

How ethical are loot box mechanics in modern video games, considering their similarities to gambling and potential effects on vulnerable players?

RESEARCH REPORT

GDEV70011 PROJECT MANAGEMENT AND RESEARCH
METHODS

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1. Abstract

This study examines how ethical loot box mechanics are in modern video games, focusing on their similarities to gambling and their potential effects on younger and vulnerable players. This is important as loot boxes are widely used in modern video games and continue to raise concerns about gambling like mechanics, consumer protection, and the possible harm to younger and vulnerable players. Based on the literature review, this report uses a qualitative content analysis of four selected game including *EA Sports FC 26*, *Counter-Strike 2*, *Star Wars Battlefront II (2017)*, and *Marvel Contest of Champions*. Both the launch and updated versions of *Star Wars Battlefront II (2017)* were analysed to examine how a controversial loot box system can change over time. The findings from this report showed that loot boxes are usually ethically problematic when they use both randomised rewards, monetised content, persuasive design features, and accessibility to younger audiences. The study concludes that many loot box systems in games resemble gambling in multiple ways, whilst also showing that a redesign and rework can reduce some of the present ethical concerns.

2. Introduction

Loot boxes have become one of the most debated monetisation systems in modern video games because of their use of paid randomised rewards and their increase in prevalence across multiple game genres and platforms. As discussed in the literature review, there are many different forms that loot boxes can appear in. This includes packs, crates, cases, chests, boxes and many more. However, they generally all share the same structure of giving players an uncertain reward in exchange for something of value, usually in game currency or real money. This had led to an increase in both academic and regulatory concern around the ethical issues these systems present, especially when they are accessible to younger or vulnerable audiences.

This report examines how ethical loot box mechanics are in modern video games as well as their similarities to gambling and potential effects on younger and vulnerable players. The literature review identified multiple key concerns around these loot box systems. Firstly, multiple authors argue that loot boxes share both important structural and psychological similarities with gambling, especially the idea of staking money, or something else of value, for a randomised outcome (Griffiths, 2018). Furthermore, the literature review also highlighted multiple studies that reported significant links between loot box spending and problem gambling severity, suggesting that these mechanics may be concerning for players who are already vulnerable to gambling (Zendle and Cairns, 2018).

The literature review also underlined the accessibility of loot boxes to younger audiences as a major ethical concern. This is especially important due to the fact that these systems are frequently found in games that are easy for minors to access across both console, PC, and mobile platforms. Research also suggested that persuasive monetisation features such as limited time offers, progression linked or 'pay-to-win' purchases, seasonal events, and bundle or currency spending may exploit

psychological vulnerabilities in some players (King and Delfabbro, 2018). However, the literature review also notes that some scholars urge caution in regard to panicking about loot box systems in games, arguing that much of the existing evidence is only correlational rather than clearly causal (Etchells, 2021). The literature review also noted that some regulatory responses have already been introduced, such as probability disclosure requirements in China, although these measures may not necessarily do enough to remove the wider ethical concerns surrounding paid randomised rewards (Xiao et al., 2021). Because of this, this report aims to build on the literature review by examining how these concerns appear in modern game design through the analysis of multiple selected game examples featuring loot box systems.

3. Aims and Objectives

This study aims to investigate how ethical loot box mechanics are in contemporary video games, and especially how similar they are to gambling and what their potential effects on younger and vulnerable audiences may be. This is going to be done through the analysis of loot box systems in modern games.

The objectives of this study are as follows:

- To identify and analyse a selection of modern video games that contain loot box systems and mechanics.
- To examine how these loot box systems are accessed, presented, and integrated within the gameplay systems.
- To examine how access to these systems can involve real world currency and in game currency.
- To evaluate how transparent these systems are, especially regarding randomness, rewards, and probabilities.
- To identify if any persuasive design features exist and their similarities to those found in gambling.
- To examine if the systems are ethically problematic, if they are accessible to younger and vulnerable audiences, and what the impact of that may be.
- To compare the findings with the issues raised in my literature review.

4. Research Method and Plan

This study uses a qualitative content analysis of contemporary video games featuring loot box systems or mechanics to examine their design and use, especially regarding their similarities to gambling and impacts on younger and vulnerable audiences. This method was chosen as the research is focused on analysing the design, presentation, uses, and structure, of loot boxes in games themselves, rather than the use of data from participants. In this study, series of games with loot box mechanics will be analysed through direct gameplay or through existing gameplay footage.

Selected games:

- EA Sports FC 26
- Counter-Strike 2
- Star Wars Battlefront II (2017) (Current and Launch Versions)
- Marvel Contest of Champions

Analysis sheet:

1. What is the loot box called?
2. How is it accessed?
3. Is real money involved directly or is an in-game currency used?
4. Are rewards random?
5. Are rewards cosmetic, do they affect gameplay, or both?
6. Does the game involve rarities?
7. Are there flashy animations, suspense, near misses, countdowns, or celebrations?
8. Does opening feel similar to gambling?
9. Are the drop rates shown?
10. Are probabilities easy to understand or confusing?
11. Is the pricing clear?
12. Are there bundles, limited time offers, events or daily deals?
13. Does the game push the player to open more?
14. What is the age rating of the game?
15. Is the game accessible to younger audiences?
16. How easy is it to access the monetised loot box system?
17. Does the system appear exploitative or persuasive?
18. Does it reflect the concerns from the literature?

The selected games were chosen to provide a comparison between different types of loot box implementation in modern games. Each game selected have loot boxes present in some form or another, allowing for comparisons across different game genres, age ranges, multiplayer and singleplayer games, and different platforms, giving a fairly detailed analysis across only a small selection of games. Furthermore, *Star Wars Battlefront II* (2017) will be examined in both its launch and current versions to show how its loot box system evolved over time and whether later changes addressed the ethical concerns present at release. The analysis sheet was created based on some of the main concerns identified in the literature review. This includes gambling similarity, monetisation pressure, accessibility to younger and vulnerable audiences, reward randomness, transparency, and persuasive design features. By using the same questions for each game, a consistent comparison can be gained making it much easier to identify similarities and shared patterns across the game, as well as making it easier to spot important differences. This suits the research questions well as it allows the study to examine how these ethical concerns surrounding loot boxes appear in real game systems rather than just in theory.

5. Findings and Analysis

The table below shows a summary of the findings from the content analysis that was conducted on the selected games above. By using the same analysis framework for each game it was possible to compare how different loot box systems vary in their access, monetisation, presentation, transparency, and accessibility to younger audiences. Although each of the games that were analysed contain randomised reward systems, clear differences and similarities can be spotted in relation to their similarities to gambling, accessibility to younger audiences, persuasive techniques, and reliance on monetised design. This is especially clear when looking at *Star Wars Battlefront II* (2017), where comparing both the launch and the current versions of the game helps to show how controversial loot box systems can change over time. The table gives a condensed summary of the main findings, while the full written analyses for each game can be found in the appendices.

Question	EA Sports FC 26	Counter-Strike 2	Star Wars Battlefront II (2017) (Launch)	Star Wars Battlefront II (2017) (Now)	Marvel Contest of Champions
1.	Packs.	Cases.	Crates.	Crates.	Crystals.
2.	Store Section in the Ultimate Team Game mode.	Through the inventory section on the main menu.	Through the crate button on the main menu.	Through the crate button on the main menu.	Through the Crystals section on the home screen.
3.	Both, real money can purchase exclusive currency.	Only real money. All cases require keys that must be purchased.	Both. Credits could be bought or earned, or crates could be bought outright.	Crates can only be earned through progression.	Both, real money can purchase exclusive currency.
4.	Yes.	Yes.	Yes.	Yes.	Yes.
5.	Mainly effecting gameplay, cosmetics are present though.	Only cosmetic. No Effect on gameplay.	Both. Star Cards could be earned to majorly boost progression.	Only cosmetic.	Only gameplay affecting. There is nothing cosmetic.
6.	Yes.	Yes.	Yes	Yes.	Yes.
7.	Yes, all are present aside from countdowns.	Flashy animations, suspense. And near misses all present.	There are flashy animations and suspense created.	There are flashy animations and suspense created.	Yes, all are present aside from countdowns.
8.	Yes.	Yes.	Yes.	No.	Yes.
9.	They can be optionally displayed.	No. Only disclosed in 2017 to comply with Chinese regulations.	No official drop rate disclosure was identified.	No official drop rate disclosure was identified.	Yes. Kabam have an official Crystal Drop Rates website.
10.	Mostly vague and confusing.	Not clear as they are not displayed.	Confusing as they are not displayed.	Confusing as they are not displayed.	Only slightly confusing.
11.	Only partly. In game currency used.	Partly as its split into the cost of the case and the key.	Mostly clear.	There is no pricing. Nothing can be purchased.	Only partly. In game currency used.
12.	Yes, many.	Yes.	Yes.	Daily free crate.	Yes, many.
13.	Yes, as it can improve your team.	Yes, as they are potentially profitable.	Yes, as they are heavily tied to progression.	No, they cannot be purchased.	Yes, as they are heavily tied to progression.
14.	ESRB E and PEGI 3	PEGI 18 and ESRB M. Due	ESRB T and PEGI 16. Due to	ESRB T and PEGI 16. Due to	PEGI 12 and Apple App

	(Possibility of being elevated to PEGI 16 due to loot box regulations)	to presence of violence and gambling-like elements.	"In-game purchases (includes random items)".	"In-game purchases (includes random items)". It has not changed.	Store 13+. Due to "In-game purchases (includes random items)".
15.	Yes. Low age rating, and targeted and young audiences.	Partially. Steam requires no age verification to purchase.	Partially. Star Wars has a large following from younger audiences.	Partially. Star Wars has a large following from younger audiences.	Yes. It's a free mobile Mavel game on multiple app stores.
16.	Very easy.	Very easy.	Very easy.	Not possible.	Very easy.
17.	Both, more persuasive.	Both, more persuasive.	Both.	Neither.	Both, more persuasive.
18.	Yes.	Yes.	Yes.	To a limited extent.	Yes.

6. Discussion

The findings from this study suggest that loot box mechanics in modern video games are ethically problematic. However, the extent of the problem can differ largely depending on how the system is designed and implemented. Across the researched games, all of the loot box systems analysed involved randomised rewards, with most also involving either the direct spending of real money, or the spending of an in game currency which can be purchased with real money. This supports one of the core points of the literature review which argued that randomness, as well as monetary spending and value are some of the key defining features of loot boxes, with these features also being central to the comparison between these systems and gambling.

One of the most common patterns found in the findings was the extent to which the analysed loot box systems resembled gambling in both their structure and presentation. *EA Sports FC 26*, *Counter-Strike 2*, *Marvel Contest of Champions*, and the launch version of *Star Wars Battlefront II (2017)* all features randomised rewards, item rarity systems, suspense and visual reveal techniques, as well as clear incentives to continue opening more loot boxes. These design features reflect the idea that loot box systems are both structurally and psychologically akin to gambling, especially through the idea of staking something of value for an uncertain outcome whilst using different presentation techniques to increase the feelings of anticipation and excitement. These results support the literature from Griffiths (2018) which argues that loot boxes share core features with gambling. Furthermore, these results also support the idea that these systems can become ethically problematic as they are heavily monetised and often designed to encourage repeated spending.

The findings from the analysis also support concerns regarding younger and vulnerable audiences. Three of the analysed games, *EA Sports FC 26*, *Star Wars Battlefront II (2017)*, and *Marvel Contest of Champions*, were all found to be at least partly accessible to younger players through having low age ratings, strong or mainstream branding, or mobile availability. This is important as the literature review identified loot box accessibility to minors as one of the major ethical concerns surrounding loot boxes. Furthermore, games such as *Counter-Strike 2* may still be accessible to younger audiences in practice despite its higher age rating due to the fact that it is free to play and distributed through a widely accessible digital platform. These findings suggest that this concern is

justified, especially in games that have easy accessibility combined with frequent promotions, bundles and premium currencies, and progression based rewards. This supports the argument made by King and Delfabbro (2018) which stated that loot boxes can form part of a wider predatory monetisation structure when they exploit psychological vulnerabilities or weaknesses, or even when they feature spending closely to linked progression and player advantage.

Transparency and probability disclosure gave mixed results from the content analysis. *EA Sports FC 26* and *Marvel Contest of Champions* both offer some form of probability disclosure of their loot boxes, whereas *Counter-Strike 2* and *Star Wars Battlefront II (2017)* did not offer a clear form of disclosed odds. However, even in the games where the drop rates were disclosed, the findings suggested that the disclosure was not always fully clear. For example, in *EA Sports FC 26*, the probabilities are visible, but still vague due to the nature of the received items. Similarly, in *Marvel Contest of Champions*, the drop rates are available, but not as easy to find as they are not displayed in game. This supports the argument of Xiao et al. (2021) which argued that probability disclosure in games can be implemented in ways that may not fully address some of the ethical issues present in paying for randomised rewards. Therefore, these findings suggest that while probability disclosure may help to mitigate some ethical concerns, they can still be implemented in ways that do very little in practice and, on their own, they cannot remove issues present with persuasive design or a gambling-like structures.

On the other hand, the content analysis also shows that loot box systems in games are not all equally unethical, and those that are unethical, can be improved. For example, the launch version of *Star Wars Battlefront II (2017)* reflected many of the concerns found in the literature review. This was mainly due to the fact that the crates gave heavy gameplay and progression advantages, making it seem largely persuasive and exploitative. However, the later version of the game reflected on most of these issues and significantly improved upon them. The fact that the game completely removed the monetised loot box system made the game far less ethically concerning. This is significant as it shows that when systems similar to these receive a large amount of scrutiny, public backlash, or regulatory pressure, they can be changed in meaningful ways. This suggests that regulation, reform, and public scrutiny can influence how these systems are designed and implemented, even if the idea on how to implement and apply them still contains disagreements.

Finally, the findings as a whole suggest that loot boxes are difficult to perceive as fully ethical when they contain monetised randomness, persuasive presentation, exploitative design techniques, poor pricing clarity, and easy access for younger or vulnerable audiences. Although the literature review noted Etchells (2021) suggestion that caution is needed around the discussion of loot boxes to avoid “moral panic”, the findings show that many of the ethical concerns that were raised in the literature review are clearly visible in actual game design. Because of this, the evidence from this study supports the view that loot boxes are more than just a harmless and optional feature in games, but instead they can encourage repeated spending and resemble gambling in ethically concerning ways.

7. Conclusion

Overall, this study found that loot box mechanics in modern video games are ethically problematic as they combine paid randomness and persuasive design, whilst also lacking clear pricing as well as remaining accessible to younger and vulnerable players. In the games analysed, there were clear similarities within features such as randomised rewards, rarity systems, suspenseful design and presentation, and repeating spending incentives. The findings also showed that even when some games disclose the loot box probabilities, this alone does not address some of the greater ethical concerns surrounding loot boxes and monetised random rewards in games. Furthermore, the

comparison between the launch and later versions of *Star Wars Battlefront II (2017)* showed that these systems can be redesigned and reworked in ways that can help to reduce ethical concern.

However, this study also has multiple limitations. Firstly, only a small number of games were analysed. This means that the findings cannot be used to represent every loot box system in modern video games as different games may show different results. Furthermore, the study used a content analysis rather than player research, meaning that there is no measurement or analysis of how players interact with or respond to these systems. Analysing players and their behaviour could give greater insight into the ethical problems caused by these systems. Finally, the analysis is also interpretive as it was conducted by a single researcher, making it subjective. Future research could improve on this by having multiple researchers conducting an analysis of a wider range of games to then compare results for a much more consistent analysis. Combining this with a player analysis would provide a much clearer understanding of how loot box systems affect players in practice.

8. References

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9. Reflection

Look back at your initial understanding of what research is. How has this changed? At the start of the module, I understood research mainly as gathering information on a topic to understand it more, and although this is true, I now see it more as a more critical and methodical

process of building justified conclusions. So, I would say that my understanding of research has not changed completely, but it has become much deeper and more structured. Through completing the literature review and content analysis, I came to realise that research is not just about finding information, but also about judging the quality of the information and identifying patterns within it. This involves comparing different viewpoints and using evidence to come to a solid conclusion.

What would you do differently if you were to do this activity again?

If I were to do this research report again, I would make a few key changes. Firstly, I would change my methodology to be player research rather than a content analysis. I think analysing players and their behaviour and interaction with loot boxes would give a much better understanding of these kinds of systems and how players interact with and respond to them. I feel that by doing this, the ethical challenges of loot boxes would be much clearer to see, allowing for a better understanding and deeper discussion. Secondly, I feel that I should have started my field work much earlier. Because I didn't, I was unable to analyse as many games as I would have liked to. Initially, I planned to analyse multiple games to get a wider understanding of loot box systems in games. However, as I did not do enough work early enough, and the fact that my analysis sheet was quite large, I was only able to analyse four games.

How did you use AI tools and what were they useful for, and not so useful for?

AI can be a useful tool for my research report and there were a few times where I was able to use it in a helpful manner. Firstly, after I had planned out my list of games that I was going to research, I used AI to help me order and prioritise the list of games to analyse based on what might give the widest and most detailed range of results that would be helpful to answer my research question. Secondly, I used AI to help refine my analysis sheet. Once I had my analysis sheet completed, I asked AI if there may be any questions or topic areas that might be worth covering to give a deeper analysis. With its help, I added three extra questions into my analysis sheet. Finally, AI was also useful for asking questions about certain games where I could not find certain information. Mainly, on each of the games that I had analysed, aside from *EA Sports FC 26*, I struggled to find the loot box probabilities and if they were disclosed in game. To double check that I wasn't missing anything, I would ask AI if they were disclosed in game, or somewhere else, which would often lead to the AI telling me if they were or weren't disclosed, and giving me a link to where they were disclosed if it was elsewhere. After double checking these, I found that AI had been useful in this regard. However, beyond being a support tool for specific scenarios, I would say its usefulness was fairly limited.

10. Appendices

Appendix 1 – EA Sports FC 26 Analysis

Q1: The loot boxes in FC26 are called Packs.

Q2: They are accessed through the Ultimate Team Game mode in the Store section.

Q3: There are two in game currencies, there are "FC 26 Coins", which can be earned through playing the game, and "FC 26 Points", which are an exclusive currency that can be bought with real money.

The packs in the game can be bought for both in FC 26 Points and FC 26 Coins. However, the amount of FC 26 Coins required to purchase the packs is very large and would require multiple hours of in game grinding and hard work, making the price for packs through FC 26 Points seem easier.

Furthermore, some packs can only be purchased with FC 26 Points, making them only obtainable through the spending of real money.

Q4: Yes, the packs give random rewards based on chance.

Q5: In packs there can be cosmetic rewards such as kits, stadiums, balls, and sounds all for customisation, however, the majority of packs focus on giving player card rewards which completely

dictate the gameplay. So the packs are mainly effecting the gameplay.

Q6: Yes, there are many card rarities in the game that are based on the players overall rating. Basic rarities include bronze, silver, and gold rarity cards. During the year new rarities get released which improve the overall ratings of specific players. This include seasonal, weekly, monthly, and yearly special rating cards.

Q7: Yes, all of these are present aside from countdowns. The greater the pack, the greater the celebrations and flashy animations. Packs open slowly revealing the best player first creating suspense. The best player is revealed slowly by showing different parts such as the position, country, club, all before the full player is shown which can create the sense of a near miss if there are two players that have similar attributes but one being better than the other. However, this can mostly be skipped.

Q8: Yes, as players spend money for a randomised reward with built suspense and uncertain value. This fits the description of gambling.

Q9: There is an option to show pack probabilities.

Q10: Probabilities can be quite confusing as they are mostly vague as it shows the probability of receiving a certain rarity, but there can be good and bad cards in a rarity bracket, so it does not fully show the entire truth.

Q11: Only partly, the prices are shown through the in game currency so the player has to do the conversions themselves if they want to purchase items for FC Points which have to be bought. Also, FC26 Points can only be bought at set amounts, so if a pack is made to be a certain price, you may have to purchase more points than you need as there is only a few options.

Q12: Yes, there are many events, promotional content, seasonal content, or special editions released to players. It is very possible to miss certain cards or rewards by missing certain times of the game as certain cards can only obtained at certain times.

Q13: Yes, the system appears to encourage repeated opening. Firstly, the amount of points that can be purchased is usually more than the packs, meaning the players are usually left over with some points, making it seem as though they are close to being afford another pack, which may make them more likely to purchase more points just to get the next pack. Plus, with limited time and seasonal events certain packs are only released at certain times meaning players are pushed to buy packs then otherwise they may miss certain content. Squad building, time limited content, and store based rewards all encourage repeated spending and engagement with packs.

Q14: ESRB have rated the game "E" for everyone. The game is also rated PEGI 3 in places like the Nintendo store, however, due to the new March 2026 regulations about paid loot boxes and online interactions, the game may have to be elevated to a PEGI 16 rating in some platforms.

Q15: Yes, due to its low age rating its very accessible to young players. Football partnerships, advertising, and branding also makes it present to all football fans which includes younger audiences.

Q16: Very easy, it is a huge part of the game for players of the Ultimate Team game mode.

Q17: It appears persuasive and can also be argued to appear exploitative as it combines paid currency, random rewards, seasonal and ongoing events, progression incentives, and the possibility of missing out of certain items all at the same time.

Q18: Based on all of the features identified in the analysis, yes. The literature covered concerns about paid random rewards, gambling like structures, transparency issues, and pressure and encouragement, all of which appear to be present in this game.

Appendix 2 – Counter-Strike 2 Analysis

Q1: The loot boxes in CS2 are called "Weapon Cases". They need case specific keys to be opened.

Q2: Cases can be accessed in the "Inventory" menu from the home screen. Cases can be gained from

playing the game or buy purchasing them from 3rd party websites or from the steam community market. However, keys cannot be gained for free within the game and must be purchased.

Q3: Whilst some cases can be earned for free, all keys have to be purchased. The best cases are also very rare to come across, so if a user wants them, they may also have to be purchased. Freely earned cases can be sold on the community market which could gain the player enough money to purchase a key. However, it is a market that players spend real money on to gain rewards, not a lot is earned for free.

Q4: Yes, cases are given chance based rewards.

Q5: Rewards are purely cosmetic. Mainly weapon skins, charms, and stickers. They do not affect gameplay performance.

Q6: Yes, cases are structured around tiers of rarities. The best items are clearly distinguished. Furthermore, some skins sell for more than others, with skins also having conditions that dictate its wear such as Factory New or Battle-Scarred.

Q7: There are flash animations, suspense, and near misses all included within the case opening. The game is pretty widely recognised for having this type of case opening and item revealing. However, there are not really countdowns or celebrations. The case opening is done in roulette style way.

Q8: It appears to be similar to gambling. Players stake money for a random reward with built up suspense. It evokes a similar sense of suspense to a wheel spin or roulette system. As items can be sold and a balance is kept in the steam store as part of a users steam wallet, it mirrors gambling and the similar wallet system used in gambling. This is where money is kept and displayed in a certain machine as a total wallet balance before it is withdrawn, promoting the player to spend it as they may not see it as real money that they have yet. The opening is also done in a roulette style way which is a prominent game seen in gambling.

Q9: The drop rates are not clearly shown for the case odds. They were not directly displayed on the case UI, but they had to be disclosed in 2017 to comply with Chinese regulations.

Q10: They are confusing and not clear as they are not clearly displayed in a simple manner.

Q11: Partly, as the pricing is split in two. The total cost to open a case is unclear as both the cases and keys have their own individual costs, so the user has to add up the prices to reveal the full price.

Q12: Yes, there is changing and rotating monetised content such as new cases and limited edition items.

Q13: Yes, as players can sell the items they gain from cases, it means if they get a good item, it can be sold and allow them to get more cases. Potentially being profitable, just like gambling. The use of the steam wallet may also promote users to continue spending money, as it is only in their steam wallet and not their bank account it is much easier to spend.

Q14: CS2 is rated PEGI 18 in the UK due to the violence and presence of gambling-like elements. In the US, this game is rated M for mature by the ESRB.

Q15: As no age verification is actually needed on apps like steam, and the game is free to play, it can reasonable be downloaded by anyone.

Q16: Very easy, it's a core system of the game.

Q17: It seems to be highly persuasive and could be argued to be exploitative due to the free game, strong incentive structure, and the fact that the cases and keys are a core part of the games system. Being frequently shown and rewarded to players means that players are more likely to engage in those systems.

Q18: Yes, it matches the concerns identified in the literature review. However, the age rating for this game is at least 18+ so it is not necessarily promoted to younger audiences.

Appendix 3 – Star Wars Battlefront II (2017) (Current and Launch Versions) Analysis

For the analysis of Star Wars Battlefront II (2017) the content analysis will mention both "at launch" and then "after the update". This is because the initial release of the game featured heavy controversy on its loot boxes with accusations of featuring 'pay-to-win' gameplay, forcing them to do a big overhaul on the loot box mechanics. Because of that, this analysis will cover both the initial version of the game, as well as the updated version to see how the games issues may have been addressed.

Q1: The loot boxes in this game are known as Crates.

Q2: Crates can be bought in the games using credits that can be slowly earned through gameplay progression, or through purchasing them outright in the store for real money. The purchasing of crates outright was later removed after the update.

Q3: At launch, credits (which could be used to purchase crates) can be earned through gameplay, but crates could also be purchased outright in the store for real money. After the update, crates could no longer be purchased outright for real money and crates could instead only be earned as daily rewards, or through progression and milestones.

Q4: Yes, rewards were always randomised. Different crates offered different rewards, but the content was always randomised in some form.

Q5: Initially, the rewards were both cosmetic, and gameplay effecting. This caused major controversy as things like "Star Cards" hugely influences player strength and progression. So players that spent more money on the game, would be rewarded with better items, characters, and quicker progression. After the update, the rewards became purely cosmetic. As of 2026 in a recent update, all players were given all cosmetic items with everything unlocked, so crates and credits are pointless.

Q6: Yes, some cards were rarer than others and there was a system of card tiers.

Q7: There are no near misses, celebrations, or countdowns. However, the crate opening does feature flashy animations, and suspense is also created through the crate opening. Furthermore, the crates reveal disks that project the rewards as holograms, each disk needs to be manually flipped to see the item, or all disks can be flipped with a button. This creates further suspense as it may appear that a player is opening the rewards twice. The rarity colour is also revealed before flipping the disk creating more suspense.

Q8: At launch yes, as money or in game currency could be staked for random rewards that could improve gameplay and progression. This received harsh criticism. However, the opening is not exactly similar to a gambling style game like roulette, and it was pretty much a guarantee that spending more money would equal better rewards. Furthermore, as the rewards were permanent and could not be resold, the player is only increasing in value, making it less similar to gambling in that way.

Q9: No official source or way that clearly shows the drop rates being disclosed could be identified.

Q10: It appears that they are unclear or confusing, especially at launch, as the system mixed progression, star cards, crates, cosmetics, and in game currencies that made it difficult to fully understand what was going on.

Q11: The price of crates was clear, but due to the number of rewards that could be gained and the confusing progression system it wasn't always clear what exactly was being paid for.

Q12: Yes, these did exist, and still now there are crates rewarded for daily logins.

Q13: At launch yes, as the crates were very much tied to progression so to get better you could always just open more crates. However, after the rework, there was less pressure to open crates as cosmetic items were less important.

Q14: ESRB rates the game T for teen, with PEGI giving it a rating of 16 whilst mentioning in game

purchases and random items.

Q15: Yes, although it is rated ESRB T and PEGI 16, Star Wars is a massive brand with a huge following and large mainstream appeal, making the game desirable for younger audiences.

Q16: At launch, it was very easy as it was built into progression and the games economy. After the rework, it was still easy to access crates as they are displayed clearly on the game's main menu, but the monetisation of them was removed.

Q17: At launch, yes as they gave strong gameplay advantages to those who purchased them. Meaning that those who were able to purchase more, were able to progress quicker in the game. After the change, it appears to be not exploitative at all, but they can still be persuasive to get as they give cosmetic items, but they could only be gained through challenges and milestones.

Q18: Yes, especially the launch version. It reflects many of the major concerns in the literature especially around game monetisation of random rewards, gambling-like mechanics, and weak transparency as well as the ethical implications of systems like this. However, it also speaks to a broader concern of monetisation in games as a whole.

Appendix 4 – Marvel Contest of Champions Analysis

Q1: The loot boxes in this game are called Crystals.

Q2: Crystals can be accessed by going to the "Crystals" tab on the home screen.

Q3: Both, crystals can be bought for in game currency, which can be purchased with real money. The store also features packs or bundles that can be purchased for real money that contains crystals or in game currency. Furthermore, the in game story is extensive, and with crystals being a core part of the game, spending more money usually results in getting more crystals.

Q4: Yes, there are drop rates with percentage chances for rewards.

Q5: There are no cosmetic rewards, they are all gameplay affecting. However, there are different types of gameplay rewards. The main and most sought after rewards are the champions, but other gameplay effecting rewards can also be gained.

Q6: Yes, the champions have a star system to show their rarity. These include 1 Star, 2 Star, 3 Star, etc, champions, with the more stars meaning the higher the rarity and the better the champion.

Q7: Yes, there are flashy animations, suspense, near misses, and celebrations. There aren't really any countdowns. The opening system is presented as a dramatic reveal that builds suspense and excitement. The crystal opening is done in a roulette style, similar to that of CSGO case opening, showing the rewards that you can possibly win, and the items that you were close to winning.

Q8: Yes, it appears to be similar to gambling. With the case opening being in a roulette style, it seems to strongly resemble gambling. Players spend money or valuable in game resources on randomised outcomes, meaning value is staked for a random chance of winning a high value reward.

Q9: Yes, Kabam (the developers) have an official Crystal Drop Rates website which shows the drop rates and also publishes update posts when new crystals release or old crystals chances are updated.

<https://playcontestofchampions.com/store/crystal-drop-rates/>

Q10: The drop rates are mostly clear. The exact percentages are shown on the website. However, there doesn't appear to be any link to the drop rates website in game, and because of the number of crystals and rewards the probabilities can be a little confusing to understand.

Q11: Only partly. The game has in-app purchases which are clear with their price and their reward, however, spending is filtered through bundles, currencies and sales. This usually forces users to purchase more currency than is needed for a crystal, meaning that users always have some currency left in their account, giving the impression that the user is close to being able to afford the next crystal, possibly persuading them to purchase more.

Q12: Yes. The game frequently has bundles, seasonal events, limited time offers, and daily deals.

Q13: It appears so yes. The game loop and structure of progression clearly support the idea of

chasing rarities and the next level. To improve and to progress at the game, new and better champions have to be gained, and the best way to get champions is through the opening of crystals. This all encourages repeated opening.

Q14: The Apple App Store lists the game as 13+ and explicitly marks it as containing loot boxes and in-app purchases. PEGI gives the game a 12 rating and highlights that the game contains "In-game purchases (includes random items)".

Q15: Yes, its a free mobile Marvel game available on the Google and Apple App Stores. This makes it very accessible to teenagers and younger players.

Q16: Very easy. The game is free to download and the loot box system is a central part of progression and reward design in the game.

Q17: It appears to be highly persuasive and could be argued to be exploitative. The combination of the games theme being a popular brand (Marvel), free mobile accessibility, progression and loot box structure, constant events, and gameplay effecting rewards creates a very strong incentive to keep opening more Crystals. Furthermore, with the purchasing of bundles and in game currencies being frequently displayed whilst also only allowing for more currency to be purchased then needed can be persuasive and possibly exploitative. All of this is key to the games structure.

Q18: Yes, very strongly so. It reflects the concerns around loot boxes and gambling-like systems, especially random paid rewards featuring progression advantages or pay-to-win gameplay, with unclear value and repeated pressure to spend, all accessibly to younger and vulnerable audiences.