Fortnite: The business model pattern behind the scene

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Summary: We analyse the business model pattern behind the success of the *Fortnite* game. A theoretical model is used to examine the conditions where a Freemium strategy is appropriate. We also shed light on the structure of the in-game-shop and analyse several features from a marketing perspective.

Keywords: Fortnite, business model pattern, gaming, e-Sports

Fortnite: Das Geschäftsmodellmuster des Erfolgs

Zusammenfassung: *Wir analysieren das Muster des Geschäftsmodells hinter dem Erfolg des Spiels* Fortnite. *Anhand eines theoretischen Modells werden die Bedingungen herausgearbeitet, unter denen eine Freemium-Strategie optimal ist. Wir untersuchen zudem die Struktur des In-Game-Shops und analysieren einige Merkmale aus einer Marketing-Perspektive.*

Stichworte: *Fortnite, Geschäftsmuster, gaming, e-Sports*

1 Introduction

Parents all over the world are scared of the excess gaming behavior of their children and would like to get them out of the 'Fortnite trap'.[1] Fortnite is a so-called 'Player versus Player (PvP)' game where 100 participants compete online against each other. It is part of the 'Battle Royale' genre, a survival-based game. By using a kind of parachute, players land on an island, and they then collect weapons and other materials to eliminate each other. The distribution of weapons and materials varies to some extent between matches, so that no match is alike. Hence, there exists some degree of uncertainty about where the best material can be found. The starting conditions vary from game to game. After a few minutes, a storm approaches, shrinking the playable map, so that the combat activities get more and more intense. The last person on the island will win an *'Epic Victory'*. Each match lasts about 20 minutes (Nicolaou 2019).

While the game can be downloaded and played free of charge, an in-game-shop offers a variety of uniforms ('skins'), parachutes ('gliders'), or dance moves ('emotes'[2]). Furthermore, the shop also offers the Fortnite Battle Pass. This offers 100 tiers of in-game extras

1 Not only parents are scared, in the UK even professional football players have been treated for Fortnite addiction (Brophy 2019 and Barbour/Jenkins 2019). Lorrine Marer, a behavioural specialist for the UK, argues that Fortnite is "like heroin" (Nicolaou 2019).

2 There is an intense discussion in the law literature about whether or not Fortnite violated trademarks/copyrights of dance artists. See Knopper (2018) for a newspaper article and Chander/Madhavi (2019) or Crane (2019) for an overview of the main arguments in the law literature.

to unlock over the course of a season. Rewards include everything from skins or weapon skins, emotes, or additional V-Bucks. Each tier is unlocked sequentially by eliminating opponents, opening chests, or completing specific challenges. After an item is unlocked, it is stored in the locker – a kind of virtual wardrobe – so that the gamer can change the outfit as he likes (PlayStation 2020).

In October 2019, more than 250 million players had a Fortnite account. However, given that this statistic also includes some inactive accounts, the overall number of registered accounts does not seem to be a good measure to answer the question of how many players are actually playing Fortnite. The highest number of active players in a single month was 78.3 million players, which was recorded in August 2018 (Loveridge/James 2019).[3]

Although, Fortnite is not ranked first in this measure, it leads the table with respect to revenues generated. In 2018, the game earned $2.4 billion in revenues (SuperData 2019, p. 9).[4] In addition, the market value of the game developer *Epic Games* is estimated to be around $15 billion (Perez 2019). In 2019, the largest e-Sports tournament (in terms of the prize money pool) of all time was held in Fortnite. The World Cup and its qualification tournaments had a prize money pool of $100 million USD (Perez 2019).

In this paper, we aim to shed light on the underlying business model of the Fortnite game by contrasting it with the business model patterns (BMP) outlined by Osterwalder/Pigneur (2010). We argue that several of the patterns are important to understand the tremendous success of the game.

Furthermore, we use a microeconomic model to highlight that it might be optimal for a company to set the price of the basic product – the game – equal to zero and give it away free of charge (free-to-play game). This will lead to the highest possible market share. Within this set-up, profit can be generated by selling related products.

The structure of this paper is as follows. Section 2 examines the *Free as a business model* pattern. A theoretical model is used to highlight the conditions under which a price of zero for the basic game is appropriate. We also shed light on the economic success of free-to-play games on an industry level. Section 3 highlights the structure of the in-game-shop of Fortnite and investigates, for example, the role of the virtual in-game currency (V-Bucks). Furthermore, we show that other features are important drivers of Fortnite's business model (e.g. multi-sided platforms and e-Sports activities). Section 4 summarizes all managerial implications. The last section concludes.

2 Free as a business model: A theoretical and empirical examination

2.1 How to break even when the price is zero

A very important characteristic of Fortnite is that it can be downloaded and played free of charge. This is in sharp contrast to the traditional video game market where the console

3 Fortnite can be played on all main platforms (PC/Mac, Xbox, PlayStation, iOS, Android, Nintendo Switch) so that it qualifies as a *'multi-platform'* game. All indicators (players, downloads, revenues) are related to the sum of all platforms. Fortnite can be also played across different platforms, which is called *'crossplay'* (St Leger 2020). Since the control of the avatar is more precise and faster with a PC keyboard & mouse compared to a console controller (Hernandez 2019), Fortnite offered – at least at some platforms – that gamers could opt to play only against opponents which use the same platform (Becht 2019). This secures a *level playing field*.

4 In October 2018, Goldman Sachs (2018, p. 17) estimated $ 3.6 billion in revenues for 2018 (April 2018 revenues of $ 296 million times 12 months).

(e.g. PlayStation, Xbox) and the games (in form of discs or downloads) have to be bought. Osterwalder/Pigeneur (2010, p. 88) regard *"Free"* as one of the most important business model patterns in the digital world.[5]

When the underlying product or service is provided for free – that is the price is zero – the question emerges of how a company can make a profit out of it. Osterwalder/Pigneur (2010, p. 88–107) give three answers to this question:

1. A *Multi-Sided Platform* combines two sides of a market: One side of the platform attracts users. The price is set to zero, in order to attract the largest customer base possible. The other side of the platform charges positive prices and the 'large customer base' is sold to advertisers (Osterwalder/Pigneur 2010, p. 92). For example, *Google* allows the public to use its search engine free of charge but sells its customer base to companies, which pay for advertisements.
2. *Bait & Hook* describes a business model pattern where an initial offer is made at a very low price or even given away for free. However, this initial good can only be consumed by buying some related products or services which complement the initial product or which represent consumables. Therefore, a one-time giveaway might lead to permanent cash flow stream in the future (Osterwalder/Pigneur 2010, p. 104). The most prominent examples are razors & blades or printers & ink cartridges. The razor (printer) is given away for free or at least for a very low price. The profit is generated via the blades (ink).[6]
3. A *Freemium* business model combines a free basic service with premium add-ons. A large fraction of the market never becomes the user of the premium service and never pays for the product. This user group is 'subsidized' by a smaller group of premium users who subscribe to the premium version. This business model pattern can be established where marginal cost is relatively low so that the cost does not vary with the size of the basic customer group (Osterwalder/Pigneur 2010, p. 96). For example, the majority of users does not pay for the basic service provided by *Skype*. However, some users pay for premium products, such as a flatrate to call (telephone) landlines (Andersen 2008).

The Freemium model is important for Fortnite because most of the profit is generated via the in-game-shop by selling the *Battle Pass* and *skins*. Skins can be regarded as a kind of uniform that the virtual player can wear. Liao et al. (2019) examine how avatar attractiveness and customisation impact online gamers' flow and loyalty. Bae et al. (2019, p. 1066) investigate the relationship between game items and mood management. Their study highlights *"the impact of interaction between two negative mood states (stress vs boredom) and types of game items (functional vs decorative) on the purchasing intention of game items."* In Fortnite, the uniform does not influence the playing skills or success within the game. Hence, it is just a *decorative* item. Given that this aspect is a very important driver of the financial success, we will model it in the next subsection.

5 In their seminal book, they cover five different business model (BM) patterns: 1. Unbundling BM, 2. Long Tail, 3. Multi-Sided Platforms, 4. FREE as a BM, and 5. Open BM.

6 Picker (2011) analyses the development of the *razor & blade* market by focusing on the history of the *Gillette* company. He is to some extent critical about whether the *bait & hook* model is able to explain the development of the market in its early stages.

2.2 A theoretical perspective: Games and skins

A game developer sells a video game (g), as well as additional content in an in-game-shop (the skins, s). The demand for games is given by

$$q_g = 1 - p_g \tag{1}$$

and only depends on the price of the game (p_g). There is a continuum of gamers between zero and one. The prohibitive price is normalised to 1.

The demand for an in-game item – a skin – is influenced by its price (p_s) and also by the quantity of games sold (q_g). The parameter $i \in [0,1]$ indicates positive network effects. The larger the number of games sold, the larger the potential demand for the in-game-shop items:

$$q_s = 1 - p_s + i \cdot q_g \tag{2}$$

Using the variable c for the variable cost and f for the fix cost, the profit function is given by

$$\Pi = p_g \cdot q_g + p_s \cdot q_s - c \cdot q_s - c \cdot q_g - f \tag{3}$$

Fix cost will only influence the *level* of profit but does not influence the optimal quantities or prices. Therefore, we set the fix cost equal to zero ($f = 0$). Because a skin is a virtual product, variable cost are relatively low. Hence, the assumption of $c = 0$ also seems to be justified.[7] By solving (1) and (2) for the two prices, we get: $p_g = 1 - q_g$ and $p_s = 1 - q_s + i \cdot q_g$. Inserting the two prices into the profit function, we get:

$$\Pi = (1 - q_g) \cdot q_g + (1 - q_s + i \cdot q_g) \cdot q_s \tag{4}$$

The two first order conditions are:

$$\frac{\partial \Pi}{\partial q_g} = 1 - 2 \cdot q_g + i \cdot q_s = 0 \;\Rightarrow\; 2 \cdot q_g - i \cdot q_s = 1 \tag{5}$$

$$\frac{\partial \Pi}{\partial q_s} = 1 - 2 \cdot q_s + i \cdot q_g = 0 \;\Rightarrow\; -i \cdot q_g + 2 \cdot q_s = 1 \tag{6}$$

The optimal price for the game is (as derived in the Appendix) given by

$$p_g^* = \frac{1 - i}{2 - i}, \tag{7}$$

while the optimal price for the skin is given by

$$p_s^* = \frac{1}{2 - i}\,. \tag{8}$$

7 All of our results still hold if we relax these assumptions and introduce positive fix or variable cost. The results are available upon request.

Figure 1: Optimal game and skin prices in dependence of i

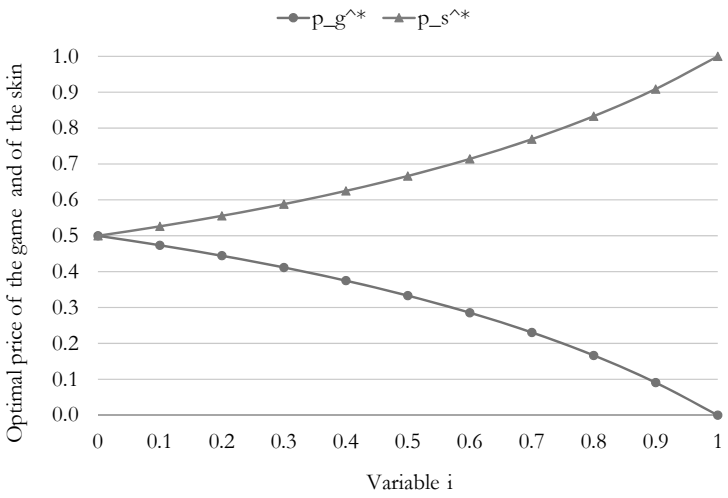


Figure 1 illustrates the relationship between i and the optimal prices. It becomes clear that

- The optimal price for the game (p_g^*) is always lower than the optimal price of the skin (p_s^*) (with an exception of the scenario where $i = 0$ where the prices are the same),
- The price of the game is the lower the larger i,
- The price of the skin is the higher the larger i,
- If $i = 1$, then the optimal price of the game is zero.

The scenario of $i = 1$ is the most interesting because the game is given away free of charge $(p_g^* = 0)$. This creates the largest customer base possible $(q_g^* = 1)$. *'Everybody is playing the game.'*

2.3 Empirical evidence for the game industry

Goldman Sachs (2018, p. 17) lists several reasons for Fortnite's success. One reason is that the game is free-to-play, which breaks the old business model of console games that have an upfront retail price of $60. Because the upfront cost is eliminated, the authors of the Goldman Sachs report believe that Fortnite *"was able to reach a far larger audience than a paid game could ever reach."* Furthermore, this business model enabled the game to appeal to younger demographics.

On the industry level, the success of the free-to-play pattern is also visible when examining the overall revenues of the gaming industry. As can be seen in Table 1, in 2018, free-to-play games had a higher financial success in terms of revenues generated. All free-to-play games on ranks 1–8 were able to generate higher revenues than the best selling premium game. The average revenue for free-to-play games ($1340 million) is more than 125 % larger than for premium games ($590 million).

Table 1: Top earnings 2018: free-to-play versus premium games

Top earning free-to-play games 2018			
Rank	Game	Developer	Revenue*
1	Fortnite	Epic Games	2400
2	Dungeon Fighter Online	Nexon	1500
3	League of Legends, Riot Games	Tencent	1400
4	Pokemon GO	Niantic	1300
5	Crossfire	Neowiz Games	1300
6	Honour of Kings	Tencent	1300
7	Fate/Grand Order	Aniplex	1200
8	Candy Crush Saga, King	Activision Blizzard	1100
9	Monster Strike	Mixi	1000
10	Clash Royale, Supercell	Tencent	900
		Average	1340

Top earning premium games 2018			
Rank	Game	Developer	Revenue*
1	PlayerUnknown's Battlegrounds	Bluehole	1028
2	FIFA 18	Electronic Arts	790
3	Grand Theft Auto V	Take-Two Interactive	628
4	Call of Duty: Black Ops 4	Activision Blizzard	612
5	Red Dead Redemption 2	Take-Two Interactive	516
6	Call of Duty: WWII	Activision Blizzard	506
7	FIFA 19	Electronic Arts	482
8	Monster Hunter: World	Capcom	467
9	Tom Clancy's Rainbow Six Siege	Ubisoft	440
10	Overwatch	Activision Blizzard	429
		Average	589.8

* Revenue in USD million.

Source: SuperData (2019, p. 9 and 11).

While premium games have an upfront price, some premium games also have an in-game-shop where special skins, materials or lootboxes are sold (Tassi 2016). For example, in '*FIFA*', the gamer can buy special packs to get access to special and famous players, which might influence player's strength (Henrik J 2019).

3 Fortnite: Some explanations for its tremendous success

In the previous chapter, we highlighted that in the scenario when $i = 1$, the optimal price for the game is equal to zero. The profit is gained via the items sold in the in-game-shop. While *'Free as a BMP'* can explain the financial success to some extent, the overall success of the Fortnite game is also driven by other factors. In this section we point out that also the business model pattern 'multi-sided platforms' and 'open as a business model' are explanatory factors for the overall success.

Nevertheless, because the previous theoretical chapter highlighted the price relationship of the game versus the skin, we will start by examining the in-game-shop. In the first step, we examine the virtual currency used in the shop (V-Bucks) and will then focus in the second step on the pricing schemes within the shop.

3.1 Pricing

3.1.1 The virtual currency *V-Bucks*

Within the in-game-shop, transactions are performed via a virtual currency called *V-Bucks* (see Table 2 and Figure 2). Therefore, the real prices are not fully transparent but gamers always have to convert the transaction prices into their real local currency (USD or EUR). This might lead to a kind of *money illusion*: travellers who visit a foreign country have some problems to convert local currency prices into their own currency. The natural intuition of whether a good is cheap or expensive is reduced to a large extent when trading in a foreign currency.

Figure 2: Screenshot: V-Bucks prices

Table 2: Exchange rates between virtual currency (V-Bucks) and real currency

Pack	Quantity	Price in EUR	Price/1,000 V-Bucks	in %
1	1,000 V-Bucks	9.99	9.99	100 %
2	2,800 V-Bucks	24.99	8.93	89 %
3	5,000 V-Bucks	39.99	8.00	80 %
4	13,500 V-Bucks	99.99	7.41	74 %

Note: Prices are taken from Chapter 2 Season 1, as of November 2019. In-game-shop approached via a European page, so that pricing is in Euros (EUR).

For example, Raghubir et al. (2012) perform several experiments to examine the role, the dimension of the foreign exchange rate plays in the money illusion problem. In one study, students were exposed to three different currencies where the exchange rate ratio was above pari (2 DEM/EUR), at pari (1 Irish Punt/EUR), or below pari (0.5 GBP/EUR). Students received a shopping list of several items. Prices were measured in local currency (Punts, GBP, DEM). For example, the price of three bars of soap were "sold" for 3.50 Punts in the Irish shop, for 7.00 DEM in the German shop, and 1.75 GBP in the British shop. Students had to estimate the *sum* of the prices for all items on the shopping list.

The true value of the shopping list was about 47 EUR. The amount was heavily underestimated when participants were confronted with the higher DEM prices (33.50 EUR). Customers believed that spending in DEM was much cheaper compared to the true value. Of course, when the perception of prices is lower, the intention to buy is higher. The sum of prices for the shopping list in the British shop was heavily overestimated (90 EUR). See Raghubir et al. (2012, p. 11).

In a different study, Raghubir et al. (2012) show that participants only have minor problems to convert currencies when a simple rule of thumb *('divide by 2')* is appropriate. However, difficulties already pop-up in case that the appropriate rule of thumb is *'divide by 3'*.

The implications for the creator of a virtual currency are clear cut. To generate a high degree of 'money illusion', one should

- Fix the exchange rate above pari, which is definitely the case for V-Bucks, where 10 EUR can be exchanged against 1,000 V-Bucks (pack 1).
- Fix the exchange rate in a way that increases the difficulties of mental conversion into real home currency. While the exchange rate of pack 1 is easy to use (1 EUR/100 V-Bucks), it is more difficult to convert V-Bucks prices into EUR with pack 2 (8.93 EUR/1,000 V-Bucks) or pack 4 (7.41 EUR/1,000 V-Bucks).

Hence, it becomes clear that Fortnite picked the right conversion rates to create a high degree of 'money illusion'. In the virtual Fortnite world, the money illusion problem is exaggerated because of the fact that no unique exchange rate between the real and the virtual currency exists. This is the case because Fortnite sells different packages of V-Bucks (see Table 2).[8]

8 Furthermore, due to special offers, which are only available for short time periods, the exchange rates are not stable over time.

Table 2 contains the prices in EUR for the four different packages, a standardised price for 1,000 V-Bucks, as well as the relative price of each package compared to the basic package. For example, the average price of 1,000 V-Bucks when bought in package 4 is only 74 % of the basic package. In other words: Fortnite offers a 26 % discount. However, when looking at the screenshot of the in-game-shop in Figure 2, Fortnite advertises package 4 with a 35 % bonus.[9]

The question of whether to advertise with a *discount* or a *bonus* has a long tradition in the marketing literature and is frequently analysed in several labour experiments. Mohan et al. (2015) claim that percentage cost discounts *always* beat percentage benefit bonuses. For example, the consumers might be confronted with the following choice experiment:

- Automobile 1 needs 50 % fewer gallons per mile compared to an existing car.
- Automobile 2 can drive 50 % more miles per gallon compared to an existing car.

While car 1 has a 100 % improvement in terms of miles/gallon, car 2 has only a 50 % improvement in terms of miles/gallon. Mohan et al. (2015) argue that it is hard for consumers to see the benefits of cost reductions and would opt predominantly for car 2. Even highly numerate consumers are prone to this kind of error.

However, empirical evidence is not 100 % clear about this issue. Mishra/Mishra (2011) report that people prefer bonus packs to price discounts for healthy food items but prefer price discounts to bonus packs for unhealthy food items. In addition, Chen et al. (2012, p. 64) point out that bonus packs are preferred in some settings and price discounts are preferred in other settings. They find that consumers' preference for a bonus pack over an economically equivalent price discount tends to be systematically affected by a tendency to neglect the base value associated with percentages (Chen et al. 2012, p. 64).

However, a game like Fortnite has a somewhat related, but also slightly different decision problem: Fortnite has the choice to advertise the largest package 4 (10,000 V-Bucks) with a 35 % bonus or with a 25 % price discount compared to the basic package. Given that customers have problems to compare these options, Fortnite opted to advertise with the larger number.

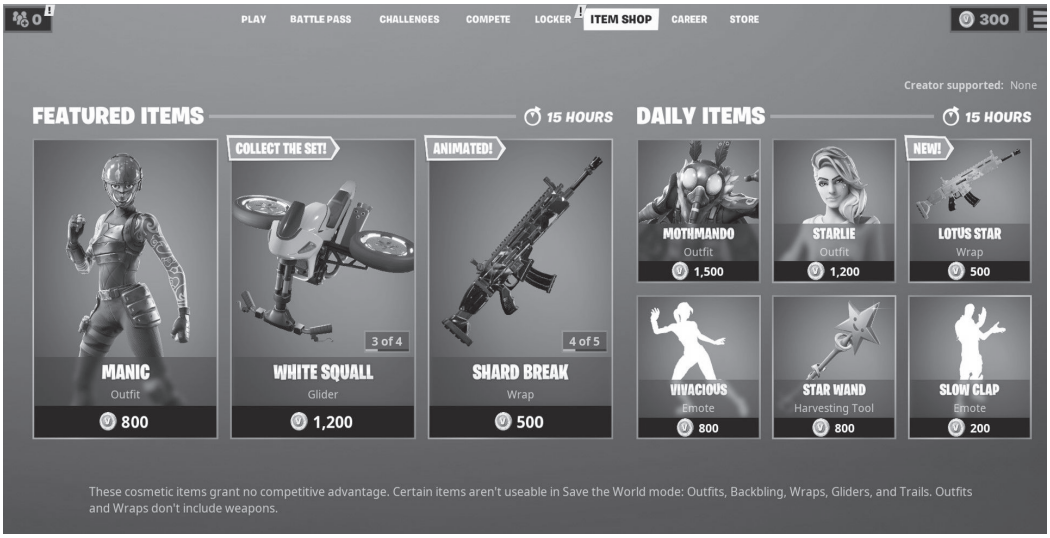
3.1.2 The in-game-shop

Skins do not influence gaming success, they are simply "*cosmetic items which grant no competitive advantage*" – as described in the Fortnite's in-game-shop. Table 3 lists the prices for several virtual items, as well as the price for a *Battle Pass*: 950 V-Bucks. The Battle Pass can not be bought directly for real currency. In a first step, the gamer has to exchange real money into V-Bucks. The smallest package of 1,000 V-Bucks is available for 9.99 EUR. It becomes clear that after the transaction is performed, an amount of 50 V-Bucks is a kind of leftover because no item can be bought for the price of 50. The item with the lowest price in the in-game-shop is a dance move (emote), which is available for 200 V-Bucks. When looking at the prices in the in-game-shop, not a single item is sold for the price of 1,000 V-Bucks (smallest package).[10]

9 The claim is right: 10 basic packages contain 10,000 V-Bucks at the price of $10 \cdot 9.99$ EUR. Package 4 is available at 99.99 EUR and contains 13,500 V-Bucks (+ 35 % bonus).

10 However, combinations of, for example, the outfit *Manic* combined with the emote *Slow Clap* lead to the sum of 1,000 V-Bucks.

Figure 3: Screenshot: in-game-shop



Note: Clock ('15 hours') indicates that items will only be available for a limited time period.

Table 3: Prices in the in-game-shop

Category	Name	Price in V-Bucks	Min. in EUR	Max. in EUR
Outfits	Manic	800	5.93	7.99
	Dream	1,200	8.89	11.99
	Whiteout	1,500	11.11	14.99
Glider	Arcana	1,200	8.89	11.99
Harvesting Tool	Astral Axe	1,200	8.89	11.99
Emote	Slow Clap	200	1.48	2.00
	Vivacious	800	5.93	7.99
Battle Pass	Valid: 10 weeks	950	7.04	9.49

Note: Prices are taken from Chapter 2 Season 1, as of November 2019. In-game-shop approached via a European page, so that pricing is in Euros (EUR). Minimum price in case that item is bought with package 4 (13,500 V-Bucks). Maximum price in case that item is bought with the basic package (1,000 V-Bucks).

Figure 3 shows a screenshot of the in-game-shop. The clock indicates that the items will only be available for a limited time period and might not be offered again thereafter. Fortnite tries to create time pressure (we will discuss this issue in more detail later on).

3.2 Time pressure

Fortnite tries to create time pressure:

- Each season runs only for 10 weeks. Therefore, a player who bought the Battle Pass has to finish all assignments within the 10 week period to receive the final reward. If a

player has not enough time to play to get the final reward, then he can buy progress in the Battle Pass for V-Bucks. It is possible to buy the complete progress of a Battle Pass for a high amount of V-Bucks.

- The in-game-shop skin is only offered for several hours. As can be seen in Figure 3, the in-game-shop offers 'Special Items' or 'Daily Items'. In both parts, one can see a little clock running, which indicates that these item will only be available within the next 15 hours. Afterwards, these items will be replaced by other virtual products. Consequently, a player is never sure about whether or when a skin will be offered again. Hence, Fortnite puts it customers under time pressure: Buy now—or never!
- On special occasions, for example, Black Friday or Cyber Monday, Fortnite has special offers that are only available on that respective day (Dassanayake 2019).

3.3 Keeping up with the Joneses effect

In a simple microeconomic setting, the utility a person derives from consumption is solely determined by the quantity of goods (q) that the individual i is consuming: $U_i = U(q_i)$. However, in a social setting, this model is too simple. According to the *Keeping up with the Joneses effect*, the utility of individual i is affected by the difference $q_i - q_j$ or the ratio q_i/q_j relative to its peers j.[11]

This effect is present within the game because players have the possibility to start in a team of two or four in the so called *team mode*. In this mode, a gamer can observe the clothes of his teammates. Hence, the players can compare their virtual outfits. Therefore, they gain knowledge about how much other friends spend in the in-game-shop. Children may use this knowledge to put pressure on their parents to match the expenses.

Skins are a status symbol among the young generation (Linken 2019). The British 'Children's Commissioner' examined the online gaming behavior of children. This study also focuses on the role of in-game items for the social status. They conclude that: "*Children are scorned in games such as Fortnite if they are seen to wear the 'default skin' (the free avatar they receive at the start of the game). Children say they feel embarrassed if they cannot afford new 'skins', because then their friends see them as poor.*" One quote of a ten year old girl (Fortnite player) brings it to the point: "*If you're a default skin, people think you're trash*." (Childrens Commissioner 2019, p. 2).

Skins can not only be bought in the shop but are also granted when completing a set of assignments that come with the Battle Pass. For example, an assignment could ask the user to open boxes in special areas of the map, to kill an opponent with a special weapon, or to play a match with some friends in the team mode. When all of the assignments are accomplished, the player is granted a special skin. This skin can also be regarded as a 'medal', which certificates that a player has completed the Battle Pass. Since these skins cannot be bought directly, the player can signal to their peers that the player has reached the final stage of the Battle Pass.

11 The phrase *keeping up with the Joneses* was introduced by Abel (1990) and Gali (1994) into the economic literature. It highlights that the level of satisfaction of an individual does not only depend on the absolute level of consumption but is also influenced by the relative level of consumption. Hence, the social comparison or benchmarking against peers – such as neighbors or classmates – is an important element in the consumption process. Dupor/Liu (2003, p. 423) distinguish two effects: In case that the benchmark increases, this could also boost the individual consumption and thereby affects the utility level in a positive way or lead to a decrease of utility because of *jealousy*.

In each season, a new skin will be granted when finishing the last level of the Battle Pass. Therefore, if a player has a skin from one of the first seasons – which are relatively rare – then the player can signal that he is a player of the first hour.

3.4 The role of other business model patterns – other than Freemium

3.4.1 Multi-sided platforms

Due to the fact that Fortnite has a very large customer base, it becomes interesting for other parties to rely on it. For example, on Feb. 2nd, 2019, the musician Christopher Comstock – better known by the DJ name *Marshmello* – gave a concert within the game. The event was promoted several days in advance, The gamers had the opportunity to buy a marshmallow uniform as their skin (Statt 2019). At a certain point in time, the game was interrupted and all combat operations stopped. All of the gamers gathered around a music scene at the in-game location *Pleasant Park* (Statt 2019). They were able to listen to Marshmello's concert and they could dance in the virtual festival area. Hence, the artist used the Fortnite customer base to promote his music.

We will now list some more examples of how the multi-sided platform business model pattern is used:[12]

- Companies use Fortnite to present their products directly to their target group. Moviemakers use Fortnite to announce their new releases. The movie *'It: Chapter Two'* is a sequel to the film *'It'*, both based on the famous novel by Stephen King. When the second part was released, red balloons from the film were found all over the Fortnite map. If a player destroyed the balloon, the laugh of what may perhaps be the world's most famous clown appeared (Hayes 2019).
- Even publishers of other video games use Fortnite to advertise their games. *Electronic Arts* opted for this cooperation for their game *'Star Wars Jedi: Fallen Order'*. Gamers could get a free Stormtrooper skin in Fortnite when buying the game in the Epic Store (Martin 2019). In Dec. 2019, Fortnite hosted its big *Star Wars* crossover live-event (Kain 2019). Gamers were able to use special weapons – such as Jedi swords – within the game.
- In a ranking assembled by Willshire (2019), the cooperation with *'Avengers: Endgame'* ranks the highest. The movie includes a scene where the main actor is playing Fortnite. Willshire (2019) interprets this as a return of the favor, Avenger received from a previous Fortnite collaboration. Since the release of *Avengers: Endgame* was also covered in Fortnite, this example stresses the long term co-operation between these two parties.

3.4.2 Open as a business model: Integrating external ideas

According to Osterwalder/Pigneur (2010, p. 108f.), firms in the digital era are more open to the outside world. They distinguish two different approaches:

12 For more examples, see Willshire (2019) or Sat (2020), who create a ranking of Fortnite's pop culture cossovers. *"A crossover is any media that combines characters, events, and other elements from two or more separate media sources"* (GiantBomb 2020). It is not fully transparent on which criteria these rankings are based. To some extend, it is also personal judgement of the two authors.

- 'Outside-in', which implies the exploitation of external ideas within the firm, and
- 'Inside-out', which provides external parties with ideas or assets lying idle within the firm.

Good examples of the pattern *open as a business model* can be found in the *Linux* operating system or the *Wikipedia* encyclopedia. Both organisations allow their users to develop the underlying product or service further. Seo (2013, p. 1542) shows "*that the collaborative efforts of gaming companies, players, online communities, governing bodies, and many other stakeholders play important roles in enriching and sustaining the experiential value of eSports consumption.*"

In the Fortnite game, there is an option to enter the 'Creative World', where the users can develop their own world or can come up with some suggestions for the next generations of weapons or vehicles to move over the island. Hence, the company can rely on their users as co-developers of the game. Furthermore, some industry specialists and journalists collect ideas and give recommendations on how to improve the game (see, for example, Higham 2018).

As mentioned in the previous section, Fortnite was particularly good at incorporating pop culture features and tributes into gameplay. For example, popular dance moves were copied and sold as emotes in the in-game-shop.[13]

Within the Fortnite game, a *Harvesting Tool* can be used to generate and collect materials such as wood, stones, and iron. For example, wood is generated when a tree is lumbered or a wooden building is torn down. These materials can be used to build ramps to overcome obstacles, walls to get cover and protection, or platforms to get a higher position in the landscape, which facilitates the combat operations. Using wood, stone and iron to build something is a game component that is also present in a very well known game called *Minecraft*. Hence, it becomes clear that Fortnite also relies on external ideas.

There is some overlap between this and the former subsection. However, we also see one distinguishing factor between the examples given: The crossover elements mentioned in Subsection 3.4.1 have – as we assume – a clear legal basis in the form of some kind of contract. The inclusion of at least some of the dance moves ('emotes') are not based on a consensual agreement, but are subject to a legal dispute (see Footnote 1). Also, Fortnite's harvesting features as well as the different options to erect constructions seem to be copied from the game '*Minecraft*'. We have doubts that Minecraft approved to use these ideas in Fortnite.

In May 2018, the developer of the video game *'PlayerUnknown's Battlegrounds (PUBG)'* sued Epic Games (Fortnite) for copying the idea of the Battle Royale genre. Before these two games were released, this genre was no big deal in the video game industry. PUBG was released in March 2017 and Fortnite followed in July 2017, but Fortnite's Battle Royale mode was not added until September 2017 (BBC 2018). It does not seem very likely, that PUBG and Fortnite were developed independently.[14]

13 This includes the *Vine-derived 'Best Mates'*, the *Robot dance*, *Carlton's dance from 'The Fresh Prince of Bel-Air'*, and *Turk's famous dance from 'Scrubs'* (Goldman Sachs 2018, p. 18).

14 However, the lawsuit was withdrawn by the developer of PUBG in June 2018. The reasons for that are unclear (Warren 2018).

3.5 e-Sports activities and professional gaming

In 2019, Epic Games announced a series of e-Sports tournaments with a prize pool of $100 million. Given that the total e-Sports prize pool for all kind of tournaments was $113 million in 2017, Fortnite was setting a precedent (Goldman Sachs 2018, p. 19). The series not only included a limited amount of professional players but every single amateur player would also have been able to qualify for the final event, the *World Cup* held in July 2019 in the Arthur Ashe Stadium (New York, USA).

Goldman Sachs (2018, p. 18) compares the announcement of the prize pool with the "Moneymaker" effect. Chris Moneymaker was an amateur poker player who won the World Series of Poker in 2003. This came as a complete surprise because only well-established professional poker players had previously won the event. The *"anyone can win mentality"* gave a big push to the poker community across the world.

The total prize pool for the World Cup alone was equal to $30 million, which represented – at that point in time – the largest price pool in an e-Sports event. A total of $50,000 was guaranteed for every qualifier at the World Cup (100 solo players, as well as 50 duo teams were qualified). The prize money for the first place in both competitions (solo and duo) was equal to $3 million (Perez 2019).

Relatively young players, aged 15 and 16, were able to make it to the podium and became a millionaire during the Word Cup. This was thrilling for the community and even made the headlines of serious business newspapers such as the *Financial Times* (Nicolaou 2019).

4 Managerial implications

In this paper, we were able to carve out several implications for the management of an in-game-shop of a video game. These implications are, of course, very important for games in the free-to-play sector. However, these practices are also used by those premium or console games which run an in-game-shop:

1. Use your own virtual currency.
   - Set the exchange rate between virtual currency and real currency above pari: For example, 100 V-Bucks/EUR.
   - Sell virtual currency in packages and make sure that the package size does not fit the price of a virtual good. For example, the smallest package size is 1,000 V-Bucks, but virtual skins are sold for 800, 1,200, 1,500 or 2,000 V-Bucks and the *Battle Pass* is sold for 950 V-Bucks.
2. Use several exchange rates for different packages in order to
   - create money illusion and
   - perform price differentiation.
3. Advertise the bonus and not the price discount.
4. Perform price differentiation: Sell virtual items in different price categories. As mentioned above, skins are sold for 800, 1,200, 1,500 or 2,000 V-Bucks.
5. Product differentiation: Within one price category (for example skins at 800 V-Bucks) sell differentiated products: Differentiate according to, for example, color of the uniform, color of skin (white versus black), gender, real versus fantasy, or season of the year (Santa outfits during X-mas season).

6. Create items which are exclusively available in a bundle and only for a limited period of time – without the chance that these items will be offered again.
7. Create time pressure by offering items only for a limited period of time, without announcing, when the items will be available again.

5 Conclusions, limitations, and future research

In this paper, we explain the most important success factors behind the video game Fortnite. Within a theoretical framework, we analyse under which conditions it makes sense to give the basic product away free of charge to subsequently make a profit by selling premium add-ons in the in-game-shop. We argue that Fortnite is a very good example of the Freemium business model pattern. However, we also show that other business model patterns have played a role in the tremendous success story. We highlight that Fortnite is very open to ideas from the outside world and is able to successfully integrate pop culture features into its game. Furthermore, Fortnite made an important move when it took the initiative to establish the game as an e-Sports discipline.

A critical assessment of the case reveals that we lack some degree of precision. We are not fully able to exactly point out what kind of success factors distinguish Fortnite from other games, which are less successful (see Table 1). A closer look into the all successful free-to-play games reveals that several of our managerial implications are already a kind of *industry standard*. Therefore, future research should have a much closer look into those factors which are Fortnite specific.

So what is it that distinguishes Fortnite from the other games? One feature is that Fortnite is less violent comp ared to other games. In case that an opponent is hit once, one will never see any blood. In case that on opponent is hit too often, the opponent is not killed but just *despawned*. Less violent content leads to a much younger customer base. Also, the share of female players is also relatively high compared to other shooter games. We believe that this is the result of the *comic type of graphic* and also the integration of the pop culture features. But further research is needed in this respect.

Future research could, for example, also focus on the role of virtual currencies in free-to-play games. In particular, several games could be examined with respect to their exchange rate policies.

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Appendix

Matrix notation

The two first order conditions are given by:

$$2 \cdot q_g - i \cdot q_s = 1$$
$$-i \cdot q_g + 2 \cdot q_s = 1$$

Writing these equations in matrix notation:

$$\begin{bmatrix} 2 & -i \\ -i & 2 \end{bmatrix} \begin{bmatrix} q_g \\ q_s \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \end{bmatrix} \tag{9}$$

The optimal quantities

Using Cramer's rule to compute the optimal quantity of games sold leads to:

$$q_g = \frac{\begin{vmatrix} 1 & -i \\ 1 & 2 \end{vmatrix}}{\begin{vmatrix} 2 & -i \\ -i & 2 \end{vmatrix}} = \frac{1 \cdot 2 - 1 \cdot (-i)}{2 \cdot 2 - (-i) \cdot (-i)} = \frac{2 + i}{4 - i^2} = \frac{2 + i}{(2 + i)(2 - i)} \tag{10}$$

After cancelling out the two $(2 + i)$ terms, we get:

$$q_g^* = \frac{1}{2 - i}. \tag{11}$$

The optimal quantities for q_s are derived analogously. Using Cramer's rule leads to:

$$q_s = \frac{\begin{vmatrix} 2 & 1 \\ -i & 1 \end{vmatrix}}{\begin{vmatrix} 2 & -i \\ -i & 2 \end{vmatrix}} = \frac{2 \cdot 1 - (-i) \cdot 1}{2 \cdot 2 - (-i) \cdot (-i)} = \frac{2 + i}{4 - i^2} = \frac{2 + i}{(2 + i)(2 - i)} \tag{12}$$

After cancelling out the two $(2 + i)$ terms, we get:

$$q_s^* = \frac{1}{2 - i}. \tag{13}$$

The optimal prices

Given the demand relationship $p_g = 1 - q_g$ we get for the optimal game price:

$$p_g^* = 1 - \frac{1}{2-i} = \frac{2-i-1}{2-i} \quad \Rightarrow \quad p_g^* = \frac{1-i}{2-i} \tag{14}$$

Given the demand relationship $p_s = 1 - q_s + i \cdot q_g$ we get for the optimal skin price:

$$p_s^* = 1 - \frac{1}{2-i} + i \cdot \frac{1}{2-i} = \frac{2-i-1+i}{2-i} \quad \Rightarrow \quad p_s^* = \frac{1}{2-i} \tag{15}$$

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