives nowadays:

- The Early Days
- Arcade Gaming
- Beginning of Multiplayer Gaming
- Emergence of Home Consoles
- Personal Computers: Designing Games And Opening Up To A Wider Community

- The Move To Online Gaming On Consoles
- Online Storefronts appearance on consoles
- Mobile gaming and Free-to-Play models

As seen above, the latest evolutions within the industry have been pushed forward by two phenomenons: the arrival of mobile (smartphones) and a brand-new business model: the Free-to-play (F2P) model.

## 2.2.2 A closer look at the F2P model

## 2.2.2.1 Main characteristics

According to Olsson and Sidenblom (2010), video game business models can be classified under six major areas:

- Retail: players purchase a physical copy of a game at a retailer.
- Digital: players purchase a digital copy of a game online or a retailer which then needs to be installed on the gaming device.
- Subscription: players will have to pay at every defined time period (usually monthly) in order to keep on playing the game.
- Microtransactions: players are playing a free game but can unlock more content by purchasing premium paid content.
- Player Trading: players can trade digital currency or in-game items on an online market and the publisher of the game gets a commission.
- Advertising: ads are being pushed to players when playing which is generating revenue.

Within these six areas, the one which we will be interested in is Microtransactions. As a matter of fact, it is currently the most used business model. Indeed, when looking at the top 10 most played video games in 2020, 8 were free-to-play microtransactions based games. When discussing the notion of "free-to-play", also referred to as F2P, we first need to tackle the freemium business model. Indeed, this model has been defined as a model in which users have access to basic features or services for free but are required to pay additional fees in order to have access to the full range of services (Kumar, 2014). In video games, it has been used under the form of demonstration versions of paid games in which players can access part(s) of the game for free but are required to spend a determined fee in order to unlock or access the full game. However, today, the F2P or freemium model is more defined by providing players the

entire game or gameplay at no cost of entry but with only basic functions or limited functions in it. Boric and Strauss (2022) have defined the freemium model as being "products or services initially being downloadable and playable for free, but those products or services having some mechanisms applied that make the consumer eventually spend some 'real' money". Companies using this model are monetizing their games by trying to make players purchase paid content within the game in order to enhance their games core functions or the overall player's experience.

According to Riekki (2016), the goal of free games is "to attract a great number of players and then offer them incentives to purchase the in-game items". Indeed, as there is no entry costs compared to Buy-to-Play (B2P) games, having a large number of players does not imply having a set amount of revenue as only 2.2% of players actually spend money within free games (Sinclair, 2014). Thus, the paid content within the game must appeal to a maximum number of players while acknowledging that only a handful of them will ever purchase extra content. Additionally, with such a high number of players, a network is created allowing the games to answer social motivations players might have.

To conclude, we need to state that a difference can and should be made between freemium and free-to-play games nowadays. Indeed, in a freemium business model paying will eventually become a sort of obligation for the player in order to either advance within the game or remain competitive with other paying players (Lelonek-Kuleta, Bartczuk, & Wiechetek, 2021), whereas in a free-to-play game, paying or non-paying players do have the exact same game. The microtransactions are not based on gameplay but purely on cosmetics or anything not affecting the way the game is being played. Thus, it is important to understand what exactly are purchasing players in games that they can enjoy without spending money in the first place.

### 2.2.2.2 What do players buy?

As stated before, Freemium games are basing their revenue on selling in-game items, microtransactions or as Oh and Ryu (2007) described it, having an "item-selling based payment model". In 2007, Lin and Sun described in-game purchases as belonging to two categories:

- **Functional**: Items which can enhance the player's performance, characters' aspects, or power within the game, by using them.
- **Decorative**: Items which will have an impact solely on the appearance of the player's characters or social interactions, without affecting its performance or gameplay.

Additionally, since then, microtransactions have been described more extensively. Indeed, using the classification Lo and Fristedt (2019) gave, we can sort microtransactions within six categories, which are:

- **Cosmetics**: Items changing the look of the player's characters or items. Such items are not modifying the gameplay of the player.
- **Expansions**: The ability to unlock a game's expansion means that the player will gain access to more content to the existing game, which can be new stories, missions, etc.
- Exclusive Items: Extra items that players can purchase which may or may not be available for purchase in the game. Such items can be affecting gameplay and are as such usually not well received by players as they tend to give an advantage to players spending money.
- **Time**: Such items exist within games relying on time to move forward such as strategy games in which you need to wait for your actions to bear fruits. Thus, "time" can be bought in the form of accelerators or boosters.
- Loot boxes: a casino type of purchase which gives you a chance of obtaining a random item or set of items based on specific odds set by the game's publisher.
- **Convenience**: Items that allow users to gain convenience benefits which can result in extra inventory slots, fast travel, etc.

However, as seen before in our case we will be focusing on free-to-play games which are basing their revenue on microtransactions not affecting gameplay. When looking at this classification we can understand that players may have different motivations behind purchasing in-game items or choosing not to. Therefore, we will now have a look at the literature regarding the motivations to play video games and with the extension, to spend money on free games.

## 2.3 Why Do Players Play Video Games?

According to Kurma (2007), "Consumer behaviour involves the psychological process that consumers go through in recognizing needs, finding ways to solve these needs, collect and interpret information, make plans, and implement these plans (e.g., by engaging in comparison shopping or actually purchasing a product), making purchasing decisions (e.g., whether not to purchase a product, and if so, which brand and where) and post purchase behaviour". In our case, it could be simply put as to studying why players are motivated to play within video games. Several researchers have conducted studies to fully understand the reasons behind the need to play in gaming, more specifically in online games.

As video games are before everything else games, we would imply that having "**fun**" is largely part of the motivation to play. According to Malone (1981) described the concept of fun, as motivation, as involving three aspects: challenge, curiosity, and fantasy, which could be summarised as not knowing what will happen next, or we have to overcome, in order to achieve our goal within this fantasy environment.

Previous research articles (Ryan & Deci,2000, Kong, Kwok & Fang ,2012 and Lin et al., 2012)), have stated that motivation can be divided into two forms: **intrinsic motivation and extrinsic motivation**. **Intrinsic** motivations are not coming from external pressure or factors. Indeed, players are motivated to play for personal satisfaction such as pleasure, curiosity, or interest (Gunnel & Gaudreau, 2015). This implies a motivation in losing yourself in the game, getting immersed in its world, as well as developing skills, practising and experiencing such a world or activities (gameplay), and by doing so extracting pleasure or positive feelings out of it (Lafreniere et al., 2012). On the other hand, **extrinsic** motivations are not coming from within the player himself but rather from external factors with tangible outcomes (e.g. a specific reward, items, etc.) or social recognition from other players in the game or outside (Hainey et al., 2011). In this case the motivation relies more on utilitarian outcomes rather than internal feelings such as pleasure, curiosity or interest. However, in the context of video games specifically it has been stressed out by Koo et al. (2007) that extrinsic motivations. These authors identified five specific constructs of experiential motivations:

- Concentration: the ability the player must no longer be affected by factors outside of the game when being involved with it.
- Perceived enjoyment while playing.
- Escape: how much the game can allow the player to escape his daily routine.
- Epistemic curiosity: how much the game is making the player feel like he is learning new things.
- Social affiliation: how much the game is allowing the player to communicate and interact with other real players.

However, even though intrinsic motivations are compiled within experiential motivations their article also stressed out that the difference between can be made. Indeed, Banytea and Gadeikiene (2015) concluded that "the essence of intrinsic motivation is personal (internal) motives of a consumer, whereas experiential motivation is more related to social aspects such as communication and cooperation with other consumers and self-assessment in comparison to other participants of the process". Furthermore, these authors stated that the "motivation to play games is reasoned by the theory of self-determination stating that personal motivation is a multidimensional construct. It is reasoned that three types of motivation, i.e., intrinsic motivation, extrinsic motivation and experiential motivation, describe general consumer motivation to play video games both on personal and not personal (game) level". Following such an idea of a multidimensional construct, the study conducted by Souza and Freitas (2017), showed that the following were influencing the willingness to play and pay: **challenge, diversion, fun, fantasy, and social interaction**.

Additionally, their results stated that **competition** has a negative impact over the motivation to play, however limitations were raised indicating that this should not be conceived as true for all players.

Playing video games, just like any other leisure activity, does involve **time** as a mechanic. Indeed, as found by Wei and Lu (2014), users are more likely to play video games during their free time or according to their time flexibility. It would then appear that time flexibility is a construct influencing the motivation to play games, even though the impact is not as significant as other constructs. Time flexibility has been defined by Hsiao and Chen (2016) as the amount of time someone can take playing, and his capacity to fix and monitor it.

To conclude we can understand that the motivations behind playing video games are coming from within the player, to look for specific hedonistic outcomes such as escaping his life, achieving specific goals, etc., and as well from others with social motivations.

## 2.4 Why Do Players Spend Money in Free-to-Play Games?

The study of why players are motivated to spend money in games that are free to play is relatively new but very connected to the analysis of players' motivations to play video games. Indeed, Hamariet al., (2017) discovered six main factors or reasons explaining the motivations players have to purchase in-game contents in F2P games: unobstructed play, social interaction, competition, economic rationale, indulging children, and unlocking content. However, it is not as relevant to include indulging children and unlocking content as specific motivations as they

have been proven to be too broad or too narrow. Thus, we will here be focusing more on the first four motivations.

First, **unobstructed play** is related to purchasing the ability to play the game without interruption or waiting time. Using the classification of Lo and Fristedt (2019) previously mentioned, the unobstructed play purchases are the "Time" related in-game purchases such as speed up timers, with the goal to avoid waiting, or completing an objective faster. As Gainsbury et al., (2016) suggested the goal is to avoid frustration which is used as a gameplay mechanic by game developers to push players to make such purchases.

Secondly, **social interaction** is becoming a motivation to pay when the object of the purchase is about the players' interactions with others which could take the form of cosmetics, being able to play with friends, interactions capabilities, participating in events, etc (Hamari et al., (2017)). Cleghorn and Griffiths (2015) referred to social interaction as a motivational factor as being a "social shopping", in which making in-game purchases would be a way to differentiate yourself from others and so communicating. This is quite similar to real life in which clothes, for example, are a way of showing a type of identity or social belonging. Indeed, according to Flunger, et al. (2018) "from a psychological perspective, the intention of purchasing virtual items not only has the hedonic motivation of satisfying oneself but also the social motivation to impress others, especially personal friends".

Thirdly, **competition** is implying the fact that a player would be able to purchase certain virtual items which would allow him to beat others, be stronger, or reach the top rankings. Such practice is highly hated by players as it is considered "pay-to-win" and by definition changes the odds in favour of the ones with the wealthiest. Park and Lee (2011) characterised this as the character competency value. However, in another way this could be linked to purchasing the ability to enter a certain competition, or specific event, which would allow the player to gain specific items only obtainable there, such as the online trading card game Hearthstone did with the inclusion of paid expansions granting players exclusive cards.

Fourthly, **economic rationale**, or monetary value, is the motivation in which players perceive a higher value in purchasing a specific in-game item at a specific cost, meaning that the cost is outweighed by all the benefits (Hamari et al., 2017). This can take the form of special discounts, wanting to support the developers of the game, reasonable prices or even investing money in the game as a personal hobby or even sport.

When looking back at the motivations to pay in free games, we can recognize that they are quite close to the ones motivating players to play in the first place. Indeed, Lucas Lopes Ferreira de Souza and Ana Augusta Ferreira de Freitas (2017) concluded that "the intention to play has a high degree of influence on the intention to pay".

More recently, Boric and Strauss (2022) published an article aiming at regrouping the literature regarding the paying drivers which turn a free-to-play player into a paying player. Through this study, a total of 17 studies results were aggregated regarding players' motivations to play and paying drivers. Within the 17 studies, 9 were analysing or about the concept of purchase motivations within free online games or mobile games:

	Analyzed game(s)		Parti-		Demographic data				Found motivations for	
Used source		Comm	Plat-	cipants	cipants Country	age (years)		gender (%)		paying in a freemium
	Name	Genre	form	(n = )		range	mean	m	f	game
Shi et al. (2015)	Dragon Nest	MMO RPG	PC	4,115	China	-	-	-	-	Perceived quality
Gainsbury et al. (2016)	Various games	Casino	-	521	Australia	18+	34-42	52	37	Enjoyment, Special offers, To advance in the game
Hsiao & Chen (2016)	Tower of Saviors	Puzzle	Smart- phone	3,309	Taiwan, Hong Kong	-	17-22 (51%)	89	11	Loyalty to the game, Good price & Convenience
Hamari, Alha, et al. (2017)	Various	-	-	519	Finland	-	<40 (95%)	91	8	Unlock content/ Unobstructed play, Socialization, Price & special offers
Hamari, Hanner, et al. (2017)	games	-	-	869	Finland	-	20-29 (47%)	90	9	To advance in the game, Socialization, Competition, Aesthetics
Kim et al. (2018)	Clash of Clans	MMO strategy	Smart- phone	387	-	-	20-39 (88%)	67	33	Socialization, Switching costs, Obtained relative advantage, Value for money
Fang et al. (2019)	Royal Sword	RPG	Smart- phone	86,022	China	-	-	-	-	Socialization
Hamari et al. (2019)	Pokémon Go	RPG	Smart- phone	1,190	-	16+	21-25 <i>(33%)</i>	59	41	Competition, Challenge, Socialization
Hamari et al. (2020)	Various games	-	-	869	Finland	-	20-29 (47%)	90	9	Socialization, To continue playing

Table 1: Overview of studies regrouped by Boric and Strauss to derive freemium game players'motivations for paying

Looking back at this table, as Boric and Strauss (2022) noted it, the main motivations for paying in players are: "socialisation, to continue playing, to unlock content, or to advance in the game, and due to a special offer, a good price/value for money, and convenience". Such motivations, even though more specific, can be indeed regrouped within the motivations we described earlier using the analysis conducted by Hamari et al., (2017).

To conclude, within the literature, the main motivations to why people would play videogames and would spend money within a free-to-play game have been analysed and stressed out. However, it is also making appear several limitations to the comprehension of the intention to pay within free-to-play players.

## 2.5 Limitations from Literature Review

At a time where the video game industry is taking more and more space within the financial environment and with the added importance it gained during the COVID pandemic, it is more and more important for marketers to understand players on a deeper level when it comes to the knowledge of the intention to pay drivers in free-to-play games, a model that is being used more and more consistently across all platforms. However, as stated previously, the above literature review is showing certain limitations regarding this aspect.

Firstly, within the analysed studies, no distinction is being made between one-time paying users and regular paying users, or continuous paying users. Indeed, as noted by Boric and Strauss (2022), "a player can spend, e.g., one USD once but never again afterwards, and can still be counted as a converted 'paying' customer in the data". As we discussed previously, when a game is free, ultimately the revenue will be generated by an extremely small percentage of players, thus, it is highly important for video game companies to keep these players. Therefore, in a F2P game, more than conversion, retention is the key metric.

Secondly, since the freemium model can be applied to all video game types, it can also be applied to games regardless of the platforms they are available on. However, the typology of players can widely vary depending on the platform they are playing, whether it is mobile, console, or PC. Indeed, this aspect has yet to be taken into consideration within the literature. Such reasoning can be applied to the game's genre as well. The results from an analysis can vary widely depending on if we regroup the data no matter the platform, or genre, or if we divide them. When we look at the top 10 video games played in 2021, it appears that 50% of them are what is being called "cross-platform" games. Being a "cross-platform" game means that the game is available on different platforms (PC, consoles, or mobile) while remaining unchanged, which signifies that you can play the exact same game on the platform you prefer, as long as it is available. Some of them are even defined as "cross-play" which means that when you are playing in the game, you can play with people playing on a different platform than yours. Therefore, it is more and more important for marketers to be able to analyse the paying motivations players have depending on the platform they're playing on, in order to tailor their approach and strategy based on a platform.

In order to extend this knowledge, we will here be analysing the impact the choice of a gaming platform has over the intention to pay in a free-to-play player. More specifically, we will be analysing the most played game in 2021, Fortnite. Indeed, this game is allowing us to reconcile the literature limitations for the following reasons:

- The game is available on PC, console, and mobile phones (Android and iOS)
- Having one game to analyse mitigate the game genre limitation
- The game has been available since 2017, which is allowing us to gather a wide range of data

We will now be tackling the game itself in order to explain what it is and more importantly the different purchase options it is giving to players.

## 2.6 Fortnite: a Game to Reconcile Limitations

Fortnite is an online free-to-play game developed by Epic Games and released in 2017. Fortnite is a cross-platform game as it is currently available on the following platforms: Nintendo Switch, PlayStation 4, Xbox One, Xbox Series, iOS, Android, PlayStation 5, macOS, and Microsoft Windows. Therefore, it is possible to play the game on PC, console and mobile. Fortnite can be defined as a Battle Royale game with many distinctive game modes. A Battle Royale is a specific game genre in which a certain number of players are thrown into the same area and have to fight, kill each other so that in the end only one player will remain and therefore win the game. In the case of Fortnite, a hundred players are gathered in one match. What makes Fortnite different from its competitors, in terms of gameplay, is that during the match, players can gather resources such as metal, wood, or rock, in order to build infrastructures to protect themselves or design an offensive strategy.

As stated above, Fortnite is a free-to-play game, which means that its revenue is based on microtransactions. Such microtransactions are all cosmetic based and none of them is affecting gameplay or the player's performance within a match. The microtransactions can be bought with real currency (euro, dollars, etc.) or the specific in-game currency called V-Bucks. The V-Bucks can be obtained in-game or bought with real money by players before being spent in microtransactions. Here are the different types of microtransactions that can be found within the game:

- 1. V-Bucks currency
- 2. Starter Packs
- 3. Battle Pass
- 4. Skins packs
- 5. Character skins
- 6. Emotes
- 7. Weapon skins
- 8. Collaboration character skins
- 9. Collaboration weapon skins
- 10. Collaboration skins packs
- 11. Fortnite Crew Membership
- 12. The original full game Fortnite including a solo campaign

In order to fully understand the economic model of Fortnite, we will define with examples the above microtransactions. Firstly, all purchases within Fortnite (with the exception of starter packs, Fortnite Club, and original full game) must be done using the in-game currency called V-Bucks. Players have to purchase V-Bucks first in order to purchase other virtual items as such virtual item prices are stated only in V-Bucks. A euro or dollar is approximately equal to 125 V-Bucks. Indeed, 1000 V-Bucks are being sold for 7.99\$, thus, 1\$ is equal to 125.157 V-Bucks.

### → Starter Packs:

Starter Packs are a regroupment of V-Bucks and virtual items which can be purchased within the shop for a real currency price. Such packs can only be purchased once per account. They are usually a "best deal" to invite new players to spend money in-game. Within Starter Packs, the ratio of V-Bucks acquired, compared to the money spent, is usually higher than with direct V-Bucks purchase.



Figure 1: Fortnite Battle Royale - Starter Pack example

## → Battle Pass:

The lore of the game Fortnite is evolving every two or three months under the form of "seasons". Each season the game is changing in the way that the story progresses, new enemies or mechanics are being introduced, and players get the chance to obtain new exclusive skins or appearances for their character. Indeed, each new season is being coupled with what is being called a "Battle Pass". For a specific amount of real money, players will have the ability to earn different types of rewards throughout the season by completing different missions, requests, or achieving specific in-game milestones. In other words, the more you play, the more you get. In Fortnite, achieving missions will make you gain experience, to increase your Battle Pass level (up to 100) and you obtain one reward per level gained. We can note that the Battle Pass is divided between two tiers: Free items & Paid items. Whether you purchase the Battle Pass or not, all players will gain experience within it and therefore levels, but if you have not purchased the pass, you will only obtain free rewards.

Finally, the ability to directly purchase each level of the Battle Pass to either avoid the hard work of doing the missions, or to get the ultimate reward at level 100 faster, for the cost of 100 V-Bucks per level.

The Battle Pass in Fortnite is being sold at 9.99\$.



Figure 2: Fortnite Battle Royale - Battle Pass Season X screen w. free and paid tiers

## $\rightarrow$ Skins packs and customisation options:

Skins packs are packs which can be purchased within the daily rotative shop of the game at different prices in V-Bucks. They contain customisation items or options for the player's character such as a specific outfit, backpack, weapon, emote, or vehicle. They usually respect a certain theme for the pack. It allows the player to fully customise his character with one purchase.

However, players can also purchase each of the items present in the pack separately. Additionally, everyday a new selection of customisation items is being showcased to the player, such as a character outfit or skin, a backpack, weapon, etc. These are referred to as character, weapon skins, or emotes.



Figure 3: Fortnite Battle Royale - Double Agent Pack - Skins pack example

## $\rightarrow$ Collaborations:

Quite regularly the company behind the game, Epic games, is making collaboration with different brands (movies, TV shows, music artists, etc.) which take the form of new and unique customisation options for players to purchase. The presentation remains the same as usual. Indeed, such collaboration items can be purchased as packs or separately.



Figure 4: Fortnite Battle Royale x Star Wars – Collaboration's example

## → Fortnite Crew Membership:

The Fortnite Crew Membership is a monthly subscription based in-app purchase allowing the players to obtain an exclusive cosmetics pack (containing a new Outfit along with at least one accessory), 1000 V-Bucks, the current battle pass, each month. The price is set at 11.99\$/month.



Figure 5: Fortnite Battle Royale Crew Membership example

# $\rightarrow$ The original Fortnite game:

The game Fortnite, as stated before, is a free-to-play battle royale game. However, it also has a paid version allowing players to experience a solo story. This version of the game is called Fortnite Save the World (Epic Games, 2022). This can be purchased as well as an ingame purchase within a bundle, at the cost of 15.99\$.



Figure 6: Fortnite Save The World purchase screen on Fortnite's website

# **Chapter 3 - Theoretical Framework and Hypothesis**

As discussed previously, the need to understand the motivations behind players' purchases within free-to-play games has never been more important for video game companies, as they must retain their paying users who account for the minority of their player base. The literature we reviewed previously showed distinctive variables which positively or negatively impact the intention to pay drivers but was lacking the data distinction regarding the platform players are playing on. Moreover, we've also seen that in F2P games, as a few percentages of players are paying, the continuous purchase drivers are gaining more and more importance. Indeed, more and more cross-platform F2P games are being released and last year the number one played video game spot was held by such a type of game: Fortnite. Therefore, it is relevant for marketers and researchers to dig deeper within the constructs of the players' continuous spendings motivations, and this study's main goal is to **understand the impact the gaming platform has over the continuous purchase drivers in Fortnite players**. To establish the variables inclusions or exclusions, we will perform a theoretical framework using the following four main researchers before drawing hypotheses:

Hamari, et al. (2020)	Hsiao and Chen (2016)
Balakrishnan and Griffiths (2018)	Souza and Freitas (2017)

When it comes to continuous purchase in Fortnite, we will be paying closer attention to the study conducted by Hamari, et al., (2020). Indeed, within this study, the authors concluded that four main constructs or categories impacted players' continuous purchases: Enjoyment (or Fun), Social value (or Social interaction), Economic value, and Continuous play. For this study, we will be considering such variables, however, the word Fun, instead of Enjoyment, and Social interaction, instead of Social value, will be used as they align with the next study, e.g. Souza and Freitas (2017). Moreover, in order to tackle the notion of loyalty within Fortnite to take into consideration the different typology of paying users, we will add the variable **continuous purchase**.

Additionally, as Souza and Freitas (2017) study showed that the intention to play positively affects the intention to pay in free-to-play games, we will be taking into consideration the following variables: **diversion and fun**. As we previously saw in the literature review, such variables, we can align them with the internal and experiential motivations studied and defined by previous authors. Moreover, the variable challenge and fantasy have not been selected because, too close to competition for challenge, and too broad within the context of Fortnite.

Even though a negative correlation was found with the intention to pay for the variable **time flexibility** in Souza and Freitas' (2017) analysis, we will include it as the context of the analysis here is different, especially taking place post COVID pandemic and its lockdown during which the notion of time flexibility was very different. The same applies for the **Competition** variable, as we are tackling the gaming platform here, results might indicate different findings. The studies of Hsia and Chen (2016) and Balakrishnan and Griffiths (2018) will be used to add different items within the same variables, respectively Continuous play and Economic value.

To sum up, the following variables were found to be relevant determinants for this study since they were tested to have an influence on players intention to play or spend money in F2P games:

Time flexibility Fun Diversion Social Interaction Competition Economic value Continuous play Continuous purchase

# **3.1** Hypotheses development

First and foremost, as we based this analysis on the impact the gaming platform has over the continuous purchase drivers in Fortnite players, all results will be divided into three segments post analysis: PC, Console, and Mobile.

Taking back the analysis conducted by Hamar, et al.,(2020), the conclusion was that the more time players spend within a game, the more likely they are to continue making a purchase, therefore for this study we will keep the same orientation.

H1A: Time flexibility explains positively continuous play intentions.

However, it can be considered based on the literature review that the longer a player might be in-game, the less likely he will be to spend money as he/she will not be pressured by time constraints.

H1B: Time flexibility explains positively continuous purchase intentions.

Fun has been described by authors as one of the main motivations to play video games, or the perceived enjoyment, and we will assume that the more a player enjoys a game the more willing to keep playing and to continue making a purchase he/she will be.

H2A: Fun impacts positively continuous play intentions.

H2B: Fun impacts positively continuous purchase intentions.

It has been stated by several analyses, such as Souza and Freitas (2017), that playing video games is a way of escaping the real world and its problems by emerging within a fictional world, thus, we will be assuming that part of this escapism can be found within continuous purchases.

H3A: Diversion explains positively continuous play intentions.

H3B: Diversion explains positively continuous purchase intentions.

As for Souza and Freitas' (2017) analysis, we will pursue the idea that social interaction within games is a main motivator for players to keep spending money in free games.

H4A: Social interaction impacts positively continuous play intentions.

H4B: Social interaction impacts positively continuous purchase intentions.

Competition can be all about performance, as in sports, and therefore, we would assume that even though it might positively impact the intention to play, it would not impact positively the continuous purchase. This is aligned with the results found by Souza and Freitas (2017).

H5A: Competition impacts positively continuous play intentions

H5B: Competition impacts positively continuous purchase intentions

Based on Boric and Strauss (2022) analysis, the economic value has a positive impact on premium purchases within a F2P game.

H6A: Economic value impacts positively continuous play intentions

**H6B:** Economic value impacts positively continuous purchase intentions

Furthermore, as Souza and Freitas (2017) found that the intention to play has a positive impact on the intention to pay, we can assume the following hypothesis:

H7: Continuous play impacts positively continuous purchase intentions

Finally, as this research has an objective to understand the impact the gaming platform has over continuous purchase intentions in Fortnite players, we need to take into consideration the role of a moderator the gaming platform might have over the different variables and their respective impacts over the continuous purchase intentions.

**H8:** The gaming platform variable moderates the relationship between Time flexibility, Fun, Diversion, Social interaction, Competition, Economic value and the continuous purchase intentions.

# 3.2 Theoretical framework

The theoretical model is defined from the relationship between the dependent variable and each of the independent variables stated before. That is:





In this framework, the theoretical diagram and the statistical diagram are defined in general terms as follows:



Figure 8 – The conceptual and statistical diagrams

Because the complete model has mediating effects and moderating effects, it is important to distinguish these effects.

It is said that there is a moderation effect if the moderating variable  $(X_2)$  exerts a significant effect on the relationship between an independent variable  $(X_1)$  and the dependent variable *Y*.



where  $X_1$  is the independent variable;  $X_2$  is the potential moderator, and Y is the dependent variable.

The corresponding equation is

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 \text{ Moderator}_i + \beta_3 X_{1i} \times \text{Moderator}_i + \varepsilon_i$$

where  $X_{1i}$  Moderator<sub>*i*</sub> is the interaction term due to the presence of the moderator and  $\varepsilon_i$  is the error term.

There is a mediating effect when it exists a significant relationship between an independent variable and another independent variable which is a mediator and a dependent variable. In general terms, the following figure shows this relationship.



The corresponding equations are

$$Y_{1i} = \beta_{01} + \beta X_{1i} + \varepsilon_{1i}$$
$$Y_{2i} = \beta_{02} + c' X_{1i} + b M_{2i} + \varepsilon_{2i}$$
$$X_{2i} = \beta_{03} + a X_{1i} + \varepsilon_{3i}$$

where the total effect is decomposed into the direct effect (c') and indirect effect (ab). That is  $(\beta = c' + ab)$ .

The combined models are the core of the path model to be estimated and can be visualized on Figure 7.

# **Chapter 4 - Methodology**

## 4.1 Research Approach

Throughout this chapter, the chosen methodology for this study will be developed. First, we will be focusing on the methods used to collect the data. Second, the sample gathered will be presented and characterised for this study. Finally, the measurement of the observed variables will be discussed.

The aim of this study is to understand the impact the gaming platform has over the continuous purchase drivers within free-to-play video games, by testing the hypotheses established from a literature review. To do so, one game has been chosen: Fortnite Battle Royale. In order to collect data for this study, a quantitative research approach has been selected through a questionnaire. The main advantage of doing a questionnaire resides in the fact that it can be done online and shared easily across the internet, allowing a large amount of data to be collected in a short time. Finally, in times of pandemic, it is a convenient way to collect data.

## 4.2 Data Collection and Sample

### 4.2.1 Survey development

The questionnaire was designed, and the data was collected for this study using the online tool provided by Google, Google Forms. This tool has been selected over others as it is free, and easily shareable using a short URL link. Additionally, as it is a fully online tool, it is accessible across different devices which is simplifying the work. Finally, all data collected was exported as an Excel file to be further analysed.

The questionnaire began with an introduction to the study, explaining the goals and approaches, as well as a short description of the reason behind such study, e.g., a master thesis. When organising the questionnaire, it was decided to divide it into two specific axes of questions. The first part was concerned with general questions, such as:

• Sociodemographic profile of the respondents, such as gender, age, employment status and region of living. In this part, it is also incorporated a general question where respondents were asked if they have ever played the game Fortnite or not to act as a filter: if the answer was negative, the corresponding respondent is eliminated from the survey.

- Characteristics about playing consumption of the game with questions about how respondents discovered the game, playing the game in terms of gaming platforms, the average playing time, how long they have been playing the game, as well as with whom they play the game (alone, with friends, etc.).
- Then, we approached the paying habits and virtual items consumption of the respondents within the game. Indeed, respondents were asked if they ever spent money in-game as well as their average monthly spending within the game. Also, respondents were asked if they ever subscribed to the Fortnite Crew membership as well as their current subscription status. Moreover, respondents were confronted with their Battle Passes consumption in-game and required to select their most purchased virtual items (outside of Battle Passes) in the game. Finally, respondents were asked if they played the game with friends that also purchased virtual items within the game, before being asked when they made their first purchase in the game.

In the second axis of the questionnaire, respondents were asked to evaluate statements in order to measure the research model variables or constructs, using a 7-points Likert Scale, Time flexibility, Fun, Diversion, Social Interaction, Competition, Economic value, Continuous play, and Continuous Purchase. The ordinal scale is a Likert-type scale of agreement: 1 – Strongly Disagree, 2 – Disagree, 3 – Slightly Disagree, 4 – Neither Agree nor Disagree, | 5 – Slightly Agree, 6 – Agree, and 7 – Strongly Agree.

Before sending the questionnaire to a wide audience on an online Fortnite community, a preliminary test was conducted on a specific chatting channel using the social media Discord, on July 4<sup>th</sup>, 2022. This allowed us to gather 12 answers to the questionnaire and so to fully review the questions and phrases. The conclusion was that the wording of some questions were modified for more clarity and one question differed. Indeed, in the initial questionnaire, respondents were asked what the virtual item was they purchased the most in the game. One of the answers was the Battle Pass, which we defined previously, and all selected it. However, as the Battle Pass is something that players can purchase only once every two or three months and that it contains many other virtual items within it, as well as challenges to overcome for players, it has been decided to modify the question by excluding the Battle Pass from the answers and instead create two additional questions regarding exclusively this virtual item. Indeed, the Battle Pass is valuable information but can lead to many different conclusions as players may not have the same reason to purchase and use it, such as cosmetics, challenges, collectables,

etc. After the introduction of these changes, the decision to use Reddit to send the questionnaire to a maximum of different players was made.

#### 4.2.2 Data collection

As discussed above, sharing the questionnaire online allows the researcher to know players better and more specifically Fortnite players all over the world. Moreover, it allows for a better understanding about a wide diversity in terms of playing and purchasing habits among players. It is commonly known that video games nowadays tend to have a wider online community where players gather in order to discuss gameplay, news and rumours surrounding the game, or simply even meet as people sharing a common interest. Therefore, the decision to reach Fortnite players for this study has been made using the international social network Reddit. Reddit is a website describing itself as "a network of communities where people can dive into their interests, hobbies and passions". Reddit is divided in many different communities called "subreddits", each one revolving around a specific subject. For the purpose of this study, the subreddit r/FortNiteBR was reached out to as it is the official Reddit community for the F2P version of the game Fortnite Battle Royale (or Fortnite BR). It has a total of 2 million people following it with a total of more than 89 million messages or discussions posted within it.

In order to distribute the questionnaire a new message titled "Can you answer a survey for my studies? :)" was posted on this community on July 19<sup>th</sup>, 2022. Within this message the link to the questionnaire was posted with a message explaining the reasons and goals behind this study as well as a mention regarding the non-collection of personal data. The questionnaire remained online for five consecutive days before being removed from the community, allowing us to gather a total of 281 answers. The post with the questionnaire's link has been seen by a total of 7K people, meaning that the questionnaire received a 4.1% Click-Through-Rate (CTR). It is important to note that, in order to obtain full honest answers, no incentive to answer the questionnaire was given to respondents. The full message posted on this community can be seen below:



# Figure 9: Screenshot of the covering letter to the questionnaire (Avannoh, 2022)

## 4.2.3 Data measurement

In order to fully measure the data to answer our main research question, as well as the previously defined hypothesis, based on the literature review, the questionnaire was divided into two major sections. The first one was done with nominal and ordinal variables while the second one was based over a 7 points Likert-type Scale as it has been done within the study from Souza and Freitas (2017) and Hamari et al., (2020).

The first part consisted of a total of 19 questions which were designed to collect data regarding the respondents' demographics, playing profile, and paying habits.

### **Demographics**:

Regarding the demographic variables, the questionnaire was designed to obtain information in order to understand who the respondent might be. For this purpose, respondents were first asked their gender, with options allowing them not to answer if they felt uncomfortable with it. The age of respondents was gathered using a total of five age brackets: below 18, between 18 and 25, between 26 and 35, between 36 and 50, and above 50. Additionally, the respondent's occupation was inquired with seven options (including the option "Other") in order to try to cover as wide as possible. The occupation options were: Employed full time, Employed part time, Unemployed, Student, Retired, Self-employed and Other. The need to ask for the level of education was considered unnecessary and occupation was chosen instead. Lastly, respondents were asked about their region. The wording "region" instead of country was chosen as it mimics the way the game Fortnite is regrouping players to play together. Indeed, the matchmaking in the game is based on regions and not countries in order to gather as many

players as possible. Thus, respondents were given the following options: North America, South America, Western Europe, Eastern Europe, Asia, Africa, EMEA, Australia and New Zealand, and an option Other was included in order to truly cover all possibilities.

## **Playing profile**:

In order to clearly establish the playing profile or gaming profile of the respondents regarding the analysed game Fortnite, seven questions were asked. To begin with, a screening question was used which was designed under the form of asking the respondent if they ever played Fortnite or not, with a negative answer leading to the end of the questionnaire. If a positive answer was recorded, then the respondents will be asked about the way they discovered the game in the first place. For this, nine options were available including an "Other" possibility where respondents were able to freely write. The options were as follows: Friend(s) or family recommendation, Video game news website, General news website, Online ads, TV, Newspapers, Social Media, Content from an influencer (Twitch/Youtube/Instagram), and Other.

Following, the respondents' Fortnite playing habits were discussed. Indeed, their experience with the game itself as a player was asked with four different possible options of playing experience: less than one month, between one and six months, six months to one year, one to three years, and more than three years. Additionally, respondents were asked where they liked to play the game the most with possible options being: Home, Office, School, Café, Friends' houses, Public transportation, and Other. Indeed, this question is relevant as the main research goal of this study is to understand the impact the choice of a gaming platform might have over the continuous pay drivers, and as the game Fortnite is available on PC, home consoles and portable devices, the options about playing locations was necessary. Following the same idea, the choice of a main gaming platform was asked to respondents as to on which device they prefer to play Fortnite. The options were done according to the different platforms the game is available on. Thus, the following options were given to respondents: PC, PlayStation consoles, XBOX consoles, Nintendo Switch, Apple devices, and Android devices.

Furthermore, their playing frequency was asked with the following options: Every day, Multiple times a week, Once a week, Every few weeks, Once a month, and Every few months. Finally, respondents were asked with whom they mainly play the game with the following options: Alone in solo queue, With online friends, With IRL friends, With random people in squads, and Other.

### **Paying habits**:

In order to clearly define the respondents' paying habits, a total of eight nominal and ordinal questions were asked. Firstly, the respondents were asked if they ever spent money in the game, with two possible answers being yes or no. Following this question, respondents were asked regarding their average monthly purchases in the game with answers being divided into the following categories: Nothing, Less than 10 euros, Between 11 - 20 euros, Between 21 - 40 euros, Between 41 - 80 euros, Between 81 - 100 euros, Between 101 - 150 euros, and More than 150 euros. Additionally, respondents were asked if they ever subscribed to the game's membership program, e.g. Fortnite Crew, and their current membership status with two possible answers for each question: yes or no. Additionally, respondents were asked regarding their Battle Pass consumption, meaning if they purchased the current Battle Pass in the game as of July 2022, with answers being yes or no. The next question deepened the previous one with the intention to know if they regularly purchased Battle Passes in the game, with answers being: Yes, all of them, Yes, but not all of them, No, only once, and No, I never purchased a Battle pass in Fortnite. Regarding the consumption in the game of virtual items, respondents were asked what is the type of virtual item they purchased the most. For this question, the answers were chosen based on the game's virtual items and included the game's wording which we have defined earlier. This question had the following answers options: Skins packs including backpack, etc., Character Skins (non-collaboration), Emote Weapon Skins (noncollaboration), Collaboration Character Skins (e.g. Naruto, Star Wars, etc.), Collaboration Weapon Skins (e.g. Naruto, Star Wars, etc.), Collaboration Skins Packs (e.g. Naruto, Star Wars, etc.), Starter Packs (packs including V-Bucks paid in real money), V-Bucks only (to be ready for planned purchases), and None of the above. Please note that the Battle Pass was removed as an option for this question and placed separately in previous questions. Finally, as the social aspect is being looked at within this study too, respondents were asked if they played Fortnite with friends (IRL or online) who spend money in the game. Answers were: Yes - all of my friends, Yes - but only a handful, No - I play alone, No - I don't have friends that spend money in Fortnite, and Other.

The measurement of each construct/variable stated identified in the conceptual model is shown in tables 2 and 3 that show the number of items of each construct/variable with their authors, respectively.

Constructs	Authors	Items
Time flexibility	Souza and Freitas (2017)	4
Fun	Souza and Freitas (2017), Hamari et al. (2020)	4
Diversion	Souza and Freitas (2017)	2
Social Interaction	Souza and Freitas (2017), Hamari et al. (2020)	5
Competition	Souza and Freitas (2017)	4
Economic value	Hamari et al. (2020), Balakrishnan and Griffiths (2018)	4
Continuous play	Hamari et al. (2020), Hsiao and Chen (2016)	4
Continuous purchase	Hamari et al. (2020), Balakrishnan and Griffiths (2018)	3

Table 1 Authors' scales and number of items for each construct

Table 2 -	Variables	of the	adapted	scale	with	authors
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Construct	Variables	Authors
Time Flexibility	I play Fortnite when I do not have nothing to do	Souza and Freitas (2017)
	I can begin and stop playing Fortnite at anytime	Souza and Freitas (2017)
	I can play Fortnite anytime	Souza and Freitas (2017)
	I play Fortnite to spend time	Souza and Freitas (2017)
Continuous purchase	I intend to continue purchasing Fortnite virtual items	Balakrishnan and Griffiths (2018)
	I predict that I will use money in the game in the future at least as much as I have used lately.	Hamari et al. (2020)
	I plan to spend more on purchasing Fortnite virtual items	Balakrishnan and Griffiths (2018)
Fun (or Enjoyment)	Playing the game is enjoyable.	Hamari et al. (2020)
	I play Fortnite because it's cool	Souza and Freitas (2017)
	Playing the game is interesting.	Hamari et al. (2020)
	Playing the game is exciting.	Hamari et al. (2020)
Diversion	I play Fortnite when I have other things to do.	Souza and Freitas (2017)
	I play Fortnite instead of other things I should be doing.	Souza and Freitas (2017)
Continuous play	I predict that I will keep playing the game in the future at least as much as I have played it lately.	Hamari et al. (2020)
	I intend to play the game at least as often within the next month as I have previously played it.	Hamari et al. (2020)
	I plan to play the game during the next month	Hamari et al. (2020)
	I will continue to play Fortnite in the future	Hsiao and Chen (2016)
Social Interaction	Playing the game improves the way I am perceived.	Hamari et al. (2020)
	My friends and I use Fortnite as a reason to get together.	Souza and Freitas (2017)
	Playing the game makes a good impression on other people.	
	I play Fortnite to relate to other people	Souza and Freitas (2017)
	My friends would think playing the game is a good idea.	Hamari et al. (2020)

Competition	When I lose to someone, I immediately want to play again in an attempt to beat him/her	Souza and Freitas (2017)
	It is important to me to be the fastest and most skilled person playing Fortnite	Souza and Freitas (2017)
	I feel proud when I master an aspect of Fortnite	Souza and Freitas (2017)
	I get upset when I lose to my friends.	Souza and Freitas (2017)
Economic value	I find purchasing Fortnite virtual items to be worthwhile	Balakrishnan and Griffiths (2018)
	All in all, the game offers value for money.	Hamari et al. (2020)
	All in all, the game is a good product/service for the price.	Hamari et al. (2020)
	All in all, the game is cheap.	Hamari et al. (2020)

All the variables above were measured with a 7-points Likert-type scale as said before. Additionally, all items were kept the same as in previous studies, except for Souza and Freitas (2017) items to which the words "electronic games" were replaced by the word "Fortnite" to fit this study. The same reasoning applied to Balakrishnan and Griffiths (2018) and Hsiao and Chen (2016).

The data collected from the questionnaire was then uploaded to the software IBM SPSS Statistics and a Partial Least Squares Structural Equation Modelling (PLS-SEM) bootstrapping technique has been chosen to estimate our research model.

# **Chapter 5 – Data analyses**

# **5.1 Descriptive statistics of the sample**

As stated before, this study aims at understanding the impact the gaming platform has over the continuous purchase drivers within Fortnite and more extensively F2P games. As a specific gaming title was selected, the targeted audience for this study were selected on the main online Fortnite community on the social media Reddit, for us to gather a convenience sample to empirically estimate the research model defined before.

From July 19<sup>th</sup> to July 22<sup>th</sup>, a total of 281 responses were gathered. Only 3 answers were not kept as they did not pass the screening question, e.g. "Have you ever played Fortnite?". This can be explained by the fact that the questionnaire was distributed within a dedicated Fortnite community and therefore the majority of people discussing it are playing or have played the game.

Variables	Categories	n	%
Gender	Male	225	80.9
	Female	39	14.0
	Other	12	4.3
	Rather not say	2	0.7
Age	Below 18	112	40.3
	Between 18 and 25	101	36.3
	Between 26 and 35	41	14.7
	Between 36 and 50	22	7.9
	Above 50	2	0.7
Employment	Employed full time	72	25.9
status	Employed part time	32	11.5
	Unemployed	27	9.7
	Student	132	47.5
	Retired	_	_
	Self-employed	8	2.9
	Other	7	2.5
Region	North America	167	60.1
	South America	3	1.1
	Western Europe	65	23.4
	Eastern Europe	13	4.7
	Africa	4	1.4
	EMEA	4	1.4
	Asia	10	3.6
	Australia, New Zealand	5	1.8
	Other	7	2.5

Table 3 - Sociodemographic profile

Among the answers gathered, most respondents were male, 80.9%, which is aligned with the results obtained by Souza and Freitas (2017), as they obtained a majority of male respondents with 78.37% (Table 4).

From the same table and regarding the age levels distribution, most of the participants stood between two age groups: either below 18 years old (40.3%) or between 18 - 25 years old (36.3%). This can be explained by the fact that game Fortnite is targeting a young audience in general and by the usage of a relatively young social network to gather data. Most respondents were students (47.5%) or employed full-time (25.9%). Finally, the majority of respondents were located within the region of North America (60.1%), which can be explained again by the social network used. Regions were selected for this study and not countries as it is based on the matchmaking system used within Fortnite.

Throughout the first part of the questionnaire, the respondents' Fortnite playing profile and playing habits were known. Firstly, we will be tackling one question containing multiple answers for respondents, regarding their playing location which is 'Where they usually play Fortnite'. As this question contained multiple answers, Table 5 shows that the majority of the respondents is playing the game at home (99.6%) or at Friends' houses (16.5%).

	_	Res		
		n		%
Playing	Home	277	75.7%	99.6%
Location	Office	7	1.9%	2.5%
	School	20	5.5%	7.2%
	Café	5	1.4%	1.8%
	Friend's houses	46	12.6%	16.5%
	Public transportation	7	1.9%	2.5%
	Other	4	1.1%	1.4%
Total		366	100.0%	131.7%

Table 4 - Playing location profile

Secondly, it is important to note that the majority of the respondents discovered Fortnite through a friend(s) or family recommendation (62.2%), or from a content creator or influencer (16.5%). Influencers could be considered as being part of "friend(s) or family" as the relationship they have with their community is closer than a regular celebrity would have with its fans (Table 6).

Also, and from the same table, we can note that most respondents has been playing Fortnite for more than 3 years (58.6%) or at least between 1 to 3 years (28.4%), and therefore the players have an important experience with the game.

Continuing, the respondents' playing experience, the majority are playing Fortnite multiple times a week (53.2%) or every day (33.1%). As for the gaming platform they play mainly the game on, PC remains the most preferred platform (38.5%), followed by consoles

with respectively 28.1% for PlayStation, 21.9% for XBOX, 9.4% for the Nintendo Switch, and lastly 2.2% for Apple devices. We can note that none of the respondents are playing the game on an Android device.

Variables	Categories	n	%
Game discovery	Friend(s) or family	173	62.2
	recommendation		
	Video game news website	15	5.4
	General news website	1	0.4
	Online ads	5	1.8
	TV	2	0.7
	Newspapers	1	0.4
	Social Media	18	6.5
	Content from an influencer	46	16.5
	Other	17	6.1
Experience with Fortnite	Less than 1 month ago	6	2.2
	Between 1 and 6 months ago	15	5.4
	Between 6 months and 1 year ago	14	5.0
	Between 1 and 3 years	79	28.4
	More than 3 years ago	163	58.6
Gaming platform	PC	107	38.5
	PlayStation console	78	28.1
	XBOX console	61	21.9
	Nintendo Switch	26	9.4
	Android device	_	_
	Apple device	6	2.2
Playing occurrences	Everyday	92	33.1
	Multiple times a week	148	53.2
	Once a week	15	5.4
	Every few weeks	9	3.2
	Once a month	3	1.1
	Every few months	11	4.0
Playing habits	Alone	104	37.4
_	With online friends	45	16.2
	With IRL friends	111	39.9
	With random people	7	2.5
	Other	11	4.0

Table 5 - Playing profile

Following their playing profile, respondents were asked about their paying profile in Fortnite (Table 7). To begin with, it appears that the crushing majority did already spend money in the game (92.4%). It would also appear that 18.7% of the respondents do not spend money in the game monthly, whereas most respondents are spending between 1 and 20 euros (58.9%). Additionally, the majority of respondents did subscribe to the Fortnite Crew membership at least once (60.4%) but only a minority is still subscribed to this membership up to this day (31.7%). It is noticed that most respondents purchased the current season Battle Pass (88.1%). Also, the Battle Pass appears to be a successful virtual item in Fortnite as 43.9% of the respondents purchased it ever since respondents started playing. Regarding the purchase of other virtual items present in the game, respondents are purchasing regularly character skins (31.3%), followed by collaboration character skins (17.3%). Finally, most respondents are playing with real life friends who are spending money in the game (83.1 = 34.5 + 48.6).

Variables	Categories	n	%
Money spent in-game	Yes	257	92.4
	No	21	7.6
Average monthly spending	Nothing	52	18.7
	Less than 10 euros	87	31.3
	11 – 20 euros	77	27.7
	21 – 40 euros	32	11.5
	41 – 80 euros	12	4.3
	81 – 100 euros	3	1.1
	101 – 150 euros	_	_
	More than 150 euros	15	5.4
Membership subscribed	Yes	168	60.4
_	No	110	39.6
Currently subscribed	Yes	88	31.7
-	No	190	68.3
<b>Current Battle Pass bought</b>	Yes	245	88.1
_	No	33	11.9
Battle Passes purchase	Yes, all of them	122	43.9
habits	Yes, but not all of them	131	47.1
	No, only once	12	4.3
	No, I never purchased a Battle pass in Fortnite	13	4.7
Most virtual item bought	Skins packs including backpacks, etc.	31	11.2
	Character Skins (non-collaboration)	87	31.3
	Emote	41	14.7
	Weapon Skins (non-collaboration)	1	0.4
	Collaboration Character Skins (e.g. Naruto,	48	17.3
	Star Wars, etc.)		
	Collaboration Weapon Skins (e.g. Naruto, Star	-	-
	Wars, etc.)		
	Collaboration Skins Packs (e.g. Naruto, Star	9	3.2
	Wars, etc.)		
	Starter Packs (packs including V-Bucks paid in	15	5.4
	real money)		
	V-Bucks only (to be ready for planned	27	9.7
	purchases)		
	None of the above	19	6.8
Friends spending	Yes, all of my friends	96	34.5
	Yes, but only a handful	135	48.6
	No, I play alone	27	9.7
	No, I don't have friends that spend money in	20	7.2
	Fortnite		

Table 6 - Paying habits

# 5.2 Reliability analysis of each construct

In order to be able to estimate the model, we first need to perform a reliability analysis of each construct considering the Cronbach's Alpha coefficient. The Cronbach's Alpha coefficient measures the internal consistency of the items that define the construct, and, for this, the coefficient should be at least equal to 0.7 or higher. If not, such analysis will not be

doable. Looking at the Cronbach's Alpha coefficient of each construct, it appears that for almost all of them, it is greater than 0.7, ranging from 0.718 to 0.891. However, for the "Time Flexibility" construct, the Cronbach's Alpha coefficient was equal to 0.461 and the elimination of one or more items would not improve this value. Therefore, it was decided to select one item that, in terms of theoretical concept, would be the most representative one of 'Time Flexibility'. Thus, the item "I play Fortnite to spend time" was selected as the most representative one, which can be seen in Annex B.

Finally, for the construct 'Competition', the item 'I get upset when I lose to my friends' was deleted once its presence would lower this coefficient. Thus, 'Competition' was computed using the other three remaining items.

Constructs	Cronbach's Alpha	Number of items
Time flexibility	0.461	4
Fun	0.800	4
Diversion	0.891	2
Continuous play	0.812	4
Social interaction	0.773	5
Competition	0.662	3
Economic value	0.718	4
Continue purchase intentions	0.806	3

Table 7 - Reliability analysis of each construct

Additionally, the variable, "Gaming platform", was recorded under a different variable named "Platform" to simplify. Moreover, the gaming platforms Nintendo Switch and Mobile devices were regrouped into the same category labelled "Other".

# 5.3 The Dummies for the variable Gaming Platform

Before constructing the dummies for the variable Gaming platform, this variable was subject to a recode in order to get four categories instead of having five categories (Table 8).

Observed variable	n	%	Recoded variable	n	%
PC	107	38.5	PC	107	38
PlayStation console	78	28.1	PlayStation console	78	28
Xbox console	61	21.9	Xbox console	61	21
Nintendo switch	26	9.4	Other	32	11
Apple mobile devices	6	2.2	Total	278	100
Total	278	100.0			

Table 8 - Recodification of the variable Gaming platform into Platform

The dummies of each category of the variable Platform are visible in tables 9 and 10.

D_P Plat	latforn tform=	n_1 PC	]	D_Platform_2 Platform=PlayStation		D_Platform_2 atform=PlayStation		D_P Platfo	latforr orm=X	n_3 BOX		D_I Platf	Platforn form=O	n_4 ther
	n	%	=	(	console	-	:		console				n	%
0	171	61.5	_		n	%			n	%	0		246	88.5
1	107	38.5	_	0	200	71.9		0	217	78.1	1		32	11.5
Total	278	100.0		1	78	28.1		1	61	21.9	Т	otal	278	100.0
				Total	278	100.0		Total	278	100.0				

Table 9 – The dummies for the variable Platform

Id.	D_Platform_1	Id.	D_Platform_2	Id.	D_Platform_3	Id.	D_Platform_4
1	0	1	0	1	0	1	1
2	0	2	1	2	0	2	0
3	1	3	0	3	0	3	0
4	0	4	1	4	0	4	0
5	0	5	1	5	0	5	0
6	1	6	0	6	0	6	0
7	0	7	0	7	0	7	1
8	0	8	1	8	0	8	0
9	0	9	0	9	1	9	0
10	0	10	1	10	0	10	0
11	1	11	0	11	0	11	0

Table 10 - Data for the first 11th observations

Finally, the detailed empirical model to be estimated is as follow:



Figure 10 - Detailed empirical model

## 5.4 Estimation of the empirical model and results

As stated before, in order to estimate the complete model, a Partial Least Squares Structural Equation Modelling (PLS-SEM) bootstrapping technique has been chosen to estimate the relations between the constructs from the software SmartPLS (Ringle et al., 2015). Such an approach has been selected as it can be applied when the sample size is small and applications have little available theory (Hwang et al., 2010; Wong, 2010). Therefore, the PLS-SEM path modelling is adequate for estimating causal models in empirical studies such as this one as the objective is theory development that combines principal component analysis with multiple regression (Hair et al., 2011). Moreover, since this approach does not assume that the data is normally distributed, it relies on a nonparametric bootstrap procedure (Davison and Hinkley, 1997) to test if the estimated path coefficients in PLS-SEM are significant (Hair et al., 2017). The PLS-SEM algorithm uses a maximum number of iterations equal to 3000 and the stop criterion is set at  $10^7$ ; to decide about the significance of the estimates, 3000 samples are generated, and a two-tailed test is used.

The category 'Other" has been selected as the category of reference.

Below are displayed the estimated coefficients for the mediating effects.

Dependent variables	Independent variables (Constructs)	Direct effects	P values	Indirect effects	P values	Total effects	P values
Continuous purchase intention	Continuous play	0.535	0.000				
Continuous play		0.090	0.021				
Continuous purchase intention	Competition	0.187	0.287	0.048	0.057	0.235	0.188
Continuous play		0.090	0.005				
Continuous purchase intention	Diversion	0.162	0.134	0.048	0.015	0.210	0.057
Continuous play		-0.065	0.143				
Continuous purchase intention	Economic value	0.075	0.765	-0.035	0.180	0.040	0.873
Continuous play		0.379	0.000				
Continuous purchase intention	Fun	-0.099	0.587	0.203	0.001	0.103	0.605
Continuous play		0.083	0.070	-			
Continuous purchase intention	Social interaction	-0.244	0.259	0.044	0.090	-0.200	0.367
Continuous play		0.191	0.000				
Continuous purchase intention	Time flexibility	0.643	0.002	0.102	0.002	0.745	0.000

Table 11 - Estimated coefficients for mediating effects

Several conclusions can be drawn from the above table regarding the mediating effects.

Firstly, the variable "Continuous play intentions" can be considered as a mediator as it is significantly explained by the following independent variables: Time flexibility, Fun, Diversion, Social Interaction, and Competition. Indeed, the p values are all inferior to 0.1, being respectively 0.000, 0.000, 0.005, 0.070, and 0.021. Additionally, it also significantly explains the dependent variable, "Continuous purchase intentions". Therefore, there are five mediating effects between each independent variable, the mediator "Continuous play intentions", and the dependent variable "Continuous purchase intentions". However, the variable "Continuous play intentions" does not mediate the relationship between the construct 'Economic value' and the dependent variable, as the p values are greater than 0.1.

Furthermore, when considering the independent variable "Time flexibility", we can observe a partial mediation once the mediating variable accounts for some of the relationship between "Time flexibility" (the independent variable) and "Continuous purchase intentions" (the dependent variable). As such, there is a significant relationship between the mediator and the dependent variable but also some direct relationship between the independent and the dependent variable. Moreover, we can observe that a full mediation is in place for the independent variables Fun, Diversion, Social Interaction, and Competition, once the inclusion of the mediator, "Continuous play intentions", drops the relationship between each independent variable and the dependent variable, "Continuous purchase intentions", to zero (p values > 0.1).

Interaction offects	Estimated	Duoluog
Interaction effects	coefficients	r values
D_Platform_1 x Fun	0.242	0.319
D_Platform_1 x Competition	-0.216	0.281
<b>D_Platform_1 x Social interaction</b>	0.576	0.022
D_Platform_1 x Economic value	-0.074	0.786
D_Platform_1 x Diversion	0.001	0.996
D_Platform_1 x Time flexibility	-0.665	0.003
D_Platform_2 x Fun	0.344	0.184
D_Platform_2 x Competition	-0.213	0.305
<b>D_Platform_2 x Social interaction</b>	0.487	0.053
D_Platform_2 x Economic value	-0.087	0.756
D_Platform_2 x Diversion	-0.080	0.564
<b>D_Platform_2 x Time flexibility</b>	-0.627	0.008
D_Platform_3 x Fun	0.331	0.282
D_Platform_3 x Competition	-0.063	0.804
D_Platform_3 x Social interaction	0.298	0.332
D_Platform_3 x Economic value	-0.034	0.919
D_Platform_3 x Diversion	-0.187	0.325
D_Platform_3 x Time flexibility	-0.865	0.004

Table 12 - Estimated coefficients for moderation effects

Finally, as this study aims to understand the existence of a moderator, Gaming platform, recoded as "Platform", that impacts on the relationship between the independent variables and

the dependent variable "Continuous purchase intentions", we will now tackle the moderating effects of this variable within the study. Table 12 displays the moderating effects of "Gaming platform".

Based on the above table, the variable "Platform" is a moderator once there are interaction effects that exerts a significant effect on the relationship between the independent variables "Social interaction" and "Time flexibility" and the dependent variable, "Continuous purchase intentions". As such, we can state the following:

- When the independent variable is 'Time flexibility', it is expected a decrease in Continuous purchase intentions in the presence of the main used platforms compared with the category of reference:
  - When the Platform is *PC*, it is estimated that, for a unit increase in "Time flexibility", the Continuous purchase intentions to buy virtual items decrease by 0.665 if the other independent variables are set to be constant.
  - When the Platform is *Playstation*, it is estimated that, for a unit increase in "Time flexibility", the Continuous purchase intentions to buy virtual items decrease by 0.627 if the other independent variables are set to be constant.
  - When the platform is XBOX, a decrease of 0.865 in Continuous purchase intentions is expected for a unit increase in "Time flexibility", holding the effects of the other independent variables constant.
- When it comes to the independent variable "Social interaction", it is expected an increase in Continuous purchase intentions, in the presence of the main used platforms compared with the category of reference:
  - When the platform is *PC* compared with the category of reference, an increase of 0.576 in Continuous purchase intentions is expected for a unit increase in 'Social interaction' (other things are kept constant).
  - When the Platform is *PlayStation* compared with the reference category, it is estimated that for one unit increase in "Social interaction" as a reason to play the game Fortnite, the Continuous purchase intentions to buy virtual items increase by 0.487, if the other independent variables are kept constant.

The adjustment quality is significantly different from zero when the dependent variable is "Continuous play intentions" or "Continuous purchase intentions" as it can be observed in Table 13.

	<i>R</i> <sup>2</sup>	P values	$\bar{R}^2$	P values
Continuous play	0.426	0.000	0.413	0.000
Continuous purchase intention	0.368	0.000	0.297	0.000

Table 13 - Quality criterion of the goodness-of-fit

The coefficient of determination is equal to 0.426 when the dependent variable is Continuous play intentions, but, if the sample size and the number of independent variables are considered, the adjustment quality is equal to 0.413, despite both of them are significantly different from zero. A similar analysis can be taken when the dependent variable is Continuous purchase intentions, being both estimates lower but significantly different from zero.



Finally, the estimated model can be drawn as it can be seen in Figure 10.

Figure 11 – The estimated model

Legend:

- Observed variableLatent variable
- → Significant effect
- ► Not a significant effect

# 5.5 Hypotheses' validation

Finally, we can display the hypotheses' validation.

	Hypothesized	relationship			Proposed effect	Validation
H1A	Time flexibili	$ty \rightarrow Continuous play$	Positive	Validated		
H1B	Time flexibili	$ty \rightarrow Continuous pure$	chase	intentions	Positive	Validated
H2A	$Fun \rightarrow Contin$	uous play intentions			Positive	Validated
H2B	$Fun \rightarrow Contin$	uous purchase intent	ions		Positive	Not validated
H3A	Diversion $\rightarrow$	Continuous play inter	ntions	6	Positive	Validated
H3B	Diversion $\rightarrow$	Continuous purchase	inten	tions	Positive	Partially validated
H4A	Social interact	$ion \rightarrow Continuous pl$	lay in	tentions	Positive	Validated
H4B	Social interact	tion $\rightarrow$ Continuous pu	ırcha	se intentions	Positive	Not validated
H5A	Competition -	→ Continuous play in	Positive	Validated		
H5B	Competition -	→ Continuous purcha	Positive	Partially validated		
H6A	Economic val	$ue \rightarrow Continuous play$	Positive	Not validated		
H6B	Economic val	ue $\rightarrow$ Continuous pla	Positive	Partially validated		
H7A	Continuous play mediates	Time flexibility Fun Diversion Social interaction Competition	$\rightarrow$	Continuous purchase intentions	_	Validated
H7B	Continuous play mediates	Economic value	$\rightarrow$	Continuous purchase intentions	-	Not validated
H8A	Platform moderates	Time flexibility Social interaction	$\rightarrow$	Continuous purchase intentions	_	Validated
H8B	Platform moderates	Fun Diversion Competition	$\rightarrow$	Continuous purchase intentions	_	Not validated

Table 14 – Summary table with the hypotheses' validation

Hypothesis 8 was divided into two hypotheses due to the fact that a moderation has been found for few independent variables but not all.

# 5.6 Discussion of the results

Based on the data and information analysed previously, we can extract the following points for discussion.

First, it would appear that the first hypothesis is supported, meaning that Time flexibility for players have positive impacts over the intention to keep playing video games (H1A) and over the intention to keep purchasing virtual items in free-to-play games (H1B). When it comes to the impact the construct Time flexibility has over the intention to keep playing, the results we obtained are in contradiction with the ones obtained by Souza and Freitas (2017). Indeed, in their study, such hypothesis was not supported meaning that players approached did not play because of time flexibility. However, in our case we can state that the respondents do intend to continue playing Fortnite when they do have free time, or not having anything else to do, which in return does impact positively their intention to continue purchasing the game's virtual items.

Secondly, we can notice that the fun players might get out of playing Fortnite impact positively their intention to continue playing (H2A) but not their intention to continue purchasing virtual items in the game (H2B). Regarding H2A, the same result was found in the study lead by Souza and Freitas (2017), finding that fun was the most impactful construct which led players to play electronic games. Regarding H2B, Hamari et al. (2020) observed that fun, or enjoyment, even though increases the players retention in free-to-play games, it reduces the game's monetization. Indeed, we observed a similar result in this study and can conclude that the more a Fortnite player is enjoying the game without paying, the less likely he will be to spend money in it as he/she might not feel compelled to.

Thirdly, when it comes to the Diversion construct, we observed that it positively and significantly impacts the continuous play intention in Fortnite players (H3A). Such results are aligned with the results obtained by Souza and Freitas (2017) who concluded that "games provide to players the possibility of escaping from daily challenges, as they establish their own rules, usually less restrictive than real life's rules". However, our result showed that diversion as a construct impacts positively the continuous purchase intentions in the sample, but it does not impact positively the continuous purchase intentions of Fortnite players (H3B), being equal to zero in the population. This could be analysed in the sense that Fortnite players use the game itself as an escapism from their daily lives, by playing and that spending money would not enhance their feeling in the game that they will play soon once virtual items have no impact whatsoever over gameplay. Indeed, adding to what Souza and Freitas (2017) said, obtaining Fortnite virtual items does not change the rules of the game.

H4A presented that Social Interaction would impact positively the continuous play intentions of Fortnite players, and results showed that this hypothesis was supported. This can be explained by the fact that most respondents discovered the game through a friend or family recommendation and that 56% of them do play most often with either IRL or online friends. Moreover, our results are aligned with Souza and Freitas (2017) who concluded that player interactions in games are appealing to players. However, our results showed that Social interaction does not positively impact the continuous purchase intentions of Fortnite players in

the population (H4B). This is also supported by the fact that only 14.7% of the respondents stated that their most purchased virtual items were Emotes, which are the only virtual items in the game allowing for a visual communication with other players. Although our results are not aligned with Hamari et al. (2020) who found that social value is "a positive predictor of purchase intentions for premium content", This conclusion can be explained by the fact that Fortnite is a competition-oriented game and not a social oriented game as others might be.

H5A showed that competition does impact positively continuous play intentions of Fortnite players. Again, this can be explained by the fact that Fortnite is a competitive game, and indeed, in the sample, 37.4% of respondents stated that they mostly play the game alone which could indicate a need to challenge themselves. Our results are therefore not aligned with those of Souza and Freitas (2017) who found a negative correlation between competition and the intention to play. H5B on the other hand showed that competition does not impact positively continuous purchase intentions in the population once the estimate is not significantly different from zero, but it impacts positively in the sample; this result can be explained by the competitive nature of Fortnite and the fact that virtual items in the game are purely cosmetics and as such not affecting gameplay nor the players' performances.

H6A and H6B, stating that economic value is positively impacting both continuous play and continuous purchase intentions, were both not supported in the population and partially supported in the sample when the dependent variable is Continuous play intentions. Our results that economic value does not impact both variables are therefore in contradiction with Hamari et al. (2020) who concluded that "the economic value of freemium services is positively associated with freemium service use and via increased use also has a positive effect on premium purchases".

H7 was supported and thus found that continuous play is indeed impacting positively the continuous purchase intentions, leading to think that the more time Fortnite players spend in the game, the higher the chances are of them making a purchase in the game. Indeed, we can note that, in the sample, 87% of the respondents were playing the game for more than a year, up to more than three years, and that 92.4% of the respondents did spend money in the game. Such results are aligned with the study of Souza and Freitas' (2017) who supported the fact that the intention to play is positively correlated with the intention to pay in electronic games.

Finally, we can state that the choice of a game platform is not impacting the relationship that Fun, Diversion, Competition, and Economic value have with the continuous purchase intentions. However, the gaming platform is a moderator in the relationship between Time flexibility or Social interaction and Continuous purchase intentions. This can be explained by the definition of each platform in the sense that some platforms are more adequate for shorter play sessions or more accessible for unexpected play sessions as mobile devices for example with which players are able to play Fortnite anywhere, anytime, while home consoles and PC are forcing the players to have a monitor and electric supplies at disposal in order to be able to play Fortnite. Thus, regarding continuous purchase intentions, this can be linked with our previous results showing that the more players tend to play the game, the more likely they are to make a purchase. Indeed, regarding the respondents, 50% of the Apple devices users and 38.46% of Nintendo Switch users are playing the game every day, both figures being the highest of all platforms for this case of playing occurrences. Moreover, each platform is displaying and encouraging social interaction differently. Indeed, we can state on Nintendo Switch that in order to be able to talk online with friends, players need to download a mobile application and run it on their smartphones while playing on the Nintendo Switch (Nintendo, 2022), whereas on PC and consoles for example, plugging, via Bluetooth or wire connection, a simple headset is enough to vocally communicate with friends. Therefore, H8A was not supported, whereas H8B was supported.

# **Chapter 6 - Conclusions**

## 6.1 Theoretical implications

Given the importance for the global video game market, this study presents relevant data on the main features that motivate players to continue both playing and purchasing virtual items in the game Fortnite, and to an extent in Free-to-Play games. Indeed, this study had as a goal to fulfil a gap within the literature: past studies tend to focus on either a single gaming platform, or gaming genre, or even games, however, as nowadays more and more games tend to be released simultaneously on different gaming platform, it is highly important to try to understand for both researchers and marketers different customers' profiles facing such multiplatform release, the game's profitability and players' loyalty. Thus, by using the case of the free-to-play game Fortnite, which is available on mobile devices, PC, and consoles, the aim of this study was to understand the impact of the choice of a gaming platform might have over the continuous pay drivers in free-to-play games and confront such results to past studies.

Using a total of seven constructs, this study aims to explain, analyse and predicts the motivations for Fortnite players to continue playing and purchasing virtual items. Such constructs were selected after an extensive literature review of past studies. It would appear most likely that Time flexibility, Fun, Diversion, Social interaction, and Competition are the main constructs that motivate players to continue playing the game Fortnite. On the other hand, the constructs of Time flexibility, and Continuous play are both motivating players to continue purchasing Fortnite's virtual items and as such contributes to customer loyalty. However, as the game itself relies solely on cosmetics virtual items, which are in no way affecting gameplay, we show that the constructs of Fun, Diversion, Social interaction, nor Competition, are positively correlated with the players' intention to continue purchasing virtual items. However, this study demonstrated that the choice of a gaming platform might impact the continuous purchase drivers of players in some cases. Indeed, the use of a PC and/or console platforms compared with the mobile devises, the reference category, players tend to decrease their purchase as their time flexibility increases. Moreover, by using PlayStation and PC platforms compared with the reference category, players tend to increase their purchase and their social interaction increases in game. Moreover, we can also conclude that when it comes to the usage of the same game, e.g. Fortnite, Free-to-Play players tend to behave the same way when it comes to the impacts Fun, Diversion, Competition, Economic Rationale, and Continuous play may have over their continuous purchase intentions.

## 6.2 Managerial implications

Through this study several managerial implications can be emphasized.

First, it is important to note that in games where virtual items have no impact whatsoever on gameplay, video game companies should focus their investment on developing cosmetic options for the most visual aspects of their game. Indeed, we've seen through this study that in Fortnite, 48.5% of paying users, almost half of the respondents, were spending most of their money on Character skins (collaboration or not). Indeed, in this game the character played by the player is one of the most visible things on screen the player is paying attention to. However, we've seen that Weapon skins were only purchased 0.4% of the respondents, which indicates that the more visible is the cosmetic impact brought by a virtual item will be, the more profitable it should be.

Second, for video games companies launching Free-to-Play games in the market, we've seen that player retention is the main key for players' continuous purchase intentions as we developed with the significant positive impact found between Time flexibility (although measured with only one item) and Continuous Play over continuous purchase intentions. Moreover, our results showed that in games where virtual items have no impact whatsoever on gameplay, players tend not to feel compelled to spend money as the point might not be seen as valid for them. Thus, in such games, we would recommend video games studios to introduce new monetization loops or mechanics linked to gameplay as it is done already with the Battle Pass system. Such mechanics could be added in parallels to the Battle Pass as with a potential longer or shorter run. Indeed, smaller or longer variations of the Battle Passes could be introduced for players to unlock new cosmetic items through specific challenges. Other forms of monetization could be linked to gameplay with new paid modes as it has been done in Hearthstone and its Tavern Brawl (Blizzard, 2016).

Third, through this study we concluded that the choice of a gaming platform to play a specific game available on different platforms does not moderate the relationship between fun, diversion, competition, or economic value and the continuous purchase intentions of players. However, it moderates the relationships between social interaction or time flexibility and continuous purchase intentions when the chosen platform is PC or Playstation compared with

the platform mobile devises. Indeed, this could be explained by the fact that on PlayStation and PC platforms, the social interfaces and social connection among players appears to be more developed than on mobile devices or the Nintendo Switch. Therefore, we would recommend for video games companies to enhance the social connections between platforms for players within games themselves in order to bypass hardware limitations, as we have seen that the use of PlayStation and PC platforms led to an increase in Continuous purchase intentions compared with mobile devises.

## 6.3 Limitations of the present study & future research

To conclude, we can say that this study is not exempt from limitations.

Firstly, we could argue that the size of the analysed sample might not be important enough to be fully relevant to all kinds of gamers and games. Indeed, its main flaw relies within the number of respondents obtained for mobile devices users, accounting only for 11.8% (Nintendo Switch and Apple devices users regrouped). To mitigate this fact, a bootstrapping technique was applied, generating 3000 samples out of our sample.

Moreover, even though Fortnite is a game available worldwide, 60.1% of the respondents were from North America. Only 40.2% of the respondents were employed and 47.5% were students from which 40.3% of the respondents were below the age of 18. Therefore, we would recommend a bigger sample to be gathered and analysed.

Furthermore, we focused this study on a Free-to-Play game and as we established previously within the literature review, such types of games have their revenue generated by only a small portion of their users. Therefore, it could be very worthwhile for both marketers and researchers to analyse if the choice of a gaming platform does have an impact on players' LifeTime Value (LTV) or not. Indeed, this present study does not allow us to compare results between paying and non-paying users.

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# Annexes

# Annex A – Questionnaire

- 1. What is the gender you identify the most with?
  - a. Male
  - b. Female
  - c. Other
  - d. Rather not say
- 2. What is your age?
  - a. Below 18
  - b. Between 18-25
  - c. Between 26-35
  - d. Between 36-50
  - e. Above 50
- 3. What is your current employment status?
  - a. Employed full time
  - b. Employed part time
  - c. Unemployed
  - d. Student
  - e. Retired
  - f. Self-employed
  - g. Other
- 4. In what region do you live?
  - a. North America
  - b. South America
  - c. Western Europe
  - d. Eastern Europe
  - e. Africa
  - f. EMEA
  - g. Asia
  - h. Australia, New Zealand
  - i. Other

- 5. Have you ever played Fortnite?
  - a. Yes
  - b. No
- 6. How did you discover the game Fortnite?
  - a. Friend(s) or family recommendation
  - b. Video game news website
  - c. General news website
  - d. Online ads
  - e. TV
  - f. Newspapers
  - g. Social Media
  - h. Content from an influencer (Twitch/Youtube/Instagram/etc.)
  - i. Other
- 7. How long have you been playing Fortnite?
  - a. Less than 1 month
  - b. Between 1 and 6 months
  - c. 6 months to 1 year
  - d. 1 to 3 years
  - e. More than 3 years
- 8. What is your main platform to play Fortnite on?
  - a. PC
  - b. PlayStation console
  - c. XBOX console
  - d. Nintendo Switch
  - e. Android devices
  - f. Apple devices
- 9. Where do you play Fortnite?
  - a. Home
  - b. Office
  - c. School
  - d. Café
  - e. Friends' houses
  - f. Public transportation
  - g. Other

## 10. How often do you play Fortnite?

- a. Every day
- b. Multiple times per week
- c. Once a week
- d. Every few weeks
- e. Once a month
- f. Every few months
- 11. With whom do you mostly play Fortnite?
  - a. Alone, solo queue
  - b. With online friends
  - c. With IRL friends
  - d. With random people in squads
  - e. Other
- 12. Have you ever spent money on virtual items in Fortnite?
  - a. Yes
  - b. No
- 13. How much do you spend on average each month?
  - a. Nothing
  - b. Less than 10 euros
  - c. Between 11 20 euros
  - d. Between 21 40 euros
  - e. Between 41 80 euros
  - f. Between 81 100 euros
  - g. Between 101 150 euros
  - h. More than 150 euros
- 14. Have you ever subscribed to the Fortnite Crew membership?
  - a. Yes
  - b. No
- 15. Are you currently subscribed to the Fortnite Crew membership?
  - a. Yes
  - b. No
- 16. Have you purchased the current season Battle Pass?
  - a. Yes
  - b. No

17. Have you regularly purchased Battle passes ever since you started playing?

- a. Yes, all of them
- b. Yes, but not all of them
- c. No, only once
- d. No, I never purchased a Battle pass in Fortnite
- 18. Battle Pass excluded, what is the type of virtual item you purchased the most in the game?
  - a. Skins packs including a backpack, weapon etc.
  - b. Character Skins (non-collaboration)
  - c. Emote
  - d. Weapon Skins (non-collaboration)
  - e. Collaboration Character Skins (e.g. Naruto, Star Wars, etc.)
  - f. Collaboration Weapon Skins (e.g. Naruto, Star Wars, etc.)
  - g. Collaboration Skins Packs (e.g. Naruto, Star Wars, etc.)
  - h. Starter Packs (packs including V-Bucks paid in real money)
  - i. V-Bucks only (to be ready for planned purchases)
  - j. None of the above
- 19. Do you play with friends (IRL or Online) that spend money in-game?
  - a. Yes, all of my friends
  - b. Yes, but only a handful
  - c. No, I play alone
  - d. No, I don't have friends that spend money in Fortnite

20. I play Fortnite when I do not have nothing to do.

Strongly Disagree - 1 | 2 | 3 | 4 | 5 | 6 | 7 - Strongly Agree

- 21. I can begin and stop playing Fortnite at any time. Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree
- 22. I play Fortnite to spend time.

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

23. I can play Fortnite anytime.

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

24. Playing the game is enjoyable.

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

25. I play Fortnite because it's cool.

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

26. Playing the game is interesting.

Strongly Disagree -1 | 2 | 3 | 4 | 5 | 6 | 7 -Strongly Agree

27. Playing the game is exciting.

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

- 28. I play Fortnite when I have other things to do.Strongly Disagree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree
- 29. I play Fortnite instead of other things I should be doing. Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree
- 30. I predict that I will keep playing the game in the future at least as much as I have played it lately.

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

31. I intend to play the game at least as often within the next month as I have previously played it.

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

- 32. I plan to play the game during the next month.Strongly Disagree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree
- 33. I will continue to play Fortnite in the future.Strongly Disagree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree
- 34. Playing the game improves the way I am perceived.Strongly Disagree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree
- 35. I play Fortnite to relate to other people.Strongly Disagree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree
- 36. My friends and I use Fortnite as a reason to get together. Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree
- 37. My friends would think playing the game is a good idea.Strongly Disagree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree
- 38. Playing the game makes a good impression on other people.Strongly Disagree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree
- 39. When I lose to someone, I immediately want to play again in an attempt to beat him/her. Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree
- 40. I get upset when I lose to my friends. Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree
- 41. I feel proud when I master an aspect of Fortnite.Strongly Disagree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree

- 42. It is important to me to be the fastest and most skilled person playing Fortnite. Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree
- 43. I find purchasing Fortnite virtual items to be worthwhile. Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree
- 44. I intend to continue purchasing Fortnite virtual items.Strongly Disagree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree
- 45. I predict that I will use money in the game in the future at least as much as I have used lately.

Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

- 46. I plan to spend more on purchasing Fortnite virtual items. Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree
- 47. All in all, the game offers value for money.Strongly Disagree 1 | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree
- 48. All in all, the game is a good product/service for the price. Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree
- 49. All in all, the game is cheap. Strongly Disagree – 1 | 2 | 3 | 4 | 5 | 6 | 7 – Strongly Agree

# Annex B - Cronbach's Alpha coefficients

## **Time flexibility:**

**Reliability Statistics** 

Cronbach's Alpha N of Items .461 4

Item-Total Statistics								
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted				
I play Fortnite when I do not have nothing to do.	15.70	10.666	.278	.377				
I can begin and stop playing Fortnite at any time.	15.16	10.423	.252	.402				
I play Fortnite to spend time.	15.40	10.854	.316	.346				
I can play Fortnite anytime.	15.96	10.406	.217	.441				

## Fun:

<b>Reliability Statistics</b>						
Cronbach's Alpha	N of Items					
.800	4					

# **Diversion:**

Reliability St	tatistics
Cronbach's Alpha	N of Items
.891	2

Playing the game is enjoyable. I play Fortnite because it's cool. Playing the game is interesting. Playing the game is exciting.

I play Fortnite when I have other things to do. I play Fortnite instead of other things I should be doing.

## **Continuous play intentions:**

#### **Reliability Statistics**

Cronbach's Alpha	N of Items
.812	4

]	[ pred	ict tl	nat I	will	keep p	olaying	the	game	in	the	future	at
]	least a	is m	uch	as I h	ave pl	ayed it	late	ly.				

I intend to play the game at least as often within the next month as I have previously played it.

I plan to play the game during the next month.

I will continue to play Fortnite in the future.

## Social interaction:

Reliability St	atistics
Cronbach's Alpha	N of Items
.773	5

Playing the game improves the way I am perceived.

I play Fortnite to relate to other people.

My friends and I use Fortnite as a reason to get together.

My friends would think playing the game is a good idea.

Playing the game makes a good impression on other people.

## **Competition:**

<b>Reliability Statistics</b>			Item-Total	Statistics		
Cronbach's Alpha	N of Items		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
.639	4	When I lose to someone, I immediately want to play again in an attempt to beat him/her.	10.55	15.374	.480	.524
		I get upset when I lose to my friends.	11.51	19.421	.274	.662
		I feel proud when I master an aspect of Fortnite.	8.87	17.160	.416	.572
		It is important to me to be the fastest and most skilled person playing Fortnite.	11.09	15.021	.513	.498

## **Economic value:**

<b>Reliability Statistics</b>	I find purchasing Fortnite virtual items to be worthwhile.
Cronbach's Alpha N of Items	All in all, the game offers value for money.
.718 4	All in all, the game is a good product/service for the price.
	All in all, the game is cheap.

# **Continuous purchase intentions:**

Reliability S	I find purchasing	
Cronbach's Alpha	N of Items	All in all, the gan
.806	3	All in all, the gan
		All in all, the gan

I find purchasing Fortnite virtual items to be worthwhile.
All in all, the game offers value for money.
All in all, the game is a good product/service for the price.
All in all, the game is cheap.

# Annex C - Computing constructs

COMPUTE FUN=MEAN(p2a,p2b,p2c,p2d). EXECUTE.

```
COMPUTE DIVERSION=MEAN(p3a,p3b).
EXECUTE.
```

COMPUTE CONTINUOUS\_PLAY=MEAN(p4a,p4b,p4c,p4d). EXECUTE.

COMPUTE SOCIALINTERACTION=MEAN(p5a,p5b,p5c,p5d,p5e). EXECUTE.

```
COMPUTE COMPETITION=MEAN(p6a,p6c,p6d).
EXECUTE.
```

COMPUTE ECONOMICVALUE=MEAN(p7a,p7b,p7c,p7d). EXECUTE.

```
COMPUTE CONTINUOUS_PURCHASE=MEAN(p8a,p8b,p8c).
EXECUTE.
```