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Revenue models for video games

How to make money from PC and console games, even when they're free

Master's Thesis
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Abstract of master's thesis

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Abstract

The purpose of this thesis was to illuminate what revenue models are in use within the PC and console gaming industries. The rapidly growing video games industry has seen a strong shift away from traditional, transactional sales, towards revenue models that enable recurring revenue generation and longer product life-cycles. the Free-to-play business model has introduced new ways of monetizing games that are making their way to pay-to-play offerings as well.

Console and video games are shown to be an industry of its own, with characteristics from both software and entertainment industries. The value chains resemble those found in traditional publishing industries, while the end-products are clearly software products. This thesis identifies the most common revenue streams in use within the industry by examining literature on digital revenue models and examining real-world products.

An explorative case study consisting of 3 games was conducted to identify revenue streams and their characteristics in a real-world context. Revenue streams within the games were identified based on type and targeting characteristics, mainly player typology.

The study found that recurring revenue streams seemed to be in increasing use and confirmed that recurring revenue streams can be employed regardless of the underlying business model. Some differences were observed between single- and multiplayer games. Care should be taken in utilizing some repetitive revenue models (especially those found in mobile games) as PC and console players are more averse to so-called pay-to-win offerings.

Although player typologies and purchase motivators ultimately proved to be poor characteristics for observing revenue models, the study found that games are increasingly leveraging network effects, for example by encouraging the growth of communities outside the game context.

Providing long-term support and development of an existing game with recurring revenue models can increase profits, compared to releasing completely new offerings.

Keywords Digital Games, Monetisation, Revenue Models, Revenue Streams

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Abstract of master's thesis

Tekijä Ville Majander		
Työn nimi PC- ja konsolipelien ansaintamallit		
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Tiivistelmä

Tämän tutkielman tarkoituksena oli valaista PC- ja konsolipeleissä käytettäviä ansaintamalleja. Nopeasti kasvava peliala on siirtynyt pois perinteisistä transaktiomalleista, kohti monipuolisempia ansaintamalleja jotka mahdollistavat jatkuvat tulovirrat ja pidemmät elinkaaret. Ilmaiset, ns. "Free-to-play" -pelit ovat tuoneet uusia tapoja kerätä tuottoja peleistä, joita näkyy yhä enemmän myös maksullisissa peleissä.

PC- ja konsolipelialan osoitetaan olevan oma teollisuudenalansa, jolla on piirteitä sekä kustannus- ja ohjelmistoaloilta. Arvoketjut muistuttavat kustannusalan arvoketjuja, kun tuotteet sensijaan ovat selvästi ohjelmistotuotteita. Tutkielmassa tunnistetaan kirjallisuudesta ja alan tuotteista pelialan tyypillisimmät tulovirrat.

Kolmen pelin tapaustutkimuksella tunnistetaan tutkittavien pelien tulovirrat ja niiden ominaisuudet. Tutkimuksessa keskityttiin tunnistamaan tulovirtojen tyyppi, jatkuvuus ja ostajien mahdolliset motivaattorit, hyödyntäen erityisesti pelaajatyyppejä.

Tutkielmassa löydettiin että jatkuvat tulovirrat ovat yleistymässä ja vahvistettiin että jatkuvia tulovirtoja voidaan hyödyntää niin ilmaisissa kuin maksullisissakin peleissä. Joitakin eroja yksin- ja moninpelien ansaintamalleissa havaittiin. Tietyt, erityisesti mobiilipeleissä käytössä olevat ansaintamallit eivät välttämättä sovellu PC- ja konsolipeleille, sillä pelaajakunta on valikoivampaa.

Pelaajatyypit ja ostomotivaattorit osoittautuivat heikoksi tutkimuskohteeksi ansaintamalleja havainnoidessa, mutta tutkielmassa löydettiin että peliala hyödyntää yhä enemmän pelien ympärille muodostuvia verkostoja, esimerkiksi kasvattamalla virtuaaliyhteisöjä myös varsinaisen pelin ulkopuolella.

Pidentämällä pelituotteiden elinkaaria ja hyödyntämällä jatkuvia tulovirtoja voidaan tuottavuutta parantaa verrattuna täysin uusien pelien julkaisemiseen.

Avainsanat Digitaalipelit, monetisaatio, ansaintamallit, tulovirrat

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Abbreviations

AI	Artificial Intelligence
AMD	Advanced Micro Devices (corporation)
API	Application Programming Interface
ARPG	Action Role Playing Game
C:S	Cities: Skylines
CD	Compact Disc
CEO	Chief Executive Officer
CPU	Central Processing Unit
DLC	Downloadable Content
DVD	Digital Versatile Disc
EA	Electronic Arts (corporation)
F2P	Free-to-play
FPS	First person shooter
GGG	Grinding Gear Games (corporation)
GPU	Graphical Processing Unit
IAP	In-app purchase
MMO	Massively multiplayer online
MMORPG	Massively multiplayer online role-playing game
MTX	Microtransaction(s)
MUD	Multi-user dungeon
NPC	Non-player character
P2P	Pay-to-play
PC	Personal Computer
PoE	Path of Exile (video game)
PUBG	PlayerUnkown's Battlegrounds
PvE	Player-versus-Environment
PvP	Player-versus-Player
RPG	Role-playing game
RTS	Real-time strategy (game)
USD	United States Dollars (currency)

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1. Introduction

Digital games have become a major industry, with revenues reaching $137.9 billion by 2018 (Wijman, 2018) These games are played on a plethora of devices, from smartphones to large tower computers. The industry is growing at a rapid pace – faster than most media sectors – but it has also seen some major shifts in the last decade (Komorwski & al., 2016). These shifts, enabled largely by the efficiency of distribution over high-speed internet connections, are driving companies to monetise their products in various ways. Simply selling a game to a consumer without options for additional future monetisation is potentially squandering hefty revenues from later upselling and recurring revenues.

The most visible exemplars of this shift are the sales figures for downloadable content (DLC) and virtual goods, as well as the rise of free-to-play games. As of 2017, the market for DLC and virtual goods has overtaken the market value for package products in the console market (Digital console…(2019). This additional content can take many forms, from large, sequel-like additions to extremely small virtual goods, such as a purely cosmetic new hat for the in-game avatar. These sources of recurring revenues are enabling game publishers to offset the traditional seasonality of their sales and cover the costs associated with maintaining online platforms.

A special case in video games business models is the free-to-play (F2P) model, where most or all of the core game offering is provided for free. Revenues are then extracted by leveraging the large network that can be grown with a free game, by offering value added content in many forms, especially by sales of virtual goods. (Alha et al., 2014) These techniques have also been widely implemented in pay-to-play (P2P) games, to enhance revenue generation especially after the initial sale.

The F2P model has already found its place in the mobile gaming arena, where the market has found that the best initial price point for a game is indeed zero (Sifa et al., 2015). However, the mobile gaming market is not a perfect indicator for what will work in the PC and console ecosystems, as the markets differ considerably in both participants and audiences.

This thesis will focus on PC and console games. While mobile games are the larger market by a narrow margin, both the player-base and the companies that operate within it are quite different. Mobile games are generally played by a very broad audience, for short bursts, whereas PC and console games are played for much longer sessions and tend to require more

involvement from the player. PC and console games compete with other forms of entertainment and leisure, such as movies and television.

1.1 The Research question

This thesis aims to shed light on the ways PC and Console games can monetise their offerings. First, I will examine the digital gaming industry broadly, focusing especially on the PC and console components. Second, I will define and categorize the revenue models and revenue streams that are being used to monetise all games, attempting to identify the specific mechanisms with which revenues are generated. Third, I will select a number of case games from the PC and/or console market to demonstrate what revenue models and strategies are being used to earn revenues from games.

The core research question I am trying to answer is:

How are games for PC and console being monetised?

The question is purposefully broad and open ended. Hopefully, by the end of this thesis I will be able to provide clear examples of the revenue models and mechanisms prevalent in the industry, what changes the market has experienced, and what effects the revenue models have on the games themselves.

The first four chapters of this thesis constitute the literature review, where I will define key terminology and examine the video games industry more closely. The following chapters will have a comparative case study of three different games, to see if I can find any similarities or differences in the ways the games are monetised.

2. The digital gaming industry

The digital games market of $137.8 billion (USD) can be divided in to two sectors: mobile games accounting for roughly 51% of revenues, and PC and console games which account for roughly 49% or $ 67.5 billion (USD). (Wijman, 2018) We choose to look at the markets for PC and console games in tandem as the markets have significant overlap in product offerings and client base.

The digital game market has significant geographical variation, especially in relation to the leading platforms. PC games are a very significant market in Europe, while consoles are the leading platform in North America. In Asia, mobile games take the lead. (De Prato et al., 2012)

It is enticing to consider the gaming industry as just a subset of the broader software industry, but O'Donnell (2012) makes a strong case that the video games industry is better considered as an entertainment industry or an amalgam of entertainment and ICT – a view supported by De Prato et al. (2012) Zackariasson & Wilson (2012) argue that the video games industry resembles other publishing industries such as books or films. This is supported by the structure of the value chain in the industry (see below) and further by the fact that games clearly compete for consumer investment (both time and money) in the broader entertainment space (Järvinen, 2008).

Differences between the markets

The gaming market is commonly divided in to the mobile and PC sectors, with the latter also encompassing consoles. The major difference between the markets is the investment required in both time and money. Mobile games are commonly played for short bursts but fairly frequently. Mobile games generally fall in to the category of "casual gaming," characterized by relatively simple gameplay and ease of learning – as well as large profit margins (Georgieva et al., 2015). PC and console games tend to encourage longer sessions of consistent play (Flunger et al, 2017).

For mobile games, the dominant revenue model is a F2P model, whereas the bulk of PC and console games still require payment. (Alha et al., 2014) This leads to mobile games favouring repeatable revenue streams of fairly small transactions, whereas PC and console games often require significant investment in both hardware and software.

For this study, I will exclude mobile games and focus exclusively on the PC and console market. Sources and data relating to the mobile gaming industry will be used where comparisons or similarities are natural.

2.1 Structure of the gaming industry

The core roles in the gaming industry value chain as identified by Zackariasson & Wilson (2012) are:

Developer – Developers are the actual makers of games. Games studios vary in size from small teams to large corporations. The developers employ a range of professionals to craft and integrate the components (graphics, sounds, design and programming) that make a game. Developers can be anything third parties working independently to fully-owned subsidiaries of major publishers.

Publisher – Publishers work to bring the developer's games to consumers. Publishers commonly take the largest financial risks and manage portfolios of multiple games from different developers. Publishers are increasingly expanding vertically and rarely limit themselves to single platforms to attain economies of scope and scale.

Distributor – Distributors handle the dissemination of products from publishers to retailers, or increasingly commonly, to the customer directly. Although digital deliveries are rapidly increasing their market share, most games are still delivered as boxed, physical goods. Distributors sometimes operate within specified geographic locations. This part of the value chain is increasingly a target for vertical integration from publishers and retailers both (De Prato et al., 2012)

Retailer – Retailers manage the customer interaction of games sales, either in brick-and-mortar stores (such as Gamestop) or online (such as Amazon for physical deliveries or Steam for digital deliveries).

Customer – The customer is the commonly the final user of the game offering and the ultimate source of revenues for participants in the value chain. The ultimate consumer can sometimes be separate from the customer (e.g. a parent buying a game for their child), but for the sake of simplicity these shall be considered as one.

Figure 1, adapted from Zackariasson & Wilson, 2012

Figure 1 shows the traditional value chain in the gaming industry. In the modern gaming industry ecosystem, it is common for a company to occupy multiple places in the value chain. This has been driven especially by the advent of electronic delivery, where brick-and-mortar retailers are being squeezed by more efficient online offerings.

In the broader gaming ecosystem, we also find platform owners – both hardware and software – as well as IP owners and providers of specialized tools or software (or middleware), such as game engines. (De Prato et al., 2012) Platforms are discussed in more detail below.

2.2 Platforms

The most obvious and most researched platform-based market is the video game console market. Itself a multi-billion-dollar business, it is essentially composed of double-sided platform-mediated networks. In order to entice game developers to create games for the console, the manufacturer has to draw a large audience of consumers. Likewise, consumers are only interested in products with enough interesting titles. (Osterwalder & Pigneur, 2010) In the case of video game consoles, the actual hardware is commonly sold at a loss while profits (for the console vendor) are derived from sales of in-house games and licensing fees from other developers.

These platform mechanics have also manifested themselves in the PC-gaming market, where many games are now delivered via platform software such as Valve's Steam, EA's Origin or Activision-Blizzard's Battle.net.

2.2.1 Hardware platforms

The most obvious hardware platforms in the industry are gaming consoles. Sony, Microsoft and Nintendo lead the field with their current 8th generation offerings. Consoles provide both a standardized hardware platform as well as a preinstalled software platform. The business logic of the games console market works as a multi-sided network: the console platforms

connect players to game developers. The consoles themselves are commonly sold at a loss and positive revenues are earned from sales of games, where the developer and publisher furnish the platform owner with a hefty cut of sales revenue. (Tan & Li, 2008) The platform owner has a controlling position in getting to decide which games are released and controlling the sale of software development kits (SDKs) for developers. The hardware platform market is an oligopoly dominated by three companies: Nintendo, Sony and Microsoft (Tan & Li, 2008, Tremblay, 2018). Although platform mediated networks generally tend to produce a clear "winner" – an effect known as winner-takes-all propensity – the console market has tended toward an oligopoly where, as Kemerer et al. (2018) put it, the "winner-takes-some", with the three major participants constantly vying for the top spot.

In the PC-gaming market hardware platforms are less obvious. The hardware required to run modern games constitutes such a platform, but the network looks very different. Games are commonly developed to run at different settings on different levels of hardware, as well as hardware from different manufacturers. The major players in the market are Intel which makes CPUs and owns Nvidia, a large maker of GPUs; as well as AMD, which similarly manufactures CPUs and GPUs.

2.2.1 Software platforms

Software platforms are playing an increasingly important role in many layers of the gaming world. The games, as applications, need to run on an operating system (OS) – the most common of which in the gaming space is Microsoft Windows – and often require additional software components such as the DirectX API bundle to be installed on the device. Games often also incorporate integrated middleware to provide game engines (e.g. El-Nasr & Smith, 2006), AI, 3D physics and modelling among other things.

The more obvious software platforms are games distribution and social networking platforms such as Valve's Steam – responsible for a lion's share of online game sales – EA's Origin and many others from other distributors and publishers. These platforms operate in a similar manner to the game console market, only on purely the software level. These platforms – especially the largest ones – wield a significant influence much as the console platform owners.

Steam

It is impossible to conduct research on PC games without addressing Valve corporation's Steam-platform. Steam, released in 2003, has gained the unequivocal lead in digital

distribution of games, and is argued by some to be the largest digital games distributor overall. Specific figures are difficult to find, as Valve is privately owned and does not report exact figures. In 2017, Steam sales of game titles only (not counting DLC and microtransactions) totalled roughly $4.3 billion USD, accounting for at least 18% of global PC game sales (Bailey, 2018). In Europe and North-America this percentage is likely significantly higher. Steam's portion of digitally delivered PC-games was estimated at 50-70% in 2011 (Chiang, 2011), although competition from other platforms such as Battle.net and Origin as well as the move of some key publishers from the service to competitors have probably eaten in to this figure. According to Valve, Steam boasts 90 million monthly active users world-wide, of a total user-base of 125 million. Over 60% of revenues are generated from Europe and North-America.

Steam's revenue model is based primarily on a proportionate fee taken from any sales made on the platform – generally 30%, recently lowered to 25% for games with earnings over $10 million and 20% for those with earnings of over $50 million. ("New revenue share tiers…," 2018).

Steam provides a general platform for PC gaming, with which users can buy and play games, as well as connect and communicate with friends for multiplayer or other activities, and even upload, download and manage modifications to products. Games are bought, downloaded, updated and launched using the platform client. Software licenses are attached to the Steam account, negating the need to keep records of license keys or other forms of license verification. In-app purchases are also widely supported, enabling developers and publishers to sell DLC and virtual goods or currencies through the Steam store or through an overlay system while in-game. Sales of virtual items between users is also possible, for supported titles. Steam is available for Microsoft Windows, macOS, Linux, iOS and Android, with limited features on mobile operating systems.

2.3 Industry trends

The video gaming industry has seen a dramatic shift towards digital distribution channels within the last 15 years. Digital delivery is expected to overtake retail sales and drive a portion of the brick-and-mortar industry out of business, while dramatically increased connectivity has enabled constant updates and droves of online content to be added to games. This has led to criticism from consumers who sometimes perceive publishers to be releasing

unfinished games yet asking for full prices – cries for "fixing" games from the player base are quite common.

Constant updates and addition of content also allow for more ways to monetise game offerings. Recurring revenue streams from continuous sales of add-on content are very tempting for games companies who face upkeep costs for servers and continued development.

The gaming industry has also not escaped the broadening of scope for media companies which the prevalence of high-speed internet has brought with it (e.g. Picard, 2003). Online delivery of data-intensive media has seen retailers in the traditional form all but squeezed out, while large media companies are expanding along the value chain to cover everything from development to publishing, distribution and retail.

2.3.1 Modding

Modding refers to modified versions of a game, created by participants outside of the developing company. Modding has become an important source of value within the industry (Kücklich, 2005), where many high-grossing and enduring titles have sprung up from user-created mods: examples include the venerable Counter Strike (2000) and Playerunkown's Battlegrounds (2017), the latter being discussed further in the case study -section of this thesis.

Modding was made possible by the separation of the gaming framework from the underlying software (El-Nasr & Smith, 2006), which allowed less well-versed users and developers to utilise tools provided by these game engines to create their own variations. In practice, much of modern game development fits this description as ever more complex game engines have become a field of development on their own. Modding has become an important component of the digital games industry, working as a stepping stone to both careers in the fields as well as ultimate finished products (Kücklich, 2005).

Valve's Steam -platform provides tools for distributing mods, allowing users to upload modifications to those games whose developers have opted in to the feature. These mods may then be downloaded by anyone who has access to the game.

2.3.2 Marketing and tangential activities

Video game marketing is largely handled in the usual channels, both offline and online, but several interesting activities have emerged in the recent years. eSports, or organized

competitive gaming (Hamari & Sjöblom, 2017) has risen to an industry in and of itself, with an estimated global audience of 454 million in 2019, and revenues surpassing $1 billion USD (Key Numbers, 2019). Prize pools for tournaments have surpassed the million-dollar mark, and even traditional sporting franchises are expanding in to eSports – the venerable FC Barcelona boasts teams in Pro Evolution Soccer (2017) and Rocket League (2015) (FC Barcelona strengthens…, 2019). eSports acts as a natural marketing channel for gaming companies, showcasing the best players playing games at a high level.

Live streaming has become an increasingly popular form of entertainment, both within the field of eSports as well as separate from it. In general, entertainment streams generally consist of one or more persons streaming gaming content with active and reactive commentary (Sjöblom & Hamari, 2017). The constant interplay of the streamer or streamers, the game and the audience form an eccentric, combined form of entertainment. Streaming naturally showcases the games being played, and both the popularity of certain games and games being played by influential streamers affect each other. Many gaming companies make sure to have at least some sort of dialogue with the streamers as they are considered influencers within the community.

2.4 Games

To study video game monetisation, we must have some understanding of the games themselves. Games can be categorized in a plethora of ways, from single or multiplayer, player vs. environment (PvE) or player vs. player (PvP), to genres (such as role-playing games (RPGs), first-person shooters (FPSs), real-time strategy (RTS) and many more). While genres can be important in the study of how games make money, it is better to clearly define the characteristics.

2.4.1 Genres

Discourse on video game genres is greatly affected by comparisons to earlier media (Apperley, 2006). Apperley further argues that video games should be considered with more emphasis on their interactivity, the very notion that sets them apart from media that is enjoyed statically. Järvinen (2009) argues that games cannot be categorized solely based on their theme or interactive features, but that both affect the other.

For the purposes of this study, genres in the thematical or cultural context are not a focal point and used only for identifying revenue models specific to that genre and other limiting factors. I will therefore focus more on characteristics of games that may have a significant

impact on the revenue model employed – essentially the mechanical parts that define a games' genre (Järvinen, 2009). One of the defining characteristics of video games is the degree to which they are social endeavours – do the games require human contact or not?

The core aspect of whether a game is primarily a single-player or a multiplayer game can have a significant effect on which business models appear appealing. Narrative-oriented single-player games incur most of the cost upfront and make it up with sales once the title is published, much like the traditional publishing industries, with very similar activities across the value chain. Online offerings need to cover much greater running costs such as servers and support teams, making revenue models that generate at least somewhat reliable recurring revenues seem appealing. (Alves & Roque, 2007)

2.4.2 Alone or together?

Single player versus **multiplayer** seems like a straightforward distinction. Is the game meant to be played alone, or with others? Further variations arise when we consider whether players are playing co-operatively, competitively or both. Many games offer play modes with combinations of the above, such as competing as a team against one or more other teams (Zagal & al., 2000). Some games or game modes are played competitively against other players, but without a team.

Traditionally games were considered to be single player games if they were played alone without access to other players. Many games offer both options, including a story-driven single player campaign and more repeatable forms of multiplayers modes. Some games such as massively multiplayer online games (MMOs) or modern action role playing games (ARPGs) can be played with little or no interaction with other players, even though the player is playing in a natively multiplayer environment. Many modern games cannot be played without a connection to game servers, even if played with no interaction with other players. In many cases, access to games can require internet access to several infrastructures, e.g. the platform servers for licensing purposes and the game servers for access to game realms.

The major axes of consideration in determining the social scope of a game are

1. Is the game played alone or in teams?
2. Is the game primary played against other players or the environment?
3. Is there a clear scoring system or leaderboard?

Games can naturally implement multiple combinations of these, ranging from pure single player (alone, PvE) to team deathmatches (teams, PvP). Most first-person shooter (FPS) games offer competitive multiplayer alone and in teams, in addition to possible single player modes. Co-operative PvE games and modes have also seen success.

In this thesis, games or game modes where players compete against each other during the game will be called directly competitive. Examples include the hugely successful battle royale -games where players vie to be the last one standing, or sports games where players are directly opposed. Games where competition is implemented with leader boards, timers or other after-the-fact measures will be considered to be indirectly competitive. This moniker can be applied to some single player games as well, when players strive for the highest score or fastest time. Many directly competitive games also implement indirectly competitive systems in the form of leader boards and ranks, which are usually long-term interpretations of your success based on an algorithm, e.g. the Elo-score normally used in chess. Games that are played alone, against the environment and with no score or leader board system will be considered the purest form of single-player.

These considerations are important in the context of game monetisation because of how they are perceived. Selling overpowered weapons to those with cash to spare in a directly competitive multiplayer game will quickly destroy any incentives the low- or non-paying mass has to play that game, and consequently languish the game itself (Hamari & Keronen, 2017). Selling shortcuts for purely single-player games is not as detrimental, as competition is not a big factor, although care should be taken when taking decision choices where in-game success can be enhanced by real-world spending.

Game mechanics as a concept and in relation to this study and its research method are briefly covered in chapter five.

3. Revenue models

To study the revenue models utilised in the gaming industry, a clear definition must first be offered. The revenue model can be defined in many ways, but at its core, it is the process, mechanism or ability with which the company translates customer value in to revenues (Osterwalder & Pigneur, 2002; Rajala, 2009). In other words, the revenue model describes the way in which a product or service is monetised.

Where the revenue model describes how a company extracts revenues from customers, the broader business model is an abstraction of the overall operations of the business and how it functions including organization, customers, partners, suppliers and their interconnections. The terms "revenue model" and "business model" are not to be confused – the former is merely a component of the latter, albeit an important one.

Research in to business models and their conceptualization is much more prevalent than research focusing on revenue models alone. Accordingly, this research will be utilized for insights in to revenue models and their place within the business model.

3.1 Definitions: the business model

Although frequently and erroneously used interchangeably, the revenue model should be seen as an important part of the broader business model. The latter term is still somewhat poorly defined (much like the term "strategy" when relating to business), but as a concept it has been studied since the 1980s. Below are some definitions for a business model from influential authors in the field:

Osterwalder & Pigneur, 2010	"A business model describes the rationale of how an organization creates, delivers, and captures value"
Chesbrough & Rosenbloom, 2002	"The business model is the heuristic logic that connects technical potential with the realization of economic value"
Amit & Zott, 2001	"The business model depicts the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities"
Timmers, 1998	"An Architecture for the product, service and information flows, including a description of the various business actors and their roles; A description of the benefits for the various actors; A description of the sources of revenues"

Table 1

These definitions reveal to us that the business model is often perceived as a tool to expose and analyse the components of a company's business activities. As such, it is a fairly broad exposition of business components that enable the modelling of a given business.

Only two of our selected definitions explicitly include the revenue model as a part of the business model, but it is fair to say that creation and capture of revenues is implicitly present. For example, Osterwalder & Pigneur (2010) explicitly describe "revenue sources" as one of the 9 key components of their business model canvas, a tool commonly used to describe and analyse business models and their component parts.

3.2 Definitions: the revenue model

In order to study revenue models in any structured manner, we must first have a keen understanding of the definition. In the previous section I defined the concept of a business model, of which the revenue model is a component. In the table below, I have listed accepted definitions of the revenue model from influential researchers.

Osterwalder & Pigneur, 2002	"…the ability of a firm to translate the value it offers its customers into money and therefore generate incoming revenue streams."
Zott & Amit, 2010	"…the specific modes in which a business model enables revenue generation."
Sainio & Marjakoski, 2009	"…the operational description of the basis on which revenue is collected from customers or partners."
Popp, 2011	"…defines how a company is compensated for each of the business patterns provided."
Ojala, 2013	"…referring to how a firm collects revenue from its customers. Thus, it relates to the various options that a firm might offer to customers who want to buy its software."
Rajala, 2009 citing Chesbrough & Rosenbloom, 2002	"…the logic with which the company captures value."

Table 2

It is clear that although there are many ways to describe a revenue model, the core definition is not in doubt: a revenue model is the way in which a company transforms or translates customer value in to income. Some authors focus more on the revenue model's place within the business model and how it enables the generation of revenues (e.g. Zott & Amit, 2010) while others concentrate on its operational nature and ability to capture value. Sainio & Marjakoski (2009) further propose the term "revenue logic" to explain the portion of the business model that deals with revenue sources and profit generation at the strategic level.

In practice, there are many ways to translate value in to revenues, and companies or their singular products are by no means limited to just one. The simplest and historically most common revenue model is that of a direct transactional sale (or in software business, the direct transactional sale of a license.) In this model, the customer pays a price for the product, generating income for the company. The product is purchased because the customer is willing to pay the agreed upon price, reflecting the value of the product to the customer.

This is of course a staggering simplification, but willingness-to-pay, customer value perceptions and the efficiency of markets are well outside the scope of this thesis.

3.3 Pricing

Pricing or the pricing model is inextricably linked to the revenue model, but they are not the same. Pricing refers specifically to quantity; namely how much revenues are extracted for a given unit of sales. Pricing offerings correctly is critical to the success of any revenue extraction mechanism and is naturally dependant on said mechanism.

Ojala (2014) lays out three core pricing bases for software:

- Assessment based pricing
- Price discrimination
- Price bundling

In *assessment based pricing* the customer pays for a measurable unit of software use, namely either for user licenses or some other measurable metric of use (e.g. outgoing invoices for an online billing service.) *Price discrimination* is a model where the same product is offered to different groups of customers for different prices (e.g. Microsoft offering different prices for its Office -software suite to companies, students and households). In *price bundling* the offering includes multiple products for a fixed price, potentially making the offering more attractive than individual sales (e.g. Microsoft Office which is most commonly sold as a bundle that includes at least word processing software, presentation software and spreadsheet software.)

A companies pricing model can utilise many of these tools to create the best offering possible.

3.4 Revenue models in digital industry

To meaningfully analyse revenue models within the gaming industry, it is beneficial to look at existing research in to revenue models within digital industries, especially the software industry, in general. The legal basis for revenue models within the digital games industry – as within the software industry (Sainio & Marjakoski, 2009), rests on intellectual property rights. The developer, publisher and distributor claim and manage patents, trademarks and copyright protections, allowing them to grant limited-use licenses for their products, enabling controlled forms of distribution. As the products exist mainly as computer code that can be run on client devices and services that require controlled access to certain services run on 1st

or 3rd party servers, intellectual property rights and contracts pertaining to their use are clearly vital for the continued monetisation of video games.

The table below lists some of the most common revenue streams employed in digital industry and their common use-cases.

Revenue Stream	**Description**	**Common uses**
Direct sales	Direct transactional sale that transfers ownership of an asset.	Traditional storefront and online sales, especially physical products. Also common is the sale of added-value components in software.
Subscription	A service where a fee is extracted periodically in return for a right to use the service.	Common in media distribution, e.g. entertainment streaming services and newspapers.
Advertising	Use of the product or service subjects the user to advertising. May be combined with other types of revenue model.	Common for commoditized services such as search (e.g. Google) and as a second or primary source of income in media (e.g. newspapers)
Fees	A fee is levied by the business for facilitating a transaction as a third party.	Common in platform-businesses and brokerage, e.g. online auctions or operating-system specific app-stores.
"Freemium"	Core functions of the product or service are available for free, but additional functions, properties or certain levels of usage require a purchase or subscription.	Common in many online services, especially services that rely on a social component to propagate. (e.g. Hamari & al., 2016)

Table 3

4. Revenue models for games

Revenue models employed by video games are increasingly varied and straying away from the traditional, transactional model. Subscription models have been extensively experimented with and applied, although success has been fairly limited, especially within the scope of a single game. Upselling, on the other hand, is proving to be a very lucrative method and has taken several forms. More and more games operate on a broad online basis, leading firms to find revenue models that adequately compensate them for the expanded cost structures, while still communicating the continued value of their proposition to customers (Alves & Roque, 2007).

In this chapter I will first explain the concept of free-to-play and the very basics of monetising free games. I will then use these concepts to illustrate the most common methods for monetising games, both F2P and P2P. I will pay special attention to virtual goods and a core subset, the mediums of exchange or virtual currencies that are prevalent in the industry. In the following chapter, I will further break down these concepts in to types of individual revenue streams.

4.1 Free-to-play

The Free-to-play (F2P) model is a successor to the so-called freemium-model, with the core difference that most or all of the core offering is available to the consumer free of charge. The offering is monetised by selling access to additional functions, services and virtual goods that enhance the user experience. (Flunger et al., 2017) The F2P business model is rapidly becoming a dominant model, especially in online-only games that rely on large user bases. This naturally leads to increased competition in crowded marketplace.

The advantages of free-to-play for the game developer are mostly those of a large audience and customization of the offering (Flunger et al., 2017). Where a game sold on a simple transaction or fee-based model requires initial investment by the consumer and therefore limits the initial user base, free-to-play games can expect a relatively broad user base on release. This broader base can then be leveraged by offering a wide variety of options for paying customers. Enhancements to gameplay (often in the mode of in-game currency) can be offered in a wide price range, for those simply wanting a small boost to progress to those with limited time but more financial resources who wish to explore the content more rapidly. This tailoring of the paid portions of the offering can enable monetisation of a broad range of users, from the occasional player who is willing to pay small amounts infrequently, to the

coveted wealthy individuals who may invest heavily in games they enjoy. Additionally, the possible network effects of achieving a large user base should not be ignored – a critical mass of users greatly increases visibility for the product and can increase conversion rates. This leads to higher profit margins as the marginal costs for new users are very low.

The model naturally has its downside. Any free-to-play undertaking is inherently risky, as the rate of monetisation (as discussed below) is difficult to predict and most of the development costs are incurred before any revenues can be harvested. Balancing the paid offerings can also be difficult, and fickle users might quickly abandon a game which is perceived as too heavily monetised or unfair. Since the model relies heavily on recurring revenues, it is important to ensure continued engagement, which – in the long term – requires continuous effort from the vendor in the form of periodic technical and balancing updates and new content, both free core content as well as new virtual goods. This also makes story-driven games a rarity in the F2P field, as a good story requires a conclusion and free games need to offer a compelling reason for the player to constantly return. (Luton, 2013)

Alha et al. (2014) found that the F2P model was viewed favourably by games developers, but many were worried about players views on F2P as well as the ethical problems it poses, especially that of cashing in on addictive tendencies. Indeed, regulatory bodies have taken an interest toward the F2P model. (European Commission, 2014)

4.2.1 Cashing in on free-to-play

Free-to-play models rely on converting a small percentage (usually between 1% and 5%) of the entire user-base to paying customers. This divide in to a majority of non-paying customers and a small minority of paying customers renders several points to consider. First is the question of conversion – how to most efficiently convert free users in to paying customers. Second is the level of attention to be paid to the paying minority, especially the high-value customers that can account for a significant portion of revenues.

Conversion relies on the purchase motivations of the potential customer. Hamari et al. (2017) found six factors that can explain purchase motivation, of which the first four were found to be most explanatory: unobstructed play, social interaction, competition and economic rationale. The last two, indulging children and unlocking content, were found to be too specific and too general respectively to be considered.

Unobstructed play refers to the players ability to continuously (and often indefinitely) play the game. Game developers can implement timers, scarcity (such as so-called "lives") or frustration mechanics to entice users to purchase enhancements to allow continued gameplay and enjoyment. The phenomenon where investing money in to the game makes either the game or other players easier to beat is called pay-to-win, or P2W for short. This mechanic is often seen as detrimental to the long-term success of a game. This is not to say that any enhancements to gameplay are automatically detrimental, but there is a fine line to be tread between offering players convenience and quality-of-life upgrades, versus offering seemingly unfair advantages to those who are prepared to invest large sums to succeed at the game.

Social interaction relies on the players interaction with others. Purchase motivators such as vanity, peer-pressure and the wish for social connections within the game fall under this category. Players may wish to customize their character to show off or to conform more closely with personal identity. Developers may also restrict social interactions of non-paying customers, e.g. by limiting the amount of in-game "friends" with broader communication possibilities.

Competition drives purchases when the player wishes to excel or progress rapidly at the game. This may overlap with the previous motivators where players wish to show off their success at the game or gain "bragging rights" at having progressed furthest or bested their friends.

Economic rationale drives purchases when the player perceives value in the offering. This value perception can be driven by appealing to cost-effectiveness with reasonable pricing and sales. The willingness to support a favoured game can also be an important motivator for purchase intent. Players may also see purchases within a game as a way of investing in one's self by supporting a hobby.

Understanding the purchase motivators for users is important in tailoring the offering and segmenting the user base. In more competitive games, where individual performance is valued, it will be important to avoid giving significant advantages to those who spend more. In contrast, offering ways to bypass obstacles or frustrations can be a very lucrative way of monetising more casual games – this is often seen especially in mobile games, which are commonly enjoyed for short periods at a time. These purchase motivations can also be applied to P2P games which offer additional post-purchase content (Luton, 2013).

Maximizing conversion is a subtle art with few shortcuts. Using high-intensity techniques such as glaring visual elements or constant notifications can have an adverse effect where negative responses outpace actual conversion (Jankowski et al., 2019). Simultaneously, ensuring high service quality, while positively affecting adoption and continued use of a service, does not necessarily affect conversion. (Hamari et al., 2017b)

4.2 Virtual goods sales

Virtual goods in the context of digital gaming are items that are a part of, and usually unremovable from, the game world. These items can commonly be applied to the virtual character to either enhance the character's abilities, thus making the player's virtual avatar stronger; or to enhance the cosmetic appearance of the character. (Flunger et al., 2017) A core property of virtual goods is that they are rivalrous, meaning that the same instance of a virtual good can not be enjoyed by multiple users but must be purchased separately.

It is important to examine the applications for virtual goods separately, as they are viewed very differently by consumers. Virtual goods or enhancements that directly affect gameplay – especially by making the game in effect easier – are seen by many consumers as detrimental to the enjoyment of the game (Hamari & Keronen, 2017).

4.3 Mediums of exchange

Many companies, including most of the case companies in this study, rely on a premium currency system where customers can purchase units or points using real-world currency. These points (commonly non-transferrable and non-refundable) can then be used for in-game purchases ranging from cosmetic effects to powerups or account features.

These premium currencies often coexist with other in-game currencies. Commonly a two-fold approach is used, where a free in-game currency can be earned by playing the game and possibly by trading, and a premium currency is only available by purchasing it from the vendor. This premium currency is often named in a way that conveys exclusivity and value (Flunger et al., 2017). Virtual item sales can take place in both currencies, but many vendors choose to gate at least some content behind the premium currency to encourage a feeling of exclusiveness. Often the premium currency can act as a shortcut to accessing content that would take a long time to access otherwise.

The benefits of these points-systems for the vendors are manifold. The points, usually valued at around 1 euro- or dollar cent or a fraction thereof, serve to obfuscate the actual prices of

products. Points are commonly also sold in amounts that result in some amount of points being left over after typical purchases, encouraging the user to purchase more points to be able to "cash out" the value of the surplus points.

4.4 Season passes

The Software-as-a-Service paradigm has not taken as strong a foothold in the gaming sphere as it has in traditional software business. Subscription model games are fairly few and mostly in the long-term limited to some outlying successes such as World of Warcraft (2004) or Eve online (2003). Many games have attempted the subscription model, only to fall back to an F2P model after subscription revenues have proved lacklustre.

Despite the apparent lack of traction for subscription models, another form of extracting recurring revenues from games has taken hold: the season pass. A season pass is commonly a virtual item that allows the player to access extra content in the game. Where the pass differs from traditional content-driven DLC or single item virtual goods sales is that the content is usually unlocked by playing the game.

Season passes commonly come in two flavours or a combination of both. A content-centric DLC season pass grants access to upcoming DLC for a duration, or perpetual access to content released within a certain period. For example, the Battlefield -series of games has in the recent years featured a season pass that grants access to certain multiplayer maps, weapons and skins released during a defined duration. The other type of season pass generally grants access to virtual goods ass the player progresses through the game, especially the multiplayer play modes. For example, Rocket League has featured a season pass that unlocks cosmetic items and experience point power ups as the game is played, awarding experience points for each game that is played.

The season passes are commonly priced somewhere between $10-$30, almost always being cheaper than the core game, if an initial purchase is required.

The season pass allows the vendor to potentially capture strong recurring revenues all while keeping players engaged with the game – a player is much more likely to continue playing a game where they can still unlock further content. This also allows for longevity, as deploying new seasons along with technical updates keeps the game fresh in the mind of the consumers.

A season pass can rarely measure up to the revenues of a subscription model on a per-unit basis, as the seasons tend to be longer (around 3-4 months is standard) and the purchase is voluntary and requires action on the user's part every time.

5. Research method

In this chapter I will illustrate a framework for analysing games' revenue models based on the individual revenue streams utilized and how they interact with gameplay and the players. I will describe the components and characteristics to be used in analysing the individual revenue streams, and how they fit within the framework.

To analyse the revenue models of case games, I will first identify each individual revenue stream utilised by the game by examining the game offering directly and utilising popular media sources. For each revenue stream, I will identify the following factors:

- Type of the revenue stream
- Repeatability by the same consumer
- Interactions with game mechanics
- Player types the revenue stream is targeting
- Purchase motivators the revenue stream is exploiting

5.1 The case for a case study

Yin (2018) identifies the three core aspects that make a case study a viable tool of research into a phenomenon:

1. The main research question is a "How?" or "Why?"
2. The researcher has little or no control over behavioural events
3. The study is focused on contemporary (as opposed to historical) phenomena

The study of how video games are monetised satisfies all three of these conditions. Direct scientific experimentation is out of the question, as I am studying the implementations of existing products from existing companies, not simply the practical implementation of theoretical ways to monetise games. Similarly, direct observation of the revenue models employed by these games is possible.

Surveying consumers would be a valid approach to measure, for instance, consumer preferences or perceptions, or even to predict revenue model performance, but would not provide insight in to the mechanisms of revenue generation, or why they were chosen. A case study involving multiple cases will best illuminate what mechanisms are used, and perhaps even shed light in to why these mechanisms were adopted.

5.1.1 Limitations and relativism

Any case study conducted in this fashion, on this topic, is undeniably done from a relativist perspective – meaning that there are multiple perceptions and interpretations, and that the findings are therefore dependant on the observer (Yin, 2018). As I am not attempting to provide a comprehensive list of revenue generating mechanisms or provide quantifiable evidence of their performance or adoption, a relativist perspective can still provide valid insight to the question of "How?".

This study will naturally be a product of its time, inspecting current but established products in a wide and fast-paced marketplace, where trends and paradigms can shift in the space of weeks or months. Case selection will play an important role in the validity of this study's conclusions and is addressed in the next chapter. Regardless, due to the small number of actual data points (cases and their revenue generating mechanisms), this study will inevitably be somewhat coloured by the choice of cases, however justified.

5.2 Methods and sources

Analysis of the case game's revenue streams will be conducted by first and foremost directly examining the offering. I will attempt to identify the consumer-facing revenue streams, their types and their targets by browsing offerings related to the game on vendor websites and distribution platforms it may be available on. I will also review the case game's terms of service and any other relevant documents to shed light on the actual legal mechanisms used and what rights are conveyed to the user.

To support and contrast these primary findings, I will use popular media sources – especially direct interviews with game developers and company representatives – to find insight in to how the developers have approached the monetisation of the game. Where available, sales, adoption, retention and monetisation figures will be observed as well.

For each case, I will also offer context: who made it, what are the major players in the value chain, what are the primary mechanics and goals, and how monetisation is visible to the user (in the form of in-game storefronts, for example.)

Finally, I will use cross-case synthesis (Yin, 2018) to identify similarities and differences between the case games based on the revenue streams employed and other factors. Hopefully, this will shed some light on why particular revenue models are used in conjunction with certain genres and game mechanics.

5.3 Revenue stream types

A revenue stream is a single source of income from a product that can generally take two forms: transactional revenues from on-time payments or recurring revenues from a continuing value proposition (Osterwalder & Pigneur, 2010). Games can utilize a variety of revenue streams to build a complex revenue model, earning income from multiple facets of the game.

The list below shows the most common revenue streams for video games and their most important sub-types. It is important to note that these are singular tools used to capture value, they do not necessarily (and in most cases don't) describe the entire revenue model for a game, only a component of it. These revenue stream types will be used as a basis for analysing the revenue models of the case games.

- Package sales (initial purchase)
- Subscriptions
- DLC
- Season passes
- Virtual goods
    - Virtual currencies
    - Loot boxes
- Advertising

Package sales and **online sales** refer to the sale of and end-user license to a game, delivered, respectively, via physical medium or digitally over an internet connection. This, the most traditional transactional model (e.g. Marchand & Hennig-Thurau, 2013), is seeing a decline, especially when it comes to physical copies of games. This is in line with trends in other industries where delivery of content has shifted sharply from traditional physical media channels to digital channels over the internet. As in other industries, such as music, this shift in distribution channels is also leading to a change in revenue models – in the music industry, streaming services with vast catalogues of music are becoming the norm while physical album sales are in sharp decline. Package sales can also refer to bundles (e.g. HumbleBundle) where an assortment of games is sold as a single package, usually at a steep discount. It is important to remember that although it is appealing to consider package and online sales as simple asset sales, they are in fact a (fairly simple) form of licensing (see Osterwalder & Pigneur, 2010, p.31).

Recurring payments required to access a game, or **subscriptions,** have been an important revenue generator for many games, especially one of the highest grossing video games of all time, World of Warcraft, and other games in the MMORPG -genre (Komorwski & al., 2016). Subscriptions work much in the same way as recurring fees in other industries, with players paying a recurring fee (commonly monthly or yearly) in order to gain access to gaming content. Sometimes a direct purchase is also required, or the subscription service is required to access certain content such as multiplayer interaction. For example, Microsoft's Xbox -platform requires a paid subscription to access multiplayer content, but this is a revenue stream for the platform provider, not the game publishers. EA's Origin platform also offers a two-tiered subscription option, with the more expensive tier offering unlimited access to almost all of EA's titles, including new releases and most DLC (Dillet, 2018).

DLC, or downloadable content, are generally additional features or content that can be purchased separately from a core offering (Luton, 2013). This allows for extensive customization of the offering, allowing each player to purchase only the parts to a game which they believe they will enjoy. The introduction of DLC, as the name suggests, is largely due to the prevalence of high-speed internet, negating the necessity of purchasing digital content on physical media such as CDs or DVDs.

Microtransactions or **virtual goods** are commonly small transactions where the user may purchase in-game objects to customize the game experience. As the name implies, microtransactions or MTX refer to small in-game purchases ranging from tens of cents to a few dollars or euros. The content purchased with these microtransactions are usually of minimal impact, often providing only cosmetic changes to a game (for instance, a new hat for the player avatar) or small benefits to in-game mechanics (such as an amount of in-game currencies or the use of limited numbers of in-game boosts.) This potential for repeatability combined with the small monetary value of each individual purchase makes microtransactions a lucrative revenue stream utilised by a large and growing percentage of games. Virtual goods are often gated behind **virtual currencies,** which must be purchased to be used within an in-game store. As virtual currencies can generally only be used to buy items from within the game market, it is important to note that the end users are essentially buying said items, with the virtual currencies only acting as a medium of exchange and a way for the provider to enhance sales (Luton, 2013).

A special subset of microtransactions are **loot boxes**, often sold under various brand names. These digital transactions generally provide the player with access to one or more permanent or consumable in-game boosts, cosmetic enhancements or similar. The defining aspect of loot boxes are their unpredictability – a player in most cases cannot know beforehand what will be received, which has led to accusations of gambling (Macey & Hamari, 2019). In some cases where an aftermarket for the items receivable from loot boxes exists, the possibility of monetary gain is quite possible. This has led to several governments opposing or intending to regulate the sale of loot boxes.

Season passes and "battle passes" are one-off or recurring payments required to access portions of a game's content. The core version of the game may be accessible as a packaged product or for free, while the premium upgrade grants access to additional content. For example, so-called "season passes" are increasingly common and usually grant access to most or all upcoming DLC for the duration of the season or even for the game's lifetime. "Battle passes" grant tiered access to in-game virtual goods based on in-game success and playtime. These passes can be found in both F2P and P2P offerings.

Advertising is most common in mobile games, where consumers are distinctly less willing to pay for gaming content (Sifa et al., 2015). Commonly, advertisements are shown overlaying the gaming content or within in-game menus. Advertising is often combined with a freemium business model, where purchasing certain upgrades to the game will remove the advertisements. Within PC and console games, advertisements are most prevalent in browser-based games and within the platforms. Publishers may advertise their other titles in menus or within launcher software such as Steam or Origin, but advertisements that overlap with gameplay content are rare to non-existent for full-fledged PC and console games.

Companies are increasingly interested in revenue models that allow for recurring revenue to offset the traditional seasonality of the industry – it is common for gaming companies to make almost half of their yearly revenue from Christmas season sales alone. Recurring revenues allow for constant monetisation to offset seasonality of retail and digital package sales and to cover recurring costs for maintaining servers for multiplayer play and delivery of updates, as well as continued post-publication development that has become the norm within the industry.

5.4 Repeatability

In this study a revenue stream will be considered repeatable if it is meaningful or desirable from the player's point of view to repeatedly spend money on that particular revenue stream. For example, it is unlikely to be meaningful for the same person to have multiple licenses to a game (indeed this is often explicitly prohibited), or outright impossible for the player to purchase several copies of the same season or battle pass on the same account. It may be meaningful for a player to repeatedly purchase virtual goods, such as consumables and in-game currency, or different outfits for the player avatar.

5.5 Interactions with game mechanics

Sicart (2008) defines game mechanics as follows:

"game mechanics are methods invoked by agents, designed for interaction with the game state."

Järvinen (2008) provides a more goal-oriented definition:

"The means that the game system affords its players to pursue the goals it states in the rule set."

For the purposes of this thesis, game mechanics are considered to be player actions taken within the game in pursuance of the game goals. This definition is offered solely in the context of evaluating whether revenue streams interact with the actions available to the player to achieve goals.

Game mechanics can further be divided in to core or primary and secondary mechanics. The primary mechanic or core loop is the essential activity that players perform repeatedly, usually to progress toward a goal (Luton, 2013). For example, the core loop of Tetris is to align the allotted piece to form a solid row to score points.

Secondary mechanics are mechanics which aid or ease the players progress and are available only occasionally or when combined with a primary or core mechanic. Examples of secondary mechanics are NPC vendors and stores in RPGs, or the ability to store a certain piece for future use in certain versions of Tetris.

A revenue stream is considered to affect game mechanics when it interacts with any mechanics in the game. Non-interacting examples are purely cosmetic virtual goods, which may alter the appearance of the player avatar or the gaming world, but in no way alter any

primary or secondary mechanics of the game. Interacting examples are virtual goods that remove hindrances, reset or alter timers, grant additional attempts (i.e. lives) or provide the player with more powerful tools to interact with any mechanics (e.g. providing the player with better weapons or faster move-speed).

These definitions are offered purely in the context of this study – academic research in to defining and formalizing game mechanics and its components is extensive and detailed, but ultimately unnecessary for the purposes of this study. (See Sicart (2008), Järvinen (2008))

In this study, I will identify whether a particular revenue stream affects game mechanics, if so, how, and to what extent. More broadly, I will review whether players are afforded clear advantages (i.e. whether there is any direct correlation with money spent and in-game success), and if possible, what portion of the revenue model relies on sales of such offerings.

5.6 Player types and motivations

Identifying player types and differentiating offerings is an important tool for building demand for games (Hamari & Tuunanen, 2014). To differentiate a game offering, it is necessary to first form a picture of the potential audience and the factors which draw people to play games. In this study, I will utilise existing typologies and attempt to identify which types are the primary target of the case games in general and the individual revenue streams specifically.

Bartle (1996) described a taxonomy for players participating in multi-user dungeons (MUDs), an early form of co-operative and rivalrous online gaming. He identified four player types and assigned each a corresponding suit from conventional playing cards, as follows:

1. Achievers or Diamonds
2. Explorers or Spades
3. Socialisers or Hearts
4. Killers or Clubs

Achievers focus on game-related goals, for example achieving a high score or accumulating large amounts of in-game treasure or currency.

Explorers are mostly interested in exploring and interacting with the game world, for example by unlocking all progress-related content and experimenting with game mechanics. This may include finding bugs and exploits within the game.

Socialisers play games as a facilitator for social interaction and self-expression, and focus mostly on aspects of the games that include these facets. Actual gameplay achievements are secondary to the social component of playing.

Killers seek to interact with other players using game mechanics to best others, cause distress or in some cases to aid others. The name is indicative of the stereotypical approach, which "involves acquiring some weapon and applying it enthusiastically to the persona of another player in the game world." (Bartle, 1996)

Hamari & Tuunanen (2014) in a broad meta-study found that the Bartle types are still a valid way of identifying motivations of play and player types. They further argue that the types should rather be seen as *archetypes* that exist on a scale, as represented in figure 2:

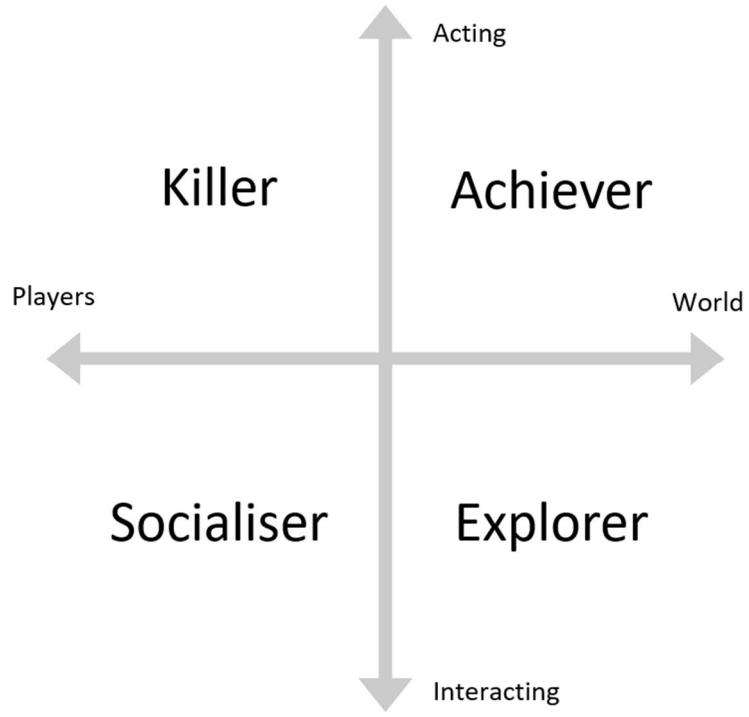

Figure 2

The axes of the diagram represent the degree to which the player wishes to interact with others or the environment, or act upon them or it; and whether the player wishes to act (or impose) upon, or interact with the players or the in-game environment, or "world."

Hamari & Tuunanen (2014) in the same meta-study identified five key dimensions for motivations of play:

1. Achievement
2. Exploration
3. Sociability
4. Domination
5. Immersion

The first four correspond directly with Bartle's archetypes. **Immersion** refers to the player's wish to be extremely engaged and even committed to the game, it's world and potentially other participants.

Some of these dimensions and player archetypes can be seen to directly be directly addressed by certain purchase motivators as outlined in chapter 4.2.1. The **socializers** are directly motivated by **social interaction** and are more likely to spend money on features and products that enable sociability. **Killers** and **achievers** can be motivated by **competition** to spend money to gain an edge over rivals or competitors. **Explorers** may be motivated by **unobstructed play**, so that they may keep probing the game.

The only motivator identified by Hamari et al. (2017) that is not clearly linked to player types or dimension of motivation is **economic rationale**, which is somewhat external to the characteristics of the game. Value perceptions can naturally be driven by appealing to the dimensions of motivation and player typology, but perception of value is not specific to any one of them.

Luton (2013) brings together the player types and different forms of in-app purchases in F2P games specifically in four categories:

Content is durable and appeals mainly to explorers, and refers specifically to content-driven DLC, which adds more elements to the game world.

Convenience is consumable and appeals mainly to achievers, referring to offerings where hindrances are removed, timers are sped up or eliminated, or the player is provided another way of progressing rapidly in the game in exchange for payment.

Competitive Advantage can be consumable or durable and appeals mainly to killers, providing the player with a clear edge over other players or, less frequently, the game itself.

Customization is durable yet usually highly repeatable and appeals mainly to socializers, referring to anything that can be construed as creative expression, such as customization of the in-game avatar with purchasable pieces of clothing or pets.

This classification is a useful starting point for evaluating revenue streams, although the permanence of the purchases and their appeal to certain player types are to be considered generalizations.

5.7 The framework

Combining the characteristics described above, we arrive at a usable framework for analysing individual revenue streams. First, I will identify each individual revenue stream a case game utilises and then:

1. assess how it is best described from the revenue stream types listed earlier
2. whether it is repeatable
3. how it interacts with game mechanics

I will then attempt to match the revenue stream to player types and dimensions of motivations for play, using the player typology and motivation dimensions above (Bartle, 1996, Hamari & Tuunanen 2014, Hamari et al. 2017) as well as Luton's (2013) categorization. The variables to be considered for each revenue stream are summarized below:

- Revenue stream type
- Category (Luton, 2013)
- Player types and motivations (Bartle, 1996 and Hamari & Tuunanen, 2014)
- Repeatability
- Game mechanic interactions
- Purchase motivators (Hamari, 2017)

Once a clear picture of the individual revenue streams is formed, I will analyse the revenue model as a whole to answer the core research question: how are the games monetised? I will also identify, where possible, the major players within the value chain, to see who benefits from this monetisation.

6. Case study

In this chapter a comparative case study of 3 digital games with sufficiently different revenue models is conducted, examining in particular the revenue streams employed by the case games, how game mechanics are utilised to empower these revenue models, and how the choice of revenue model affects player retention and network effects.

6.1 Case selection

The goal of a case study is to analyse a "How?" question in a contemporary context (Yin, 2018). To study how games for PC and consoles are monetised, I will examine 3 games that are currently on the market and have an active player base. Selecting the cases to be studied naturally also defines the agenda of the entire study (Seawright & Gerring, 2008). My agenda is to provide an overview of revenue generation methods used in PC and console games, and secondarily to find if the selected cases provide insight in to their performance as mentioned above.

To study a phenomenon, the best insight is usually found from cases that lie beyond the established norm, or that have identifiable distinctions from the mainstream (Seawright & Gerring, 2008). Identifying outliers naturally requires that we identify the standard or median case, which is not simple in the fast-evolving video games market. For the purposes of this study, we will establish the direct sales only -model as one standard case, and therefore strive to select cases with revenue models that deviate from this standard case. This is not to preclude games that require an initial investment, only to rule out games that only sell the game offering as a packaged product and utilise few or no other means of monetisation.

Selecting cases that lie outside this definition requires knowledge of the potential sample set (Yin, 2018). Random selection of a small number of cases from a large potential set can yield very unpredictable and unrepresentative results (Seawright & Gerring, 2008). Information based case selection allows the researcher to pick cases that he believes will yield insight, and to apply his extant knowledge to selecting cases. I have a long range of experience as a PC and console game consumer, with specific knowledge on how some of my favoured games are monetised. I am intentionally allowing this knowledge to bias my case selections so that I am at least somewhat familiar with the case games that I will select. To further guide this study I have chosen a game I am very familiar with to serve as the first and pilot (Yin, 2018) case.

To form a broad picture of the revenue models used by different games, 3 games from different genres, using differing business models are selected. The first and pilot case is a F2P -game utilising revenue streams typical for the F2P model, while offering all of the game content for free and without providing significant advantages to players.

The second case is a P2P single-player game with a focus on content. A purely narrative driven single-player game was deemed too obvious a choice, due to the fact that these games commonly operate on the same revenue models as traditional publishing media (Komorowski & al., 2016). Instead, we choose a city simulator game, Cities: Skylines, with open-ended gameplay (no ultimate victory condition exists), an established presence in the market and a wide range of DLC available.

Finally, we consider a directly competitive multiplayer P2P game that utilises multiple streams of revenue, including the new season pass model and other microtransactions reminiscent of F2P offerings. Comparing this game, PlayerUnkown's Battlegrounds, to both an F2P offering and a fairly standard modern P2P single player game will hopefully illustrate some of the major differences in the ways that games are monetised.

6.2 Pilot Case: Path of Exile

The first case I will examine is Grinding Gear Games' (GGG) sole offering, Path of Exile. Path of Exile is an action-oriented role-playing game or ARPG. The player controls a character in an isometric environment (a 2-dimensional representation of a 3-dimensional space), with the core gameplay loop of slaying monsters for experience points and loot (in-game items), while progressing the story. Player's may choose from a total of seven character-classes which affect the characters choice of offensive and defensive traits.

Path of Exile is played in a multiplayer-native environment and requires an internet connection to game servers to be playable. The game is mainly played as a PvE -game either alone or with a party of up to six players. Although a directly competitive PvP game mode does exist, the game is primarily played in an indirectly competitive fashion, with committed players racing to be the first to hit the level cap of 100 when new leagues start, or to be the first to achieve a certain milestone such as defeating one of the many notoriously difficult encounters the game offers. As the same characters can be used for both solo and group play and the game's content is geared towards solo players moving between solo play and

cooperative play is practically trivial, requiring a player only to invite another player using the in-game social system. For players who value personal achievement, separate leagues where party play and trading with other players is disabled are offered – these are called solo self-found or SSF leagues. They operate within the same parameters as their parent leagues apart from the possible social aspects. The game also offers "standard" and "hardcore" versions of both the temporary leagues and the base game. In "hardcore" leagues, death of the in-game character is permanent and the character cannot posthumously access that league.

Path of Exile began as small independent project and announced in September 2010, closely followed by alpha, closed and open beta releases, before being officially released in October 2013. From the onset, the developers (especially lead developer and CEO of Grinding Gear Games, Chris Wilson) emphasised the "ethical micro-transactions," which meant that all the playable content in the game was released for free, and players were only charged for cosmetic items and in-game storage space. (Nutt, 2014)

At the time of launch, this was a relatively novel approach to monetising a free game. Nevertheless, Path of Exile raised $2.2 million by the time of launch from supporter packs, a form of crowdsourced funding arranged independently by the company.

Path of Exile was selected as the first and pilot case due my broad personal knowledge of the game and the cosmetics-focused, but not exclusive, revenue model. Being a fairly successful and long-running game with a constantly growing player-base developed and published by a previously unestablished company within the market, it makes for an interesting specimen in the free-to-play sphere. Due to the game being the company's sole offering disambiguation between the company and the game is unnecessary.

6.2.1 Value chain

Path of Exile is both developed and published by Grinding Gear Games of Auckland, New Zealand. The company also offers distribution and retail options on its own website, but a large portion of distribution and retail services are provided on Valve's Steam-platform (estimated by GGG CEO Chris Wilson to be about 50% of the player-base). The game is currently available for Microsoft Windows and Xbox as well as Sony's Playstation 4, in most major markets around the world. Chris Wilson (2019) has stated that the company has developed most of the game development tools as well as the core game-engine in-house.

On May 21st, 2018, it was announced that Tencent, a large Chinese gaming corporation, had purchased a controlling stake in the company. According to Grinding Gear Games, it continues to operate as an independent company with creative and operational independence and only financial reporting obligations to Tencent. (Wilson, 2018)

6.2.2 Leagues and content expansions

Path of Exile follows a roughly quarterly development cycle, where new content is added every quarter in the form of a new challenge league and integration of previous league mechanics to the continuous standard leagues. Challenge leagues are temporary events where players must start the game from the beginning, with no in-game items or previous characters being accessible within that league. Each league introduces a new mechanic that is unavailable in the core game while the league is running. This method provides GGG with the opportunity to test new game mechanics in a fairly controlled manner, while providing players with an incentive to return to the game to experience new content. The fact that players start from scratch creates indirect competition via in-game leader boards and helps keep players engaged with the game. Each league is also presented with a new set of supporter packs, as explained in more detail in the following subchapter.

6.2.3 Revenue streams

Path of Exile is a free-to-play game, with all game content being available to consumers free of charge. Revenues are generated by selling cosmetic virtual goods and account-wide features. Both cosmetic items and account features are gated behind a virtual currency called "points." These points are only available through purchases and cannot be earned in-game. Likewise, the complex in-game currency system is isolated from real-world spending – no in-game currency is offered for sale by the developer and third-party purchases are explicitly prohibited in the Path of Exile terms of use section 7h (n.d.).

Points can be purchased separately in packs of 50 for $5, 100 for $10 or 200 for $20, USD at the time of writing, for a conversion rate of 1 point = $0.1 USD. Additionally, so-called "supporter packs" are available on a changing basis linked to the development cycle of the game. Supporter packs range in price from $30 to $480 and include a variety of cosmetic virtual goods as well as an amount of points equal to the value of the supporter pack minus 50 points for the packs up to $100, and at equal value for packs above that. The supporter packs from $160 and up also include physical items (clothing and signed art). Additionally, a "First Blood" pack is available for $20 on a one-time basis (one purchase per account), and contains

200 points, one stash tab and one weapon effect. These packages are clearly an example of price bundling as defined by Ojala (2014).

The table below shows all the possible purchases available to a player using real-world currency. All of these purchases bar the “First Blood” pack are repeatable, and upgrades to higher-tier supporter packs within the same series are possible by contacting customer support.

Availability	Name	Price	Points	IG items	NG items	Physical items
	"50"	$5,00	50	0	0	0
	"100"	$10,00	100	0	0	0
	"200"	$20,00	200	0	0	0
One-off	First Blood	$20,00	200	2	0	0
League	Sunstone	$30,00	250	3	2	0
League	Sunspire	$60,00	550	5	2	0
League	Doomcrow	$30,00	250	3	2	0
League	Doomguard	$60,00	550	5	2	0
Core	Pitfighter	$60,00	550	6	2	0
Core	Assassin	$100,00	950	12	2	0
Core	Vanguard	$160,00	1600	18	2	1
Core	Empyrean	$240,00	2400	25	2	2
Core	Crucible	$480,00	4800	32	2	3

Source: Pathofexile.com/purchase, Retrieved April 3, 2019

The supporter packs marked “league” are on offer for the duration of the current quarterly patch and associated challenge league, most likely until June 2019. The “core” packs are available for the duration of the current major version, most likely until some time 2020. The columns “IG items” and “NG items” represent in-game virtual goods and external virtual goods respectively, the latter consisting only of a forum supporter title respective to the supporter pack name (visible in the game forums at pathofexile.com/forum) and a digital audio copy of the game soundtrack.

Although this is an exhaustive list of ways to spend money on Path of Exile, it provides a poor representation of what customers are actually buying. To form a clearer picture, we must look at what specifically can be purchased using these points.

Offerings on the website and in-game store can be classed in to three major classes based on functionality:

1. Cosmetic
2. Utility
3. Social utility

The first class consists of a vast array of cosmetic virtual goods available to the player. These include customization of the player avatars clothing (boots, gloves, helmet, helmet attachment, torso, torso attachment, up to 2 pets and various skill effects), customization of the players environment (town portal effect, hideout decorations) and social interaction appearance (player portrait border). Cosmetic virtual goods have no inherent functionality and do not interface with game mechanics in any way.

The second class consists of virtual goods with clear in-game utility. These are limited to "stash tabs" that represent storage space within the game. Stash tabs are account-wide and come in various forms. The player starts with 4 "normal" stash tabs, and can purchase an unlimited amount of normal, "premium" and specialized stash tabs. Premium and specialized stash tabs have additional functionality, including enabling API-connections to facilitate trading with other players. Specialized tabs generally hold a very large amount of specific item classes (e.g. in-game currency items or maps). Additionally, a player may purchase further character slots in addition to the 24 provided for free.

The third class consists of tools for social utility. The default social grouping in Path of Exile is a "guild." A guild has 30 slots for members by default, but this can be increased by buying guild slots in packs of 10 slots. A guild can also have a shared in-game item "stash," if the guild leader purchases "Premium Guild Stash Tabs." Guild stashes have permission control functionality, enabling the guild leaders to control access (view/insert/take).

Finally, Path of Exile has a way for users who spend significant amounts of money to inject content in to the game, under the guidance of the developers. When the game was still in beta, major contributors could create custom unique items that would then be available in-game. Although this possibility is no longer offered, many user-created unique items are still in the game. Currently, players can spend $660 (the price has varied in the past, with a sum of $1100 quoted previously) to be given the opportunity to design a "divination card," a class of in-game item sets of which can be traded for another in-game item as specified on the card

(players also receive 6600 points with the purchase). Players inform the developers of the item they wish to have added and the general theme of the card, while developers and artists create the artwork and create drop-restrictions so that the card will not have extreme effects to the in-game economy.

A thorough compilation of available in-game purchases per category is available in appendix A.

The first class of offerings are fairly clear cut in terms of their target players and motivations. Customizing a character is a form of self-expression and vanity. In terms of Bartle's typology, customization appeals most directly to socializers. Path of Exile is primarily a single-player game, where a given player's character can only be seen by others for a very limited time in the common world areas where players begin a play-session. Most of the time, the only person to witness a customized character is the player himself. Where Bartle's typology offers no other clear answers, Hamari & Tuunanen's dimensions motivation can offer additional insight. Customizing an avatar to suit one's own preferences or perceptions has a clear impact on immersion – how convincing the escapist fantasy is for the player controlling the avatar, as well as how representative the avatar is of qualities important to the player. This approach would seem to better explain the popularity of cosmetic microtransactions in a single-player oriented game.

In addition to cosmetic virtual goods available for purchase directly in the in-game store, the game offers randomized loot boxes for sale. For a price of 30 points the player may purchase a box which contains one random item from a known set of items otherwise unavailable at the time of purchase. Generally, when a new series of loot box is released the contents of the previous series are made available to purchase individually at prices ranging from 30, the original price of the loot box to several hundred points. Knowledge of this creates an opportunity for players to attempt to "win" items that are perceived to be of higher value, making these loot boxes in essence a form of gambling, albeit with no in-game earning opportunities as cosmetic items are untradeable.

The second class of utility microtransactions caters to a wider array of player types. The utility of more storage space for currency, other consumables such as maps and equippable items can enable and empower players to achieve a wide variety of goals, be it beating difficult in-game encounters (achievers), exploring all the available content by, for example,

completing each available map (explorers) or by ensuring that a player has all the gear required to beat other players in direct PvP -matches or in indirect competition for the first character to reach level 100.

The scarcity of storage space creates a frustration when players are unable to store all the items they wish, the sale of additional storage space in several different varieties provides a solution for these frustrations, while the varieties of stash tabs with different costs create a value perception for the player. For example, the standard stash tab is 12 x 12 grid spaces in size, for a total storage capacity of 144 spaces. Items come in sizes ranging from 1x1 to 2x4 and cannot be rotated, creating a 2-dimensional packing problem for the user. Specialized stash tabs allow users to store more of certain types of items. For example, maps – items which permit access to end-game content – are items with a size of 1x1. The specialized map stash tab can hold 72 of each map type, of which there are 167, for a total capacity of 12024 maps, for the cost of 5 standard or 3.75 premium tabs.

Social utility microtransactions cater most obviously to socializers, although they have clear utility for other types as well. Especially achievers will benefit from the support of widely-available companions and simplified item trading that the guild mechanics enable – reaching higher experience levels is generally faster in a group as an explicit bonus to earned experience is granted for groups, in addition to the implicit benefits of specialization and mutual support.

The most expensive option allows the user to have a direct effect on the game and other players within it. Purchasing a divination card represents a large investment in comparison to other offerings within the game or games in general ($660 would buy 11 copies of a AAA-game at the industry-standard price point of $60.) The most likely motivators for such an investment represent a will to support a favoured game or the attractiveness of the bundle which includes a proportionate amount of points.

6.2.4 Analysis

Path of Exile's revenue model is a fairly popular variant of the F2P-model, focused on offering the users visual customization and utility without compromising the core idea that players have equal access and relative power within the game independent of their spending. Another core feature is that almost all of the microtransactions are repeatable and the general offering is extremely broad. Characters have a wide variety of slots where customizations can be equipped, each customization can mostly be used on only one character at a time, and the

range of options for each slot is very broad. New content is added regularly – in-game content including new mechanics and storyline elements are added quarterly, while customization options are added on an ongoing basis. The first acts as a tool to keep players engaged with the game, while the latter continuously offers new spending opportunities.

This presents GGG with the opportunity to reap extensive (although somewhat unpredictable) recurring revenues. Although virtual items are persistent and carried over between leagues and realms (players will have access to purchased stash tabs in every realm they have a character in), the constant introduction of new visual themes, new skills and associated cosmetic customizations and the growing number of characters a given player has (characters from past leagues are transferred to the standard realm and can be deleted manually) create pressures for players to purchase more virtual goods. Players may be unwilling to part with favoured characters or items in the standard realm even if they mainly play challenge leagues.

The quarterly release cycle is a deliberately orchestrated cadence to encourage players to return to the game to explore new content in a new context – most of the new content will only be available in the challenge leagues with a fresh in-game economy. User levels spike significantly when new leagues start, as do purchases (Wilson, 2019). Predictability in this release cycle is also important, allowing players to take a break from the game and look forward to new content once it is announced (Ibid.).

To encourage departed players to return, marketing plays an important role. The marketing message is crafted to highlight different areas of upcoming content to appeal to different player types, such as new storylines, new combat mechanics, new end-game progression and difficult end-game encounters. Some players, especially those motivated by immersion aspects look forward to new characters and storylines, while achievers and explorers will be pleased by new encounters and areas to explore. Traditional marketing through press releases and announcements on the website get picked up by gaming journalists and propagate rapidly on social media, while streaming on platforms such as twitch.tv gives potential customers glimpses of the new content played by familiar entertainers.

Path of Exile clearly targets different player types and motivations with its offering. Unfortunately, any data on sales of specific items or classes is unavailable so any quantitative analysis on the relative success of the offering classes is impossible. This revenue model, while not as stable and predictable in revenues as subscription services, provides the

developer with fairly stable recurring revenue (made somewhat predictable by the quarterly launch cycle) to offset maintenance costs for online servers as well as costs for future development, as evidenced by the continued success of the game and the growth of the developing company.

6.3 Case: Cities: Skylines

Cities: Skylines (2015) is a city building and simulation game developed by Colossal Order and published by Paradox Interactive. Cities: Skylines (C:S) was selected as a case game as an exemplar of the purely single-player game and because of its content-centric revenue model. As the game is an open-ended, single player simulator, it is classed as a non-competitive game, even though the game does contain metrics and measures (e.g. city population, crime rate, traffic flow), competition is not evident. The game is known for it's realistic (and hardware-intensive) simulation and accuracy – it has even been used as a tool for real urban planning (Nutt, 2016). It nevertheless meets the criteria of a game as it is primarily sold as entertainment and does contain milestones which can be seen as goals (Järvinen, 2009). The game entered the market to fill a void left by the latest instalment of Maxis' SimCity -series (2013), which left many critics and customers disappointed. (Dean, 2014)

C:S is a P2P -game, with the base game costing €27.99 or €36.99 depending on the version. Additional content is available, ranging from full-fledged expansions that add new mechanics to the game to smaller DLC that add some visual elements or new music. A full listing of the offerings related to C:S is shown below.

Type	Name	Price	Bundle price	
Base Game	Standared	27,99		
Base Game	Deluxe	36,99		
Expansion	Industries	14,99	17,99	(inc. Synthetic Dawn)
Expansion	Park Life	14,99	17,99	(inc. Country Road Radio)
Expansion	Green Cities	12,99		
Expansion	Mass Transit	12,99		
Expansion	Natural Disasters	14,99		
Expansion	Snowfall	12,99		
Expansion	After Dark	14,99		
Mini Expansion	Concerts	6,99		
DLC - Music	Country road radio	3,99		
DLC - Music	All that jazz	3,99		
DLC - Music	Rock city radio	3,99		
DLC - Music	Relaxation Station	3,99		
DLC - Music	Synthetic Dawn	3,99		
DLC - Mod	European Suburbia	4,99		
DLC - Mod	High-Tech Buildings	4,99		
DLC - Mod	Art Deco	4,99		

Source: https://www.paradoxplaza.com/cities-skylines/CSCS00GSK-MASTER.html, retrieved April 10, 2019
https://store.steampowered.com/app/255710/Cities_Skylines/, retrieved April 10, 2019

Table 5

In addition to the two versions of the base game, 7 non-co-dependant (i.e. a user may purchase any combination of expansions) expansions are available, in addition to more cosmetic DLC items and additional music packs, which show up as radio stations within the game. Each expansion also comes with new hats for the in-game notification system, "Chirper." In the table above, I have classified the content as follows:

1. Base Game
2. Expansion (with new content and mechanics)
3. Mini Expansion (with minor content and mechanics)
4. DLC – Music (additional music in the form of an in-game radio station)
5. DLC – Mod (community created content, both cosmetic and functional)

The price structure of these offerings gives a user a fairly broad range of options to spend money on the gaming experience. The base game has all the features and mechanics to be expected from a city simulator in the vein of Sim City (1989), including zoning, traffic,

public transport and other city services, while the expansions bring additional depth and new challenges for players to overcome in various forms and sizes. The smaller DLC mod packages contain only a set of alternative art for standard buildings in the game (such as homes or shops) and some placeable landmark buildings with some game mechanic interaction (such as attracting tourism.) Finally, the music packs offer music licensed from third parties and made available to the players while playing the game, offering a revenue stream which requires very little in-house development and overhead.

It is important to note that the expansions are not mutually co-dependant – a user may buy the latest expansion without owning the previous expansions, which is not always the case in the gaming market. This allows the customer a fair degree of customization and does not force users to spend money on unwanted features to get access to the mechanics they want. If a user wants to play in a winter setting and make sure that their citizens receive heat but do not want to be plagued by natural disasters, they can customize their own gaming experience accordingly. As a fairly complex simulator, C:S can overwhelm newcomers with its wide variety of features and variables to consider. As many DLCs add additional mechanics and variables to consider, users can "ease in" to the game by purchasing DLC only when they feel up to the additional challenge.

6.3.1 Value chain

C:S is developed by Colossal Order of Tampere, Finland and published (and initially financed (Dean, 2014)) by Paradox Interactive, of Stockholm, Sweden. The game is distributed via Steam for PC (a Steam account is required even if buying the boxed game, a fairly common practice) and as a package product for Xbox One, PlayStation 4 and Nintendo Switch. C:S runs on the Unity engine by Unity Technologies, which provides the 3d - environment.

6.3.2 Analysis

This broad offering with non-co-dependant expansions is typical for other titles from the same publisher and gives an indication of their strategy. Another title by the same publisher (which is also the developer), Crusader Kings 2 (2012) boasts a total of 64 expansions and DLC items in the Steam store, the latest having been published in November 2018.

Strategy and simulation games offer greater replayability than purely story-driven games and can therefore expect a longer lifecycle. The strategy in use for C:S and many other Paradox Interactive titles supports this view, especially as new installations of base games are released

fairly infrequently, but new content is made available periodically and in fairly great numbers.

It is difficult to link any components of the offering to certain player typologies, as the prerequisites for sociability or direct interaction are absent. There is also no real in-game world to explore or immerse ones self in. The game has sold over 6 million copies across all platforms (Cities: Skylines Celebrates, 2019) with no in-game social functions, yet the developer's CEO credits much of this success to the community surrounding it (ibid.). This community is active on forums and social media, such as the community pages on Steam or the dedicated forum on Reddit.

At first glance, it would seem that from our previously described typology, only achievers are catered for by the game's offering. Yet the strong community, publishing guides, tools and content for the game creates a clearly important social component as well. The developer has embraced the modding community – even stating the easy creation of mods as a design goal (Dean, 2014) – enabling easy installation of mods via the Steam Workshop -interface, and even creating additional paid content in conjunction with popular modders.

As of April 12, 2019, there are 179222 individual items across 58 categories available on the Steam Workshop page for Cities: Skylines, ranging from complex traffic management tools to simple cosmetic changes to in-game buildings. All of this content is available to players for free (although some specific assets may require that certain DLC be installed), but greatly expands the offering. Judging by the success of the game and the amount of mods available, this would seem to be a successful way to leverage community goodwill.

6.4 Case: PlayerUnkown's Battlegrounds

PlayerUnkown's Battlegrounds (2017), or PUBG as it is commonly referred to, is a first-person battle royale shooter, where the objective of the player or team is to be the last one(s) standing, eliminating all other competitors in a constantly shrinking playable area on an otherwise static map. The game is directly competitive and natively multiplayer, no single-player campaign or game mode is present. PUBG is available for PC via Steam, as well as Xbox and PS4. A mobile version with some differences is also available but is considered to be out of scope for this thesis.

PUBG, released December 20, 2017, is a P2P game, costing 29,99€ in Finland in April, 2019. Purchasing the game grants the player full access to all of the 4 available maps. Additional revenue sources are focused on character customization, with players being able to purchase clothing for the character and weapon skins (which alter the appearance of in-game weapons) directly from the store (or by purchasing "G-points" on XBOX or PS4), or by acquiring loot boxes and associated keys. Loot boxes can be earned by playing the game and accruing "Battle points," which can be used to purchase crates and a limited amount of customizations from the in-game store. There are multiple variants of these loot boxes with different contents, and with some requiring a key purchased with real-world money to be opened. A full list of the items on sale is shown below:

Type	Name	EUR Price	USD Price
Base Game	Standard	29,99 €	
Bundle	Season pass Bundle	34,99 €	
Season Pass	Survivor Pass 3: Wild Card	9,99 €	
Shortcut	5 levels	4,44 €	4,99
Shortcut	20 levels	16,02 €	17,99
Shortcut	30 levels	22,26 €	24,99
Account	Name Change	8,90 €	9,99
Key	4 variants	2,23 €	2,5
Cosmetic	Lowest	2,66 €	2,99
	Highest	4,44 €	4,99

Source: Steam, PlayerUnkown's Battlegrounds in-game store, retrieved April 11, 2019

Table 6

In addition to direct sales of cosmetic virtual items and loot boxes and keys, the game also features a two-tiered "survivor pass" system. All players are granted "survival points" (separate from the aforementioned "battle points") which are accrued in a linear level progression. The level progression has two tiers of rewards, with the lower tier awarding cosmetic virtual goods or in-game points for all players every few levels, and the higher tier awarding separate virtual goods for those players who have opted to purchase the survivor pass for €9.99. As of writing this, the game was also available to be purchased bundled with the survivor pass for €34.99. In-game purchases are priced in USD and converted to local currency at checkout.

Points are earned in small amounts through gameplay, but the largest source for points lie in so-called missions. These missions include tasks such as using specific weapons or items or performing certain actions and are mostly more specific than the stated goal of the core game – to be the last one surviving. 3 daily missions and 4 weekly missions are available for free, with those who have purchased the survival pass getting an additional 6 weekly missions as well as some fixed missions (which are available for the duration of the season.) The purpose of this meta-game is of course to further engage players, retaining a broad enough player-base to keep the game running and drive further sales.

6.4.1 Value chain

PUBG is developed by PUBG Corporation of Seoul, South Korea and published by the same corporation for PC and PS3, by Microsoft Studios for XBOX One, and Tencent Games for the mobile Android and iOS versions. Distribution and retail is handled on Steam for PC and via respective platform stores for Xbox One, Playstation 4, iOS and Android. PUBG runs on Unreal Engine 4 developed by Epic Games.

6.4.2 Analysis

PUBG is an example of the purely multiplayer FPS -genre, and more specifically the battle royale -format that is popular today. The game has an initial cost, but once the purchase is made all the gameplay-related content is immediately playable. The game mechanics would seem mostly to cater to killers, as the main goal is to defeat all other enemies and remain the last one standing, but the season pass introduces mechanics that can also appeal to achievers or socialisers.

The most interesting feature of PUBG's revenue model is the season pass. A similar feature has been implemented in arguably PUBG's largest competitor, Fortnite: Battle Royale

(2017), as well as other games of completely separate genres, such as Rocket League (2015). Fortnite: Battle Royale is an F2P game in the battle royale shooter genre, while Rocket League is a P2P vehicular soccer game.

The season pass system essentially creates a meta-game within the core game itself, allowing users to progress and achieve goals that are more specific and may lie outside of the normal victory conditions. In addition to the initial cost to upgrade the pass, players can directly purchase additional levels for real-world currency. Although the mainly cosmetic items available as rewards have minimal game-impact, this can be seen by players to be a pay-to-win approach to the metagame, raising questions about progression through the levels by gameplay only.

7. Findings

Video games can be monetised in a broad variety of ways. Directly selling content to consumers using methods from other publishing industries may not be the best strategy. Although the case study revealed several different strategies for monetising video games, no clear best practices or commonalities presented themselves in the light of our framework. All the case games exhibited revenue streams beyond initial package sales, and both multiplayer games exhibited at least somewhat repeatable in-app sales. No 3rd party advertisements or subscription fees were present in this limited selection, while some form of in-game advertising was present in each game. Loot boxes were present in both multiplayer games, while only one game offered a season pass. The revenue streams identified are shown in table 7 below:

Revenue stream	PoE	C:S	PUBG
Package or Online sales	No	Yes	Yes
Subscriptions	No	No	No
Content DLC	No	Yes	No
Season Pass	No	No	Yes
Virtual goods	Yes	No	Yes
Virtual currencies	Yes	No	Yes
Loot Boxes	Yes	No	Yes
3rd Party Advertising	No	No	No

Table 7

Out of all case games, the categories of in-app-purchases as described by Luton (2013) that are available are convenience, customization and content. Sales of competitive advantages were not found, and content sales were only present in the single-player offering. Instead, the main focus for the multiplayer games was customization content. This cosmetic content would mainly appeal to socializers as laid out by Bartle (1996) and Hamari & Tuunanen (2014), or more generally to self-expression or vanity.

The least targeted player types in this case study were killers, followed by achievers. Fears of creating an appearance of excessive monetisation – or pay-to-win – would seem to limit the amount of in-game advantages catering to these stereotypes that developers are willing to sell. Cosmetic content was widely and repeatably available in both multiplayer games. Repeatability can be achieved by making the virtual goods rivalrous (where players can have

multiple characters) and by constantly adding new offerings. The latter can also be used to create a sense of exclusivity by marketing items only for short periods of time and then withdrawing them from sale, creating a "fear of missing out."

In the end, single revenue streams are difficult to authoritatively match to certain player types or purchase motivations, as most games will seek to target a broad audience. Indeed it would seem that the player typologies are a more useful tool for examining games, and how they are played, as a whole, rather than focusing on revenue generation.

The major finding is that all games, even purely single-player ones, can and should leverage the player community beyond simple word-of-mouth marketing. Engaging with and even enlisting the community to better your product (e.g. by way of mods) can have a positive impact on the longevity of the product, which combined with strategies for recurring revenue generation can lead to much greater lifetime values than simple publishing business models. Applying these strategies to narrative-focused single-player games can be difficult, as stories tend to naturally come with endings, making further engagement with players a challenge, but building on the existing product (i.e. releasing further narrative DLC or even further game-modes) is possible and ultimately cheaper than developing a brand-new game.

Modern games tend to exhibit clear network effects, where the game is more appealing to other players if it has a large player-base. All of the case games in this thesis showcased strategies to leverage the player-base and network effects to engage players further and improve the longevity of the product. One of the games studied provides no social features built-in to the game, but utilises tools provided by the distribution platform. It is beneficial for games developers to be able to reap revenues from a successful title for as long as possible, as creating additional content for existing games is cheaper and easier than creating a new title.

8. Conclusions

This thesis started as a study in to the revenue generating mechanisms used by PC and console video games but revealed something broader about the industry.

The free-to-play concept has brought new ways of monetising video games to the forefront, and these techniques should not be overlooked by those offering paid titles. Video games should best be approached as long-running projects, not as one-off publications with diminishing value. Successfully leveraging communities and networks can yield substantial, recurring long-term revenues from a single title, with smaller costs and risks for the developer and other actors in the value chain.

Although no clear findings relating to player typologies or purchase motivators presented themselves, the largest contribution of this work is to underscore the importance of creating and managing networks and communities related to game offerings. Bartle's (1996) player typologies and their extensions (Hamari & Tuunanen, 2014) can be extremely useful tools in analysing multiplayer games, but do not lend themselves very well as tools for analysing motivations related to particular revenue streams.

Any multiplayer game requires a certain number of players to be viable, but single player games may also take steps to ensure that their customers find themselves as part of a community. Enabling and encouraging modding and asset creation can be a powerful tool for this.

Monetisation of F2P games can be tricky with the more engaged PC and console audience. Attempts of introducing mechanics from mobile games, where virtual item purchases give the players a clear advantage are poorly received by the customers. Focusing on cosmetic items and alleviations to minor inconveniences can shield a developer from accusations of greed and malice.

8.1 Main contribution

The purposefully broad research question, "How are PC and console games monetised?" cannot definitively be answered by this study, or probably any. Regardless, some useful observations were made. For multiplayer-games, continued monetisation was observed to be focused on social and self-expression aspects, more than in-game performance aspects. The detriments of the so-called "pay-to-win" phenomenon have been taken in to account at least by the developer of the games studied here.

More broadly, the social networking and community -aspects of games can play an important part, even for single-player games. Multiplayer-games are by nature that connect players to other players, and should be cognizant of network effects, but single-player games can achieve similar effects by engaging the players and community beyond simply playing the game.

8.2 Managerial implications

In the end, the video game industry is indeed unlike the rest of the traditional publishing industries. The game offering need not be static, with declining revenues as the novelty fades. Games can be constantly updated and changed, and new channels of revenues can be (carefully) introduced. Continued development of an existing game should also prove to be a cheaper investment than building a brand new offering.

The modern manager in the gaming industry has a plethora of tools available to capture and keep audiences and ensure recurring revenues from a well-made product. Tools such as early access releases allow for testing of new concepts in the marketplace, while in-game stores can provide revenues for relatively small investments when selling virtual goods. Leveraging the passion and creativity of the community to further better the product should be embraced.

8.3 Further research

This study provided only a glimpse in to the many ways in which games can be monetised, and as such has many limitations. No claims for revenue model performance can be made without a stringent quantitative study, and this broad, relativistic study cannot claim to provide an exhaustive list of monetisation mechanisms, let alone strategies. The research in to revenue streams within digital games is still fairly immature, lacking an accepted global language and categorizations. Further refining the categories and taxonomy of in-app purchases, especially focusing on PC and console games would be beneficial for further research.

An interesting path for future research into gaming revenue models would lie in performance analysis. A broad, quantitative study of revenue models and their relative performance in the market would yield much insight, but is difficult to execute on a broad base, due to the exact and granular nature of the required data, and companies' reluctance to share specific figures. Consumer research in to revenue model preferences and especially willingness-to-pay is another promising avenue, and one much easier to undertake.

Network effects are fairly well researched as it is, but further research in to the revenue generating effects of communities that have formed around games (such as Cities: Skylines) could yield interesting insight in to how such communities should be managed and interacted with.

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Appendices

Appendix A

List below retrieved from in-game shop, April 5, 2019

Sum with 1 pet and portal effect	**980**	**5485**		
Category	Low	High	Notes	*Available account-wide nonrivalrously
Helmet	40	260		
Helmet Attachment	30	200		
Torso	175	200		
Back Attachment	40	640		
Apparition	90	280		
Weapon 1 skin	90	360		
Weapon 1 effect	15	295		
Weapon 1 added effect		140	"Extra gore" only	
Weapon 2 skin	90	360		
Weapon 2 effect	15	295		
Weapon 2 added effect		140	"Extra gore" only	
Boots	50	160		
Footprints	80	175		
Gloves	60	160		
Player effect	125	420		
Pet 1	5	1100		
Pet 2	5	1100		
Social (portrait) frame*			[Supporter packs only]	
Portrait*			[Unavailable]	
Portal*	75	300		
0...n Skill effects	10	135		
Vanishing dye		50	(Rivalrous, persistent, can be applied to helmet, torso, boots, gloves, w2)	
Skin transfer	4	6	(consumable)	
Hideout		200		
Decorations	10	250		
Functional decorations (Atlas table)		190		
Mystery Box	30	30	(Contains one cosmetic item from a set list, includes character and hideout cosmetics.)	
Stash tab	25	30		

Premium stash tab	33	40
Premium upgrade		15
Premium quad stash tab		150
Currency stash tab		75
Map stash tab		150
Unique Collectiont tab		140
Essence stash tab		40
Fragment stash tab		75
Divination stash tab		50