Bachelor Thesis Marketing

Player loyalty and churn in Web3 casual mobile games and the effects of player enjoyment, flow, skill development, social features, game innovation, and reward methods.

Gaspar Kruijzen 541125gk

Erasmus Universiteit Rotterdam – Erasmus School of Economics

Bachelor Economie en Bedrijfseconomie

541125gk@eur.nl

Academic Supervisor:

Dr A.T. Barendregt

Second assessor:

Dr D. Zilbershtein

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Executive Summary

This thesis studies the factors influencing player loyalty and churn in the context of Web3 casual mobile games (CMGs), with a particular focus on the gaming platform PlayZap. Investigating the interaction between Play-2-Earn (P2E) mechanics and player loyalty and churn holds significance for both CMG developers and players. Developers could obtain key insights into strategies and mechanics that stimulate long-term engagement and player deviation. In contrast, players could make more informed decisions about where to invest their time and potentially their money. The following research question is formed: "Which distinguishing competitive characteristics can gaming platform PlayZap add to its current online mobile web-3 games offering to prevent the churn of its players and increase the loyalty of its players?"

To answer the central research question, the following theoretical and empirical sub-questions are formulated:

Theoretical sub-questions:

1. What are the characteristics of online mobile gaming?
2. What entails distinguishing competitive gaming and game characteristics?
3. What entails online players' churn?
4. What entails online players' loyalty?

Empirical sub-questions:

1. What are the characteristics of PlayZap's online gaming platform?
2. Which distinguishing competitive gaming and game characteristics could PlayZap add?
3. How should PlayZap prevent online players' churn?
4. How should PlayZap increase its players' loyalty?

To create a theoretical framework, the literature study examines the characteristics of online mobile gaming, competitive gaming, player churn, and player loyalty. The study also employs empirical research, utilizing surveys to gather data from online CMG and Web3 players. Table 1 shows the formulated hypotheses.

The literature study shows the many-sided features of player motivations, such as entertainment, flow, achievement, skill-development, social interaction, and game innovation. It also investigates how these features affect player loyalty and churn potential. The new and

upcoming realm of Web3 gaming and the usage of NFTs is also explored, addressing their potential to enhance player engagement and loyalty.

The empirical research confirms the significance of enjoyment, flow, and perceived skill improvement in contributing towards player loyalty. It also shows that the presence of social features and consistent game innovation significantly reduce player churn. The conjoint analysis suggests a preference among Web3 players for cryptocurrency as both a reward and customization method, although these findings should be interpreted cautiously due to the lack of statistical significance. Table 1 shows which hypotheses are accepted or rejected.

Hypothesis		**Accepted/Rejected**
H1	A CMG that fulfills a player's need for enjoyment/relaxation will lead to higher levels in player loyalty.	Accepted
H2	Players who report experiencing flow more frequently while playing a CMG, will exhibit higher levels of loyalty.	Accepted
H3	Players who perceive a significant skill-improvement due to competitive mobile gaming will exhibit higher levels of loyalty to the game.	Accepted
H4	The presence of social features in online mobile games reduces players' churn.	Accepted
H5	Consistent game innovation in CMGs reduces players' churn.	Accepted
H6	A combination of real-life value rewards and in-game rewards are more appealing to web3 CMG players than only real-life value or in-game rewards.	Rejected
H7	Web3 CMG players value NFTs more as a reward than cryptocurrency or in-game rewards.	Rejected

Table 1: Overview of the acceptance or rejection of the hypotheses

By answering the central research question, recommendations towards PlayZap are made. These recommendations focus on the importance of social features, consistent game innovation, fostering skill development, and optimizing the reward system. As for future research, instead of a cross-sectional study, a longitudinal study could be used to examine the long-term effects of player motivations. In addition, future research could explore other aspects related to web3 gaming that may significantly affect player behavior.

In summary, this thesis provides valuable insights into the factors that influence player loyalty and churn in Web3 CMGs. The findings can inform the strategies of gaming platforms, like PlayZap, to enhance player engagement and retention in this rapidly evolving landscape.

Chapter 1: Introduction.

1.1 Introduction

Casual mobile games (CMGs) dominate the gaming landscape. Their intuitive designs, simple gameplay sessions, and often free-to-play models make them the perfect entertainment for a wide audience. From young to elders, when asked if they know CMGs like Candy Crush and Angry Birds, they probably will nod. Yet, within this realm of accessibility and convenience lies a constant challenge for developers and marketing managers. To quote the CEO of King[1] when asked about the most important key consumer metrics while doing research before investing: "So for me, the most important key performance indicator is player retention" (Makula, 2023). Studies reveal a hard truth, a staggering 40% to 60% of players abandon CMGs within the first 24 hours of installation (Verto Analytics, 2016). This volatile loyalty shows the need for innovative engagement strategies.

Traditionally, CMGs have relied on in-app purchases and advertising for monetization. While effective, these models don't necessarily guarantee long-term player commitment. If rewards are absent or perceived as insufficient, players can effortlessly switch between games. With the uprise in Play-to-Earn (P2E) mechanics, a potential game-changer that integrates real-world rewards into the gaming experience, players can earn assets like cryptocurrency or NFTs (non-fungible tokens) by completing in-game tasks, competing in tournaments, or simply showing consistent engagement.

The appeal of P2E raises interesting questions about its impact on player loyalty. Could the implementation of in-game rewards foster a deeper sense of investment in a CMG, motivating players to stick around longer? What drives individuals to play games? Is it the intrinsic enjoyment of gameplay, the thrill of achievement, or the potential for extrinsic rewards? P2E models tap into extrinsic motivations, but how they work together with a game's core motive is crucial.

Investigating the interaction between P2E and player loyalty holds significance for both CMG developers and players. Developers could gain key insights into strategies that stimulate long-term engagement. Players, on the other hand, could make informed decisions about where to

[1] King Digital Entertainment, a Swedish video game developer specialized in CMGs, known for developing CMGs like Candy Crush. Subsidiary company of Activision Blizzard.

invest their time and potentially their money. Observing the effects of intrinsic and extrinsic factors on player retention is key for gaming platforms, such as skill-based competitive gaming platform 'PlayZap', which will be presented later in this study.

1.2 PlayZap: a CMG-platform with a P2E-model

PlayZap is a free-to-play, Play-to-Earn gaming platform located in Barcelona, Spain and was founded in 2022. Its core team exists of 20 members, where most of them (12) are game developers and engineers. As a so-called Web3-game, the company aims to provide an equally amazing gaming experience as a Web2-game[2], while adding the innovative elements of blockchain technology, token economy, and game mechanics. To play and build on PlayZap's gaming platform, their native cryptocurrency (PZP-token) is used. This token is built on the Binance Smart Chain (BSC), which is the third largest blockchain in the world and especially known for its fast transaction speed and low transaction fees.

The company focuses on skill-based competitive tournaments and player vs. player matches, where players play against each other in popular casual game formats. Players can choose between multiple fixed stakes, where the winner of the match/tournament takes it all or gets the largest share of the pot. There is also an option where matches are played with an in-game coin without an extrinsic value, made for the players that want to train their skills or don't want to play for real tokens. Players can earn special rewards in the PZP-token, by just playing matches and completing certain challenges. This way, PlayZap targets a very wide gamer-audience. By offering a single app housing a diverse collection of casual games, such as Solitaire, 8-Ball Pool, Bingo, Tetris variants and Match games, PlayZap targets individuals who enjoy playing CMGs and like the possibility to earn rewards. By having a native token and an own ecosystem, the platform is very appealing for those interested in the cryptocurrency- and NFT-space and enjoy the P2E format. At last, the platform is very interesting for players that seek a challenge and skill-based competition within casual games.

The team of PlayZap consists mostly of experienced game developers, project developers and marketing employees with a background in traditional- and mobile gaming companies like MiniClip, Knowledge Adventure and Gameloft. They have secured a lot of partnerships with various entities to enhance its platform and reach. By partnering with other game developers

[2] In Web2-games, user and game data are stored on centralized servers managed by game developers. Web3 data is stored on decentralized servers that cannot be controlled by large tech-companies but by internet users.

and studios, they can bring established and new CMGs onto their platform. With the help of other blockchain & Web3 companies and marketing & community partners, PlayZap can secure and maintain their ecosystem more efficiently, and promote its platform and grow its user base.

To start the project, PlayZap secured over 4 million dollars in funding through Seed- and Private rounds (sold to venture capital firms and angel investors), and an Initial Coin Offering (ICO) held for the public (Cryptorank.io, 2024). The successful search for funding can probably be explained due to PlayZap being one of the few gaming platforms offering simple CMGs, while further advancing the development of the gaming finance sector.

1.3 The problem area

The main problem for PlayZap is that the company is not attractive enough compared with its competitors. This leads to most of their players leaving the platform after a certain time to join a different one or even leaving the entire space. With the P2E gaming sector growing rapidly, there is a constant inflow of competitors. Similar companies try to offer all sorts of Web3-games with all sorts of P2E-models. While most Web3-games are not mobile accessible, they often offer higher and more exiting rewards, which result in higher player retention (Gherghelas, 2024). Web3 gaming platforms like Gala Games and Wombat offer a large variety of games, including skill-based short-session casual games. Gala Games is a platform known for higher budget blockchain games played on PC and focusses on a broader gaming ecosystem, whereas Wombat collaborates with existing games, for PC and mobile, and creates P2E challenges and tournaments within these games. Both competing gaming platforms offer NFTs that can be earned and/or traded with other players. These NFTs serve as game assets, which possess one or more characteristics and sometimes could favor a player's skills. The usage of NFT's is a P2E mechanic that hasn't been implemented by PlayZap. Additionally, by having larger playerbases, these two competitors can create fairer tournaments and improve matchmaking between players based on their skill-level.

When players are not triggered enough by the available rewards, they probably lose interest faster and move to a different game. Another threat regarding P2E-models is that players sometimes have negative perceptions about it. Instead of the game being primarily targeted at having fun, socializing, passing time and/or feeling a sense of achievement, the game becomes mainly focused on making money. Players might play with different strategies, due to different goals. This could hinder adoption amongst casual players.

It becomes clear for a gaming platform like PlayZap that it is very important to know on what to focus. What factors are the most important to consider and how to promote the platform? As what kind of platform do they want to be seen? How to increase player loyalty, and do extrinsic rewards stimulate loyalty?

1.4 The central research question

"Which distinguishing competitive characteristics can gaming platform PlayZap add to its current online mobile web-3 games offering to prevent the churn of its players and increase the loyalty of its players?"

1.5 Theoretical sub-questions

1. What are the characteristics of online mobile gaming?
2. What entails distinguishing competitive gaming and game characteristics?
3. What entails online players' churn?
4. What entails online players' loyalty?

1.6 Empirical sub-questions

5. What are the characteristics of PlayZap's online gaming platform?
6. Which distinguishing competitive gaming and game characteristics could PlayZap add?
7. How should PlayZap prevent online players' churn?
8. How should PlayZap increase its players' loyalty?

1.7 Ethical research issues

With the landscape of P2E mechanics still being in its introduction phase and constantly evolving, there are some ethical concerns regarding the topic of P2E mechanics and web3 gaming. Some P2E games and features are chance-based and together with the extremely volatile token values regarding the cryptocurrency-space, elements of gambling can occur. Especially lower average income players make up a risky segment for gambling addiction, whereas they may view the earning potential of P2E-models as the primary reason for playing. With chance-based mechanics and the volatile token values, players may lose all their invested money. Additionally, it is often easy for players, even below the age of 18, to buy tokens in

exchange for fiat currencies. When traded for tokens, the real value in terms of fiat currency is easily forgotten (Chimienti et al., 2019).

Furthermore, the use of blockchain technology for rewards in cryptocurrencies and NFTs bring up issues of data ownership, privacy and security. P2E games often collect additional player data off-chain (e.g. email-addresses and gameplay preferences). There are risks associated with how this type of data is stored and who has access to it. Even with pseudonymous wallet addresses, the combination of blockchain- and off-chain data potentially allows P2E gaming platforms and third parties to build player profiles and track their activity.

1.8 Research limitations

Research into P2E mechanics and player loyalty and churn faces several challenges that can influence the findings. These challenges include the fast-evolving landscape of the P2E sector. New type of games, P2E-models, and regulations may affect the research' findings. Also, with the new trend of P2E mechanics being implemented into CMGs, the scarce availability of data and the possible little foreknowledge of respondents could result in a limited generalizability and/or reduced accuracy of the research. Furthermore, players who choose to take part in P2E games, might be exposed to self-selection bias due to certain motivations and behaviors.

Another research limitation arises regarding regulations. There is an inconsistency across jurisdictions regarding the use of cryptocurrencies. Laws governing the use of cryptocurrencies and thus also P2E mechanics vary a lot across countries, making it difficult to draw generalized conclusions. Regulatory bodies keep struggling with how to classify and regulate cryptocurrencies, resulting in constant changes in regulations and lawsuits.

1.9 Study structure

Chapter 1: Introduction.

The issue of player loyalty and churn regarding CMGs and the influence of P2E mechanics on the newer web3 gaming format, is related to the web3 gaming platform 'PlayZap'. Furthermore, the central research question and sub-questions are presented. In addition, ethical research issues and research limitations are described.

Chapter 2: Literature study.

Relevant literature is presented to answer the theoretical sub-questions. It includes descriptions about the characteristics of mobile gaming and competitive mobile gaming. The terms players' churn and loyalty are described, as well as how these terms are measured in previous literature. At last, hypotheses are formed and shown in a conceptual research model.

Chapter 3: Research methodology.

Through the gathered information from the literature study, the research design is described. Additionally, the data collection methods, sampling methods, and data analysis techniques are formed. The surveys, which have been used to gather first-hand empirical data are described, and their remarks and limitations are presented.

Chapter 4: Research outcome.

The results of the survey are showed and discussed, together with a description of the method of analysis. The statistical analysis and results are presented and are used for the empirical testing of the research model. Conclusions regarding the hypotheses are formed.

Chapter 5: Conclusions and recommendations.

Conclusions and recommendations regarding how PlayZap can reduce its players' churn and increase its players' loyalty by adding/changing competitive characteristics are presented. Finally, limitations of this thesis and recommendations for further research are presented.

Chapter 2: Literature study.

2.1 Characteristics of mobile gaming

The accessibility of smartphones has transformed the way we interact with mobile games and increases the unique characteristics that shape mobile player experiences. From getting enchanted by fictional worlds that offer an escape from the present, to the thrill of leveling up and completing in-game achievements, mobile games tap into a desire for challenge and reward. The implementation of social interactions and creating communities enhances players' experiences even more. Understanding the captivating elements is key to maintaining a healthy and balanced approach towards mobile gaming.

According to Jordaan & Humbani (2023), designing games that fulfil the player's personal needs appears as the biggest challenge for gaming companies. Escapism and fantasy in gaming significantly reduce stress (Prinsen & Scofield, 2021), which results in fulfilling player's needs. Game developers can design mobile games that help players escape into fictional worlds to accomplish tasks they would not do in their normal lives. The findings of Jordaan & Humbani also indicate that mobile games that appeal to the player's need or ability to accomplish challenging tasks will drive intention to play mobile games, regardless of whether the perceived value of information disclosure is low. By offering tournaments or challenges that can be intensified by creating tiers where players can progress, in which the prizes become larger as the tier increases, a player's need for achievement can be accomplished (Sailer et al., 2017).

In a paper written by McCauley et al. (2017), which tries to explain why players play the mobile game they play most frequently, they found that mobile games are primarily used for passing time and enjoyment. Another key motivator they found was that gamers use mobile games to relax and escape real-life challenges. Additionally, the social aspect of mobile gaming also is a significant key motivator. A lot of players are drawn to games where they can connect and interact with others. The desire for social interaction is a key driver for a positive WOM towards other players about mobile games (Erturkoglue et al., 2015). By ensuring trust in the game platform, indicating that the platform has a good reputation and is secure and by making it easy to use and accessible across multiple platforms, players can influence the success of games by communicating these advantages and attractive characteristics of a game to others.

Enjoyment being one of the biggest key motivators for playing online games is mentioned as well by Cheah et al. (2021), whereas other factors such as challenge, suspense, interactivity and social interaction influence enjoyment. Regarding to the results of Columb et al. (2020), the highest motives, in order, for online gaming are recreation, coping, competition, skill development, social and escape. A key characteristic of online mobile gaming is the presence of microtransactions. The study found that 72.9% of participants engaged in microtransactions, which suggests the commonness of making these transactions in mobile games and the impact on player spending and engagement.

While most players are primarily motivated by enjoyment and social aspects, there can be wide variations in the demand for achievement and skill development; some players seek out challenges, while others seek more laid-back experiences. New demographics have been drawn to mobile gaming, which may have an impact on the kinds of games that are played and how they are made. All things considered, online mobile gaming is a complicated and diverse phenomenon that is fueled by a range of social and personal preferences, technology breakthroughs, and incentives. McCauley et al. (2017) emphasize that mobile gamers are not a homogenous group, and their preferences vary widely. Some enjoy simple games for casual play, while others seek difficult challenges and want to master their abilities. This highlights the need for diverse game offerings to cater to different player types.

One of the most widely used and applied definitions in the videogame literature are the terms ‘flow’ and ‘immersion’ (Michailidis et al., 2018). Flow is seen as a state of complete absorption and focus within the gaming activity that leads to a sense of enjoyment and accomplishment. Immersion refers to the degree to which a player feels involved and engaged towards the game. Although flow and immersion are two different concepts, they often go hand in hand. An immersive game can help create a flow state by drawing the player into the game. On the contrary, flow can enhance immersion due to players who are fully absorbed in the game being more likely to feel emotionally and mentally connected to it. The quality of a player’s gaming experience is defined by immersion and flow (Cheah et al., 2021).

The predominant drivers for players seem to exist out of four motivators. Entertainment & relaxation, achievement, escapism & fantasy and social interaction. With the smartphone being the most used object in the world and always near its owner, players have to put in little effort to play a mobile game and to fulfill their needs.

2.2 Distinguishing competitive gaming and game characteristics

Competitive gaming has grown into a massive industry, with professional teams, leagues, and tournaments held online and offline. But competitive gaming is not only limited to professionals. Amateurs and casual players can also participate in online tournaments or leagues, due to the accessibility of online gaming platforms. To comprehend the types of competitive gaming and their characteristics, it is crucial to understand how they influence social engagement, skill-development and behavior regarding rewards.

The core of competitive gaming is direct interaction between players, where their goal is to outperform or defeat each other. This interaction can take many forms, such as player vs. player matches, team battles or ranked leaderboards. In player vs. player (PvP) matches and team battles, being defeated leads to unpleasant and stressful feelings, whether being the victor results in pleasant emotions and a reduction in stress (Wilson & Kerr, 1999). A threat to the enjoyment of PvP game modes is the greater amount of hostility measured, which significantly reduced the player's enjoyment (Shafer, 2012). Longitudinal research that represents an association between competitive videogames and aggression, the relation between aggression and the competitive aspect of gaming is strengthened (Adachi & Willoughby, 2016).

Competitive gaming requires multiple players to play against each other, and players often team up. Players are exposed to a new social environment which enhances social interaction between players and increases loyalty. Having more in-game friendships is one of the main reasons for team engagement (Huang et al., 2013). Players tend to team up with online friends to increase the likelihood of winning or ranking up fast. With the achievement motivation being one of the most valuable assets for game companies and the relation between a social environment and competitive gaming, a game structure that encourages cooperation between players is essential for the success of online games (Lou et al., 2020). Once players are immersed in a specific mobile game, they may speak positively about the game and recruit their friends to play with them. This makes word-of-mouth a valuable attribute towards the success of mobile games with social aspects (Wang, 2021).

Another characteristic of competitive gaming is the development of cognitive abilities that extend beyond the virtual realm. Bediou et al. (2018) indicate that engaging in competitive games can enhance a range of skills that are crucial for success in both personal and professional

life. The most well-known area of improvement is in cognitive abilities. Bavelier et al. (2012) shows that competitive gaming can improve attention, spatial reasoning, and memory. The fast-paced nature of most competitive games calls for quick decision-making and rapid information processing, which train the brain. Additionally, competitive gaming ensures players to analyze complex situations, come up with strategies, and make critical decisions under pressure. These experiences spill over into useful real-world skills, enhancing a player's ability to approach challenges with creative analytical solutions (Granic et al., 2014).

A different aspect in competitive games are real-world value rewards and in-game rewards, that fuel player motivation. Real-world value rewards are tangible, like a game platform currency. These rewards boost the competitive drive, due to the potential for financial gain (Hamari & Sjöblom, 2017). However, they can lead to pressure, burnout, and a loss of enjoyment (Kuss et al., 2017). On the other hand, in-game rewards with no real-world value also play a significant role in player motivation and engagement. With these in-game currencies players can buy virtual goods to customize their characters through skins, emotes or character titles. These virtual goods are often obtained through playing the game and winning matches, offer a sense of accomplishment and self-expression (Castranova & Lehdonvirta, 2014). While these rewards lack a monetary value outside the game and may not enhance a player's motivation as much as real-life value rewards, they tap into players' intrinsic motivation.

With the transition from web2 to web3 gaming due to the introduction of blockchain technology and NFTs, there has been a significant shift in the gaming landscape (Ayodele, 2023). The web3 gaming environment gives players true ownership of in-game assets in the form of NFTs, unlike web2 games where assets are controlled by its game developers. With this ownership, web3 players achieve the freedom to trade, sell, or transfer their assets outside of the game environment, which leads to a player-driven economy.

NFTs introduce a new concept of provable scarcity, which can make certain in-game items rare and valuable. Together with true ownership, scarcity of an item significantly increases the perceived value of NFTs for web3 gamers (Guidi & Michienzi, 2023), who see them as investments that can appreciate over time.

Competitive gaming takes place in various formats and stimulates social interaction and skill development. Player interaction, whether in teams or individual matches, drives competition

and can lead to both positive and negative emotions. Playing competitive video games also improve cognitive functions and problem-solving techniques. In addition, there are two different kinds of rewards in competitive gaming: monetary real-world rewards and imaginary in-game rewards. While in-game incentives provide players with a sense of success and a platform for self-expression, real-world value rewards can enhance competition and drive player engagement.

2.3 Online players' churn

Online player churn is a complex issue for gaming platforms with both short-term and long-term implications. It refers to the percentage of players that stop playing a game within a certain amount of time and is used as a metric for evaluating a game's success and sustainability (Runge et al., 2014).

To measure churn, various game specific features are tracked. Kim et al. (2017) predicts a mobile and online casual game model to determine churn using log data. For this model they collect the following data: amount of time played, earned scores and number of plays. With this data, variables can be measured such as mean scores, indexes and ratios. In most models that measure churn in videogames, the used variables consist of the session length and frequency, in-game progression, player intensity, and social interaction (Perianez et al., 2016). These variables are usually tracked for the first 7 days, due to giving the most valuable insights into player behavior (Perišic & Pahor, 2023) (Mustač et al., 2022).

Game innovation plays an important role in reducing churn. In the short term, original gameplay mechanics, engaging and familiar storylines and frequent updates can stimulate players' interest and sustain their engagement (Handrich et al., 2022). Another effective approach is offering welcome bonuses or special offers during the first week of playing. By convincing players to return in the short term with these incentives, players get a signal that the game values their participation and wants the players to enjoy the game (Mustač et al., 2022). In the long term, continuous innovation through game expansions, new game modes, and time-limited events can sustain the existing player base by providing new challenges and experiences (Gu & Jia, 2018).

Social network features also play a key role in reducing churn. Games that apply strong social connections through the game, with mechanics like in-game chats, clans/guilds (organized groups of players who regularly play together), shared activities, and friend lists create a sense of community and belonging (Alsén et al., 2021). These social features can significantly reduce churn, as players are more likely to stay engaged when they feel connected to other players (Kim et al., 2022). Also, social features can encourage players to return to the game, as they may not want to miss out on certain interactions with friends or clan/guild members or let them down by not playing.

To measure churn, various game-specific features are considered: session length and frequency, in-game progression, player intensity, and social interaction. These features are usually measured in the first seven days of player activity. Game innovation plays an important role in reducing churn. Short-term strategies include engaging gameplay, familiar storylines and mechanics, frequent updates, and welcome bonusses and daily rewards. Long-term strategies consist of continuous innovation through expansions, player feedback, new modes, and time-limited events. Social network features like in-game chats, clans/guilds, and shared activities create a sense of community and belonging.

2.4 Online players' loyalty

Besides player churn rates, another metric for evaluating a game's success is player loyalty. Player loyalty refers to the sustained engagement and commitment of players to a game over an extended period. It consists out of behavioral loyalty (e.g. frequency of play, time spent in-game, in-app purchases) and attitudinal loyalty (e.g. positive feelings towards the game, willingness to recommend the game to peers) (Hamari & Sjöblom, 2017).

There are several factors that influence player loyalty, both within and outside the online game environment. Enjoyment, which entails the enjoyable experience derived from the gameplay, is a fundamental driver of loyalty (Chen, 2021). Players that find a game enjoyable are more likely to invest their time and effort in it, creating a sense of attachment and loyalty. Another factor is perceived attractiveness, which consists of technological features such as visual appeal, storyline, and character design, also contributes to loyalty (Liao et al., 2019). Additionally, economic stimulus plays a significant role in influencing player loyalty. Rewards, discounts, exclusive content, and paid upgrades can further incentivize players to remain loyal to a game Akin, 2023).

Flow, a term referred to earlier, plays a significant role in stimulating player loyalty. It is referred to as a state of complete immersion and enjoyment in an activity (Mirvis & Csikszentmihalyi, 1991), and occurs in gaming when players are fully absorbed in the challenges and rewards of a game without a sense of time passing (Liao & Teng, 2017). Flow often leads to a desire to continue playing and thus increasing behavioral loyalty. Continuous usage may lead to habit formation. When players form a habit of playing a particular game, it becomes a part of their routine, making them more likely to return and continue playing (Pham et al., 2021). Although the playing experience (flow) sometimes becomes more important than the outcome (satisfaction), which may explain why satisfaction doesn't always directly lead to player loyalty (Liu. et al., 2018).

Furthermore, both extrinsic and intrinsic motivations play a crucial role in forming player loyalty. Extrinsic motivation comes from external rewards like in-game currency, achievements, or social recognition (Wan & Chiou, 2007). While these rewards can be powerful motivators, they may not always lead to long-term loyalty if the game itself lacks intrinsic appeal. Intrinsic motivation comes from the intrinsic enjoyment and satisfaction of playing and is a more sustainable driver of loyalty (Wan & Chiou, 2007). Players that find a game genuinely fun and engaging are more likely to remain loyal, even in the absence of external rewards (Penttinen et al., 2018).

In addition, social influences also significantly impact player loyalty. The sense of community through the implementation of clans/guilds, friend lists and other social features can create a strong bond between players and the game (Kohler et al., 2011). Positive interactions with other players, shared experiences, and the feeling of belonging to a virtual community can encourage players to stay loyal (Liao et al., 2020).

Beyond the economic aspect, NFTs can foster a sense of community and increase identity among gamers. Owning rare/unique NFTs are often accompanied by exclusive benefits, helping the player's gameplay, which leads to the possibility of being seen as a status symbol (Alizadeh et al., 2023). With the cross-platform interoperability that comes along with web3 gaming, in-game assets can be used in multiple games and platforms, gathering more players together and creating larger communities (Ayodele, 2023).

In conclusion, online player loyalty is an interaction of psychological, economic, and social factors. By stimulating flow, taking extrinsic and intrinsic motivation into account, offering economic stimuli, and encouraging social environments, game designers can create a loyal player base that remains invested in their games in the long run.

2.5 Hypotheses and central research question

To answer the central research question:

"Which distinguishing competitive characteristics can gaming platform PlayZap add to its current online mobile web-3 games offering to prevent the churn of its players and increase the loyalty of its players?"

The following hypotheses are formed:

H1: a CMG that fulfills a player's need for enjoyment/relaxation will lead to higher levels in player loyalty.

H2: Players who report experiencing flow more frequently while playing a CMG, will exhibit higher levels of loyalty.

H3: Players who perceive a significant skill-improvement due to competitive mobile gaming will exhibit higher levels of loyalty to the game.

H4: The presence of social features in online mobile games reduces players' churn.

H5: Consistent game innovation in CMGs reduces players' churn.

H6: A combination of real-life value rewards and in-game rewards are more appealing to web3 CMG players than only real-life value or in-game rewards.

H7: Web3 CMG players value NFTs more as a reward than cryptocurrency or in-game rewards.

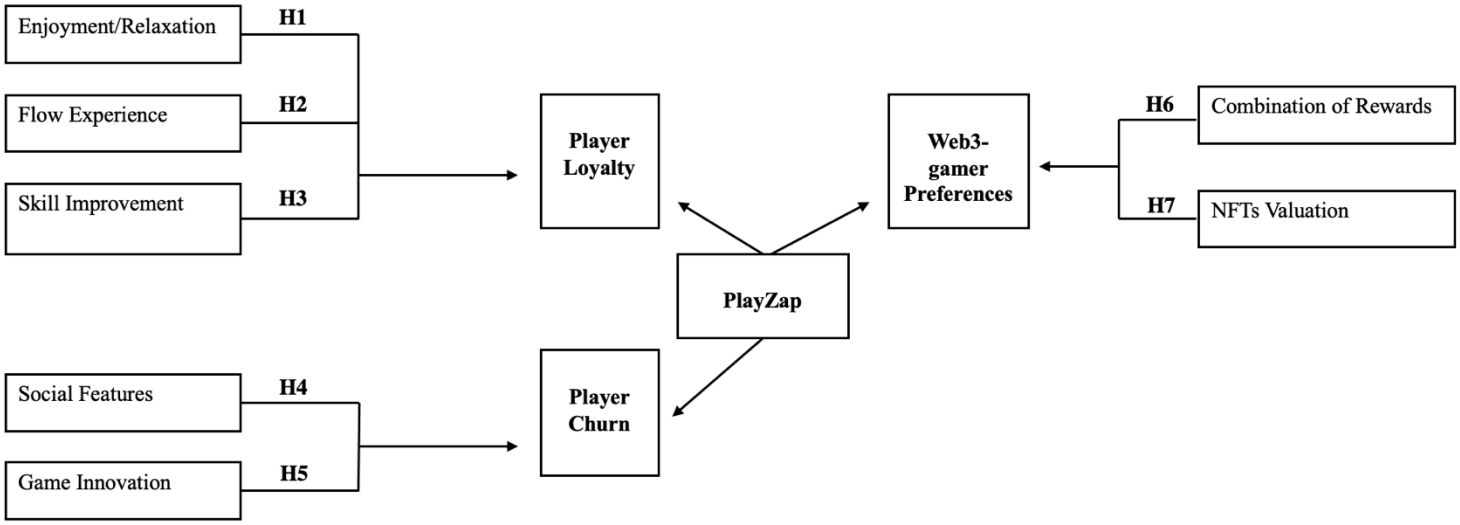

Figure 1: Conceptual research model.

Chapter 3: Research methodology.

3.1 Research methodology

To answer the hypotheses, academic research must be done. Both qualitative and quantitative research methods offer valuable insights. Using qualitative research, such as interviews or focus groups, an in-depth understanding of players' motivations, preferences, and critique points can be obtained. With quantitative research, by using surveys and data analysis, a larger sample size can be examined.

For this thesis, quantitative research is used. Due to the ability of making sure that the findings are generalizable and statistically significant, quantitative research can provide concrete evidence for the impact of certain game features and characteristics on player churn and loyalty. Also, quantitative data can be easily analyzed using statistical tools and software, ensuring more objective and accurate conclusions. While qualitative research could offer valuable contextual and specific insights, quantitative research provides a broader understanding of trends and patterns, is less likely to be influenced by subjective interpretations strengthening the validity of the research and is more representative of the overall gaming population.

3.2 Data collection methodology

To collect the necessary data to accept or reject the hypotheses, two online surveys are distributed to a diverse sample of online casual mobile gamers and web3-players. The surveys are issued to respondents through multiple channels, including online gaming forums, social media groups, and relevant gaming communities.

The first survey (Appendix B) consists of several sections, each designed to measure specific variables related to the hypotheses. The first section contains a short description of the topic and shows some examples of the most well-known online CMGs to freshen up the respondents' memories. To ensure that respondents are/were current/recent players of CMGs, the survey starts with asking the respondent if they have played an online CMG in the past 30 days. If not, the survey ends, due to not being a suitable respondent. To significantly reduce memory retrieval bias, participants are asked to enter the name of the current or most recent CMG they're playing.

The following two sections are constructed to gather data that afterwards can calculate values for the dependent variables, player loyalty and player churn. The dependent variable, player loyalty and player churn, are calculated with the following formulas:

Player Loyalty = ***Frequency*** + ***Session length*** + ***Retention*** + ***Social engagement*** + ***Game satisfaction*** + ***game attachment*** + ***Word-of-mouth (WOM) behavior***

Player Churn = ***Frequency*** + ***Session length*** + ***Retention rate*** + ***Game satisfaction*** + ***Boredom/Frustration (inverted)*** + ***Intention to churn (inverted)***

A player loyalty score of 1 would indicate the least loyal player, whereas a score of 5 would indicate the most loyal players. A player churn score of 1 would indicate that the player has a very low retention rate (likely to stop playing soon), whereas a player churn score of 5 would indicate that the player has a very high retention rate (likely to continue playing for a long time).

The descriptions and options for the descriptors are shown in Table 2 (Appendix D). To evaluate the independent variables, enjoyment and flow, the next two sections require the respondents to answer ordinal questions. These ordinal questions can be transformed into formulas, which are as follows:

Enjoyment = ***Core enjoyment*** + ***Immersion*** + ***Social enjoyment***

Flow = ***Immersion*** + ***Concentration*** + ***Time distortion***

To collect the data to prove or disapprove the hypotheses regarding the perceivement of skill-improvement, social features, and game innovation on player loyalty or churn, a few single ordinal questions are asked.

To gather data from the web3 gaming respondents that entail their preferences regarding earning rewards, they are presented with a different survey (Appendix C). This survey exists of 12 questions, each consisting of two optional choice sets. Each choice set contains four features that differ in combinations with one another. The four features are: Acquisition method (How the reward is acquired), Difficulty or Stake value (How difficult it is to acquire the reward/How high the stakes of the match are), Reward type (The type of reward, with NFTs and

cryptocurrency having a monetary value), and Customization method (Which method is used to buy/use in-game assets).

The last part of both surveys consists of demographic questions, such as age, gender, education level, occupation, (web3) gaming experience. This makes it possible to get a deeper understanding of the respondents and generalize the results. Participation will be voluntary and anonymous, with the collected data being stored securely in accordance with ethical guidelines.

3.3 Sample

The surveys are made with Qualtrics and target a diverse sample of online CMG and web3-players, to pursue representation of the wider mobile gaming community. With the first survey being applicable to a broader audience, to ensure relevance, respondents are asked to confirm they have played an online CMG within the past 30 days. Additionally, to minimize recall bias, participants are asked to specify the name of their current or most recent CMG.

The characteristics of the respondents include a wide range of CMG players. With CMGs being available for all ages and type of players, there are no specific categories of CMGs being considered. With a diverse sample of CMG players, the generalizability of the findings is increased. To ensure that the respondents provide valuable insights, they need to be experienced with CMGs.

The second survey targets respondents who have knowledge about and experience with web3 games. With the survey targeting a more niche group of gamers, a deeper study of preferences related to the web3 gaming environment is conducted. To ensure relevant answers, respondents are asked if they are familiar with web3 gaming. Given the more targeted sample, it is assumed that respondents have sufficient knowledge about the subject.

With the web3 gaming environment being a lot smaller, the characteristics of the web3 respondents are possibly more alike compared to traditional web2 players. This homogeneity in characteristics might be more present in factors as age, experience and education. With web3 gaming being a recent technology, and the higher barrier to entry due to blockchain knowledge requirements, the diversity amongst web3 players could be limited.

The surveys are distributed across multiple channels, including online (web3) gaming forums, social media groups, and relevant (web3) gaming communities. This approach results in getting a broad range of opinions and experiences with online CMGs, as well as the web3 gaming community.

Both surveys collected data between the 16th of June and 20th of July.

3.4 Data analysis methods

To analyze the data obtained from the surveys and test the hypotheses, a combination of statistical methods will be employed. These statistical methods are done in SPSS. For the first two hypotheses, correlation analysis will be used to examine the relationships between continuous variables, such as the association between player enjoyment or flow, and player loyalty. By making use of the Pearson (if normally distributed) or Spearman rank (if not normally distributed) correlation coefficient test, which tests the strength and direction of the linear relationship or monotonic association between two continuous and normally distributed or two ranked variables, the relation between player enjoyment or flow, and player loyalty can be determined. The absolute value of the correlation coefficient indicates the strength of the relationship, with the value being closer to 1 (positive or negative), suggesting a stronger correlation. The sign of the correlation coefficient indicates the direction of the relationship. Where a positive correlation indicates that if one variable increases, the other also increases and vice versa.

The third hypotheses will be tested through a one-way ANOVA. If this test rejects the null hypothesis, a Post-hoc LSD test will be done. With the value for perceived skill-improvement having more than two groups due to measuring this value through a 5-point likert scale, a one-way ANOVA test can compare the mean loyalty scores across these multiple categories. A significant F-statistic would indicate that at least one group differs significantly in loyalty scores. If this is the case, to further identify which specific group(s) differ, a Post-hoc LSD test is conducted. This test compares the means of all possible pairs of groups and determines if the observed differences are statistically significant. With the sample size being small and the few numbers of comparisons, Fisher's Least Significant Difference (LSD) is the most appropriate Post-hoc test. The results of the Post-hoc test show which specific pairs of group means are significantly different from each other, and the magnitude of the differences.

To test the fourth and fifth hypothesis, ordinal logistic regressions will be employed. This type of regression models the relationship between ordinal independent variables, such as the importance of social features or perceivement of game innovation, and the likelihood of player churn. The regression coefficient for the importance of social features or consistent game innovation will indicate whether valuing the independent variable in question, decreases the odds of churn.

Lastly, to test the sixth and seventh hypothesis, a conjoint analysis will be conducted. This analysis is done in R Studio. This type of analysis assesses player preferences for different reward structures. By using a fractional factorial design of 16 choice sets, and presenting them against each other in 12 questions, the relative importance of each reward type can be determined. Each choice set presents different combinations of reward types, values, difficulty/stake value, and customization method.

3.5 Survey and data analysis remarks and limitations

As mentioned, to ensure relevance, respondents of the first survey are asked to confirm they have played an online CMG within the past 30 days. If not, they are excluded from the survey, which may limit the diversity of the sample and exclude insights from worn-out players. Furthermore, while both surveys attempt to reduce memory retrieval bias by for instance asking for the name of the most current or recent CMG, it still relies on respondents' self-reported data. This data might not always be accurate. Another remark entails the calculation of player loyalty, player churn, enjoyment, and flow using specific formulas based on various factors. However, these formulas might not capture the full complexity of these concepts, as these concepts can be influenced by many factors beyond those included in the formulas. To reduce survey fatigue bias, only specific factors are used to calculate the formulas.

With both surveys taking approximately four to seven minutes, some respondents may experience fatigue. Participants may abandon the survey before completing it, or give less thoughtful or accurate responses, leading to less reliable data. Unreliable responses due to fatigue can reduce the statistical power of the analysis, making it harder to identify significant effects.

Chapter 4: Research outcome.

4.1 Descriptive statistics

4.1.1 Survey 1

The first survey was filled out by 213 respondents, of which 185 were completed and considered as useful data. The average age of the respondents were 25 years old, with the youngest being 13 and the oldest 64. 75.1% of the respondents are male, 23.8% are female, and 1.1% preferred not to report their gender. The average mobile gaming experience of the respondents holds a value of 3.52, which is almost in the middle of the options 3-5 years of mobile gaming experience and 5-10 years of experience. No respondent reported a mobile gaming experience of less than one year, 41.6% reported an experience of three to five years, and 35.1 percent reported an experience of five to ten years.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	185	13	64	25,39	6,174
Experience	185	2	5	3,52	,847
Valid N (listwise)	185				

Table 3: Descriptive statistics of age and CMG experience from survey 1

Table 3 shows the descriptive statistics. The mean and standard deviation of all variables except age and experience are not to be interpreted, due to not saying anything meaningful about the variable. The frequencies and minimum/maximum values for these variables are shown in Table 4 (Appendix D).

4.1.2 Survey 2

The second survey was filled out by 199 respondents, of which 187 were completed and considered as useful data. The average age of the respondents were 28 years old, with the youngest being 22 and the oldest 52. 97.3% of the respondents are male, 1.6% are female, and 0.1% preferred not to report their gender. The average experience with web3 gaming of the respondents holds a value of 4.01, which represents 6-12 months of web3 gaming experience.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	187	22	52	27,60	3,987
Gender	187	1	4	1,05	,333
Education	187	1	6	3,86	,905
Occupation	187	1	7	3,61	1,147
Experience	187	1	6	4,01	,948
Valid N (listwise)	187				

Table 5: Descriptive statistics from survey 2

Table 5 shows the descriptive statistics. The mean and standard deviation of all variables except age and experience are not to be interpreted, due to not saying anything meaningful about the variable.

Some differences between both surveys are the respondents' age and variations in gender. The respondents of the first survey are younger compared to the second survey and have a much higher standard deviation suggesting that the data for age are spread out over a wider range of values within the first survey. The sample of the second survey consists of almost only men (97.3%), as where the first survey the percentage of men is 75.1%. As for the differences in experience it is difficult to make a comparison due to being measured with different options.

4.2 Hypothesis testing

4.2.1 Hypothesis 1

The first hypothesis: A CMG that fulfills a player's need for enjoyment/relaxation will lead to higher levels in player loyalty, is tested through correlation analysis. With the data being not-normally distributed and at least one of the variables being measured on an ordinal scale, the Spearman's rank correlation coefficient test is used.

Correlations

			Loyalty	Enjoyment
Spearman's rho	Loyalty	Correlation Coefficient	1,000	,549**
		Sig. (2-tailed)	.	,000
		N	202	202
	Enjoyment	Correlation Coefficient	,549**	1,000
		Sig. (2-tailed)	,000	.
		N	202	202

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6: Spearman's rho correlation matrix for loyalty and enjoyment

Table 6 shows a moderate[3] positive correlation between a player's need for enjoyment, and loyalty. The Spearman's rank correlation coefficient of 0.549, indicates a moderate positive monotonic association, suggesting that as a player's enjoyment increases, loyalty is likely to increase as well. With the significance level (2-tailed) of (0.000) being lower than (0.01), it is possible to conclude that the probability of this correlation due to chance alone is very low. That is to say, it is likely that there's a positive association between enjoyment/relaxation and player loyalty.

In the context of the hypothesis, this result supports the hypothesis that "A CMG that fulfills a player's need for enjoyment/relaxation will lead to higher levels in player loyalty." The moderate positive correlation and statistical significance suggest that enjoyment/relaxation is a significant factor that influences CMG player loyalty.

4.2.2 Hypothesis 2

The second hypothesis: Players who report experiencing flow more frequently while playing a CMG, will exhibit higher levels of loyalty, is tested through correlation analysis. With the data being not-normally distributed and at least one of the variables being measured on an ordinal scale, the Spearman's rank correlation coefficient test is used.

Correlations

			Loyalty	Flow
Spearman's rho	Loyalty	Correlation Coefficient	1,000	,599**
		Sig. (2-tailed)	.	,000
		N	202	202
	Flow	Correlation Coefficient	,599**	1,000
		Sig. (2-tailed)	,000	.
		N	202	202

**. Correlation is significant at the 0.01 level (2-tailed).

Table 7: Spearman's rho correlation matrix for loyalty and flow

Table 7 shows a moderate[3] positive correlation between a player experiencing flow, and loyalty. The Spearman's rank correlation coefficient of 0.599, indicates a moderate positive monotonic association, suggesting that the more flow a player experiences, this player's loyalty is likely to increase as well. With the significance level (2-tailed) of (0.000) being lower than (0.01), it is possible to conclude that the probability of this correlation due to chance alone is very low.

[3] Rule of thumb for interpreting the size of a correlation coefficient: [.00 to .30]=negligible correlation, [.30 to .50]=low correlation, [.50 to .70]=moderate correlation, [.70 to.90]=strong correlation, [.90 to 1.00]=very strong correlation. (Mukaka, 2012)

That is to say, it is likely that there's a positive association between experiencing flow and player loyalty.

In the context of the hypothesis, this result supports the hypothesis that "Players who report experiencing flow more frequently while playing a CMG, will exhibit higher levels of loyalty." The moderate positive correlation and statistical significance suggest that the player's experience of flow is a significant factor that influences CMG player loyalty.

4.2.3 Hypothesis 3

The third hypothesis: Players who perceive a significant skill-improvement due to competitive mobile gaming will exhibit higher levels of loyalty to the game, is tested through a one-way ANOVA test and a Post-hoc LSD test.

Table 8 (Appendix D) shows that the significance value (0.001) is less than (0.05), indicating that there's a statistically significant difference in loyalty levels among the five groups (five ordinal ranks of the 5-point likert scale on agreement) defined by perceived skill-improvement. The F-value (4.851) being higher than 1, further contributes to the assumption that the difference between groups is meaningful.

Based on this one-way ANOVA test, it can be concluded that there is enough evidence to suggest that the level of perceived skill-improvement is associated with different levels of player loyalty. To determine which specific levels of perceived skill-improvement lead to the highest loyalty, the Post-hoc LSD test is performed.

Table 9 (Appendix D) shows that there are several significant differences between groups at a (0.05) significance level. The fifth group (strongly agreeing to experiencing skill-improvement through playing), shows significantly higher loyalty scores than the second, third, and fourth group. It also reports a non-significant higher loyalty score than the first group, making the pairwise comparison between the first and fifth group not interpretable. The fourth group (agreeing to experiencing skill-improvement through playing), shows a significantly higher loyalty score than the second group. It also reports a non-significant higher loyalty score than the first and third group, making these pairwise comparisons not interpretable.

The first (strongly disagreeing), second (disagreeing), and third (neither agreeing/disagreeing) groups all show a step-by-step increasing effect of perceived skill-improvement on player loyalty, but due to being mostly non-significant differences, these comparisons are not interpretable.

In the context of the hypothesis, these results supports the hypothesis that "Players who perceive a significant skill-improvement due to competitive mobile gaming will exhibit higher levels of loyalty to the game." Groups with higher perceived skill improvement (mainly the fourth and fifth group), show, in most comparisons, significantly higher loyalty scores than groups with lower perceived skill-improvement.

4.2.4 Hypothesis 4

The fourth hypothesis: The presence of social features in online mobile games reduces players' churn, is tested through an ordinal logistic regression. This analysis uses a 5-point likert scale to measure the effect of the importance to the player of social features in CMGs on their intention to churn. A significant negative estimate for the importance of social features would indicate an increasing effect towards the player's intention to churn, whereas a significant positive estimate would indicate a decreasing effect towards the player's intention to churn.

Table 10 (Appendix D) shows with the Model Fitting Information that the used model is significant (0.000), meaning the predictors put together improve the model's ability to explain players' churn. The result of the Pearson Goodness-of-Fit with a unsignificant significance of (0.877), suggests there is some lack of fit regarding the overall fit of the model to the data. However, the Deviance Goodness-of-Fit with a significant significance of (1.000), suggests there is a good fit regarding the overall fit of the model to the data. The Pseudo R-Square tests indicate that 22% of the variance in the outcome variable is explained by the model (0.22 Cox and Snell & Nagelkerke), and that there is a modest improvement in fit over the baseline model (0.055 McFadden). Based on these tests, the ordinal logistic regression model seems to provide an appropriate fit to the data.

Table 11 (Appendix D) shows that there are negative significant estimates, meaning that the different levels regarding the importance of social features, increase the likelihood of churning. The negative estimate of the lowest level of the importance of social features (level 1; Very unimportant) on player's churn is not significant, making this estimate not interpretable. The

negative estimates of level 2 (-1.926), 3 (-1.310), and 4 (-0.041) are statistically significant at the level of 0.05. It is noticeable that with a higher level of social features, the negative estimates decrease, meaning that a higher presence of social features in online mobile games indeed reduces players' churn. With the test of parallel lines holding a significance of (1.000), it indicates that the model is likely to be valid and the coefficients can be interpreted in a straightforward approach.

In the context of the hypothesis, this result supports the hypothesis that "The presence of social features in online mobile games reduces players' churn." The ordinal logistic regression analysis shows a significant decreasing negative estimate on players' churn and an increasing presence of social features in online mobile games.

4.2.5 Hypothesis 5

The fifth hypothesis: Consistent game innovation in CMGs reduces players' churn, is tested through an ordinal logistic regression. This analysis uses a 5-point likert scale to measure the effect of the importance to the player of consistent game innovation in CMGs on their intention to churn. A significant negative estimate for the importance of consistent game innovation would indicate an increasing effect towards the player's intention to churn, whereas a significant positive estimate would indicate a decreasing effect towards the player's intention to churn.

Table 12 (Appendix D) shows with the Model Fitting Information that the used model is significant (0.000), meaning the predictors put together improve the model's ability to explain players' churn. The result of the Pearson Goodness-of-Fit with a unsignificant significance of (0.997), suggests there is some lack of fit regarding the overall fit of the model to the data. However, the Deviance Goodness-of-Fit with a significant significance of (1.000), suggests there is a good fit regarding the overall fit of the model to the data. The Pseudo R-Square tests indicate that 23% of the variance in the outcome variable is explained by the model (0.23 Cox and Snell & Nagelkerke), and that there is a modest improvement in fit over the baseline model (0.058 McFadden). Based on these tests, the ordinal logistic regression model seems to provide an appropriate fit to the data.

Table 13 (Appendix D) shows that there are negative significant estimates, meaning that there are some levels regarding the importance of social features that reduce the likelihood of

churning. The negative estimate of the lowest level of the importance of consistent game innovation (level 1; Very unimportant) on player's churn is significant and has the highest negative estimate (-5.424). The negative estimates of level 2 (-1.690), 3 (-1.262), and 4 (-0.721) are statistically significant at the level of 0.05. It is noticeable that with a higher level of consistent game innovation, the negative estimates decrease, meaning that a higher presence game innovation in online mobile games indeed reduces players' churn. With the test of parallel lines holding a significance of (0.980), it indicates that the model is likely to be valid and the coefficients can be interpreted in a straightforward approach.

In the context of the hypothesis, this result supports the hypothesis that "Consistent game innovation in CMGs reduces players' churn." The ordinal logistic regression analysis shows a significant decreasing negative estimate on players' churn and an increasing importance of consistent game innovation in online mobile games.

4.2.6 Hypothesis 6

The sixth hypothesis: A combination of real-life value rewards and in-game rewards are more appealing to web3 CMG players than only real-life value or in-game rewards, is tested through a conjoint analysis.

Table 14 (Appendix D) shows the conjoint analysis output. Based on this output, the results of the conjoint analysis are uncertain. All coefficients are unsignificant, making them not interpretable. This means it is not possible to say which factors have a significant impact on web3 player preferences.

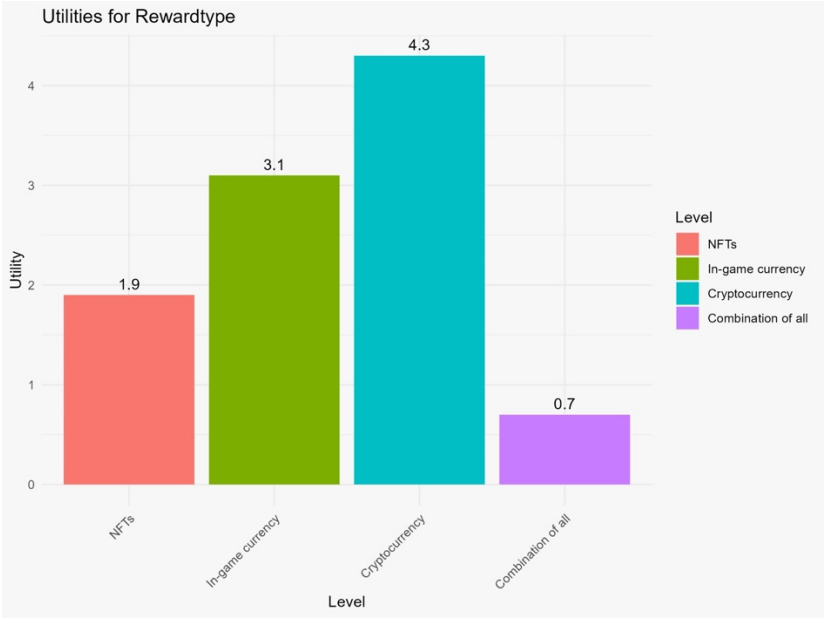

Figure 2: Histogram on utility values of the reward type levels

Figure 2 shows that a combination of real-life value rewards (NFTs and cryptocurrency) and in-game rewards has the lowest utility score out of all four levels, suggesting that web3 players dislike this option the most. Cryptocurrency has the highest utility, followed by in-game currency. NFTs as a reward type has the lowest utility score. This suggests that web3 players prefer obtaining rewards in the form of cryptocurrency, instead of a combination of all.

In the context of the hypothesis, this result rejects the hypothesis that "A combination of real-life value rewards and in-game rewards are more appealing to web3 CMG players than only real-life value or in-game rewards." The conjoint analysis is not significant, meaning that the estimates are possibly due to chance.

4.2.7 Hypothesis 7

The seventh hypothesis: Web3 CMG players value NFTs more as a reward than cryptocurrency or in-game rewards, is tested through a conjoint analysis.

Table 14 (Appendix D) shows the conjoint analysis output. Based on this output, the results of the conjoint analysis are uncertain. All coefficients are unsignificant, making them not interpretable. This means it is not possible to say which factors have a significant impact on web3 player preferences.

Figure 2 shows that cryptocurrency has the highest utility, followed by in-game currency. NFTs as a reward type has the lowest utility score. This suggests that web3 players prefer obtaining rewards in the form of cryptocurrency, instead of NFTs. Figure 3 shows that the NFTs are the least preferred method for customization, with cryptocurrency being the most preferred method followed by in-game currency. This also suggests that web3 players prefer the use of cryptocurrency or in-game rewards instead of NFTs.

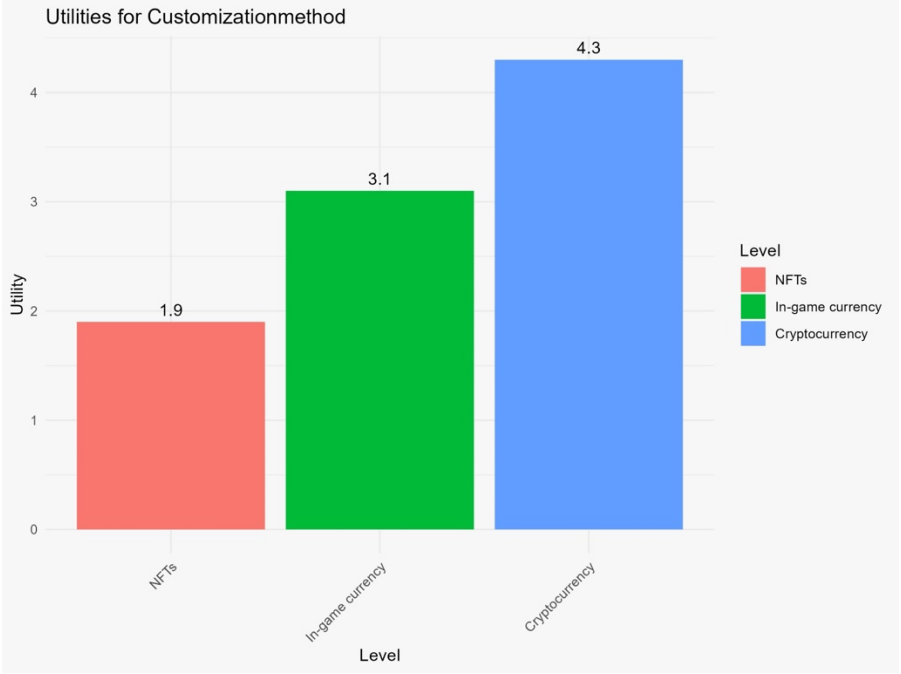

Figure 3: Histogram on utility values of the customization method levels

In the context of the hypothesis, this result rejects the hypothesis that "Web3 CMG players value NFTs more as a reward than cryptocurrency or in-game rewards." The conjoint analysis is not significant, meaning that the estimates are possibly due to chance.

4.3 Summary of key findings

Through the performance of multiple statistical analysis methods, it was found that both player enjoyment and the experience of flow significantly correlate with players' loyalty towards CMGs. With the use of a one-way ANOVA and a LSD post-hoc test, it can be concluded that a higher level of perceived skill improvement due to competitive elements in CMGs results in a higher level of player loyalty. The presence of social features and importance of consistent game innovation contribute to reducing players' churn, as shown through ordinal logistic regression analyses.

The results of the conjoint analysis show a preference for cryptocurrency when it comes to the type of reward and customization method, suggesting web3 players prefer the use of cryptocurrency overall. Regarding the reward type, the combination of real-life value rewards (cryptocurrency and NFTs) and in-game rewards is the least preferred, suggesting that web3 players might have a clear preference regarding only one type of reward instead of a combination. However, the results based on the conjoint analysis are uncertain due to the lack of significant results.

4.4 Limitations and remarks of the empirical research

Due to web3 gaming being a newer industry, made of a more niche player base, the sample of the second survey is limited to a narrower population. This decreases the generalizability of the results that are based on the second survey. Furthermore, with web3 gaming still being a new industry, respondents' experiences are relatively short-term, possibly leading to less robust results.

In the case of the third hypothesis, which used a one-way ANOVA and LSD post-hoc test to analyze the data, an HSD post-hoc test would also be suitable. Due to the sample size being small and the few numbers of comparisons, LSD is chosen. But LSD does not control for the family-wise error rate, making it more vulnerable to false positives. An HSD test could provide a more accurate estimation of the differences in perceived skill-improvement between different levels of players' loyalty. With the HSD post-hoc test reporting slightly non-significant estimates, and the LSD post-hoc test reporting significant estimates, LSD is chosen.

Moreover, the Pearson and Deviance goodness-of-fit tests (hypotheses 4&5, tables 10&12 (Appendix D)) contradict each other. The Pearson test suggests that there is some lack of fit, while the Deviance test suggests there is a good fit. These contradicting results might suggest that although the model sufficiently predicts the overall model fit, it might not fully seizes all details within the data.

Furthermore, the non-significant estimated coefficients in the conjoint analysis indicate that the factors used for the analysis, might not fully explain web3 players' preferences. It is likely that there are other unmeasured variables that play a more significant role in web3 players' preferences.

Chapter 5: Conclusions and recommendations

5.1 Key findings

5.1.1 Key findings of the literature study

The literature study investigates the wide variety in online CMGs and its characteristics, for both web2 and web3 gaming. It shows that there are several motivations for players to keep loyal to a game and decrease their likelihood of churning. With the increasing accessibility provided by smartphones, these motivations can be met faster.

Also, the literature supports the idea that enjoyment and relaxation within CMGs are primary motivations for players to play mobile games and are key drivers of player loyalty. When a CMG satisfies a player's need for enjoyment and/or relaxation, it increases their satisfaction with the game, resulting in a higher degree of loyalty towards the game. Another important factor regarding player loyalty is the role of flow. Flow is a state of deep immersion and focus and occurs in gaming when players are fully absorbed in the challenges and rewards of a game without a sense of time passing. Players who frequently experience flow are more likely to show higher loyalty towards the CMG that provides them with this factor.

Furthermore, the study explores the characteristics of competitive CMGs, showing the importance of stimulating social interaction, the contributing effects on skill development, and strategic thinking. Another important aspect of competitive mobile gaming are the positive and negative emotional experiences, depending on the competitive outcomes.

Moreover, the theoretical research investigates the metrics of player loyalty and churn. Player loyalty is measured through a combination of factors, such as the length of each game session, play frequency, consistent playing, game satisfaction, game/brand attachment, and word-of-mouth behavior. To measure churn, besides similar factors like frequency, session length, consistent playing and game satisfaction, other factors such as experienced boredom/frustration and the intention to churn are taken into account.

At last, the literature presents the increasing importance of web3 gaming and the use of NFTs, which introduce new features of ownership and scarcity to in-game assets. The use of these new mechanics have the potential to further expand player engagement and loyalty, and increase the

sense of community and identity among gamers through the ability of breaching through different platforms.

5.1.2 Key findings of the empirical research

The empirical research uncovers multiple key insights that show the complex attributes of player behavior regarding CMGs. It reveals the significance of player enjoyment and the experience of flow as important factors of player loyalty. The data shows that higher levels of enjoyment and an experience of flow while playing, significantly correlate with higher levels of player loyalty. Indicating that player enjoyment and the experience of flow are to be taken seriously. Furthermore, the research reports a positive and significant association between the perception of skill improvement, derived from competitive mobile gaming, and higher levels of player loyalty. Suggesting that players who notice that through the competitive gameplay of the CMG are also enhancing their skills, have a higher tendency to keep playing the game.

Moreover, the research examines the role of social features and consistent game innovation in reducing the likelihood of churning. The presence of social features, such as in-game chat functions, guild/clans and friend lists, has a significant increasing effect on lowering the likelihood of player churn. This indicates that players that notice the presence of social features in a CMG, are less likely to stop playing the game on short notice. Also, the importance of consistent game innovation, through constant game updates and time-limited events, has a significant increasing effect on lowering the likelihood of player churn. This suggests that players who experience consistent game innovation within a CMG, are less likely to stop playing the game in a short period of time.

At last, the study investigates the upcoming realm of web3 gaming. The use of NFTs as a reward mechanisms and customization method appears to be the most disliked amongst the use of cryptocurrency and in-game currencies. The research also observes that a combination of real-life value rewards (cryptocurrency and NFTs) and in-game rewards, is the least preferred alternative amongst web3 players. These results suggest that web3 players prefer a singular reward type and approve of the use of cryptocurrency over in-game rewards and NFTs. However, these findings are based on a non-significant conjoint analysis, making these results non-interpretable and uncertain.

5.1.3 Comparing the key findings

The theoretical research provides a structured understanding of the factors that influence player behavior and points out that player enjoyment and the experience of flow are important attributes that contribute towards the player's loyalty. The empirical research confirms these relationships, by showing moderate significant correlations between player enjoyment and player loyalty, and flow and player loyalty. Furthermore, the literature study identifies that players may experience the development of cognitive abilities and analyzing skills due to competitive characteristics within CMGs. The empirical research builds upon this belief, by reporting a positive and significant association between the perception of skill improvement, derived from competitive mobile gaming, and higher levels of player loyalty.

Moreover, the empirical research reconfirms assumptions based on the literature review regarding the effect of social features and consistent game innovation on reducing players' churn. The first-hand research shows a significant increasing retention rate, for both higher levels of importance of social features and importance of consistent game innovation, reconfirming the importance of these characteristics within CMGs.

Finally, the empirical research also contradicts and discovers some insights that were not explicitly mentioned in the theoretical research. The non-significant conjoint analysis suggests that web3 players disfavor the use of NFTs as a reward and customization method, and rather use cryptocurrency instead. Also, web3 players prefer a singular reward type instead of a combination of all.

5.2 Answering the central research question

Based on the theoretical insights and empirical findings, the central research question "Which distinguishing competitive characteristics can gaming platform PlayZap add to its current online mobile web-3 games offering to prevent the churn of its players and increase the loyalty of its players?" can be answered.

Firstly, creating a lively social ecosystem is of greatest importance. Through the implementation of in-game chats, friend lists, clans/guilds, leaderboards and shared activities, PlayZap can promote companionship and collaboration amongst players. By making use of clans/guilds, leaderboards and shared activities, the company can incentivize completion and achievement. As concluded from the research, the presence of social features reduces players' churn.

Secondly, it is essential to highlight the importance of consistent game innovation. By regularly introducing new games and game modes, bring in time-limited events and challenges, and offering time-limited customization options, PlayZap could create a more dynamic and engaging gameplay experience, and make its players return to the game. This is also confirmed by the empirical research, that concludes that consistent game innovation reduces players' churn.

Thirdly, PlayZap must keep player enjoyment and flow as one of their top priorities. By fostering a balanced level of difficulty and encouraging continuous skill progression, players are more likely to experience a sense of accomplishment. Thereby ensuring flow and immersion. By creating a more attractive and enjoyable experience, and taking social features and game innovation seriously, PlayZap can retain a sense of excitement and novelty amongst its players and prevent them with boredom. This is also confirmed by the empirical study, that concludes that a CMG that fulfills a player's need for enjoyment and make players experience flow, is exposed to higher levels of player loyalty.

Fourthly, the encouragement of skill development by playing a CMG also plays a significant role in increasing players' loyalty. By providing players with a ranking system, detailed statistics, progress tracking mechanics, and different difficulties with complementing rewards, PlayZap can establish a sense of achievement and progression amongst its players. The empirical study confirms that players who perceive a significant skill-improvement due to competitive mobile gaming exhibit higher levels of loyalty to the game.

At last, optimizing the reward systems withing web3 gaming remains a many-sided issue. The use of NFTs introduce a new method of achieving true ownership, scarcity, a sense of community, cross platform playing, and an investment potential. However, the empirical research suggests that web3 players prefer the use of cryptocurrency above in-game currency and NFTs. It also indicates that offering a combination of all reward methods counteracts on the approvement of web3 players.

In conclusion, by integrating these strategic recommendations, PlayZap can strengthen its competitive position within the emerging and competitive web3 gaming market. By prioritizing social interaction, consistent game innovation, player enjoyment, flow experience, skill development, and an optimized reward system, PlayZap can create a more immersive, engaging

and rewarding experience for its players. And make its players more loyal and less likely to churn.

5.3 Recommendations to PlayZap

Regarding the importance of creating a lively social ecosystem, up until this point, PlayZap only facilitates a friend list. This single feature is far from sufficient, resulting in PlayZap not fully grasping the need of its players regarding social features. The company should add clans/guilds, in-game chats, leaderboards and shared activities to promote companionship and collaboration amongst its players.

As for the importance of consistent game innovation, PlayZap hasn't updated its platform in the last year. The company should add new games and employ time-limited events and challenges to keep players engaged and prevent them getting bored.

Considering the significance of player enjoyment and flow, PlayZap must ensure the experience of flow and immersion amongst its players. The company should create a more attractive and enjoyable experience, by among other things, stimulate social engagement and game innovation.

In view of the noteworthy role of skill development by playing a CMG, PlayZap should improve its platform regarding this factor. The platform contains various skill-based games, making it easy to encourage skill development. However, the company doesn't stimulate it. PlayZap should add ranking systems, progress tracking mechanics, and training options with different difficulties to establish a sense of achievement and progression amongst its players.

Up to the present, PlayZap offers cryptocurrency and in-game currency as a reward, depending on the player's stake method. With cryptocurrency being the most preferred alternative, the company should build upon the usage and reward acquisition methods with cryptocurrency.

5.4 Assessment hypotheses

Table 15 shows which hypotheses are accepted or rejected considering the research outcomes.

Hypothesis	**Accepted/Rejected**

H1	A CMG that fulfills a player's need for enjoyment/relaxation will lead to higher levels in player loyalty.	Accepted
H2	Players who report experiencing flow more frequently while playing a CMG, will exhibit higher levels of loyalty.	Accepted
H3	Players who perceive a significant skill-improvement due to competitive mobile gaming will exhibit higher levels of loyalty to the game.	Accepted
H4	The presence of social features in online mobile games reduces players' churn.	Accepted
H5	Consistent game innovation in CMGs reduces players' churn.	Accepted
H6	A combination of real-life value rewards and in-game rewards are more appealing to web3 CMG players than only real-life value or in-game rewards.	Rejected
H7	Web3 CMG players value NFTs more as a reward than cryptocurrency or in-game rewards.	Rejected

Table 15: Overview of the acceptance or rejection of the hypotheses

5.5 Limitations

It is important to note that this study has several limitations. For instance, the sample may not fully represent the entire population of CMG and Web3 CMG players. Most respondents where male and relatively young, which could limit the generalizability of the findings. In addition, the sample size was rather small, which led to some issues with the statistical analysis.

Moreover, the study identified significant correlations between player enjoyment and flow, and player loyalty. While the correlational analysis gives valuable insights regarding associations between variables, it doesn't define causal relationships. The significant correlations are suggestive of potential causal relationships, but do not provide conclusive evidence of direct causation due to the possibility that other factors influence both independent and dependent variables.

Furthermore, the relative novelty of web3 gaming and/or the volatile blockchain markets may have influenced respondents' responses and behaviors. The web3 and blockchain technology experiences a lot of periodically excitement and negativity, due to the volatility of the markets and changing regulations. This current change in sentiment might have influenced respondents' answers, due to answering on positive/negative recent events within the blockchain environment.

5.6 Recommendations to future researchers

To further explore the dynamics of player loyalty and churn in web2 and web3 CMGs, future research could conduct longitudinal studies to track player behavior and preferences over time. This study used cross-sectional data, making it more vulnerable to confounding variables and harder to prove causal relationships then when using longitudinal data. Also, with the volatile sentiment within the blockchain environment, longitudinal studies could provide more robust insights. Moreover, with the study using cross-sectional data, player behavior and preferences are measured at a specific point in time. However, these preferences and behavior can evolve over time, especially in the rapidly changing landscape of mobile and web3 gaming. To examine and understand the long-term effects of player motivations, longitudinal research is necessary.

Furthermore, the study focusses only on the use of cryptocurrency, in-game currency and NFTs within the web3 gaming environment. However, there are other aspects related to web3 gaming that could significantly affect player behavior. For instance, the amount of decentralized governance the player experiences or the amount of technical issues within the game or network chain experienced by players. Future research could investigate a wider range of web3 gaming features and their impact on player behavior.

5.7 Self-evaluation

While writing my thesis, I learned how to structure a thesis in a proper manner. By practicing this while writing this thesis, I now understand how important it is to first create a solid foundation. Due to not grasping this importance from the beginning, I had to change certain research questions and the corresponding text throughout the writing of the thesis. Moreover, I gained a lot more experience in academic writing, which will be useful next year when I need to write my master's thesis.

Secondly, I developed my ability to deep dive into unfamiliar concepts. While writing the literature study, I was surprised with how much research has been done on online mobile gaming and learned new concepts regarding the subject. Also, with the newer and rapidly evolving web3 gaming environment, I gained experience in doing research on more unfamiliar concepts.

At last, I had a hard time with collecting a sufficient number of respondents. Due to posting the surveys on social media and online gaming forums, people ignored and removed my posts with ease. With most hyperlinks being associated as a scam, and the anonymity of users, a lot of people thought I was distributing unsafe hyperlinks. It didn't take long before the link to my surveys were banned from most forums, and some of my profiles ended up being blocked. In the end I found out it was better to first establish a small relationship within a community or forum, before asking if I could share my surveys.

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Appendix B: Survey 1

Welcome! Thank you for taking the time to participate in this survey. My name is Gaspar Kruyzen and I'm a bachelor student at the Erasmus School of Economics. I'm conducting research to better understand what motivates players in casual mobile games, and what their preferences are in web3 gaming. Your feedback is valuable and will help us improve the gaming experience together.

This survey should take approximately 4-6 minutes to complete. Your responses will be kept completely confidential and are stored safely. If you have any questions, please contact me at 541125gk@eur.nl.

Please answer the following questions and note that your participation is voluntary. You are free to stop at any point during the survey if you feel uncomfortable or no longer wish to continue.

Thank you again for your time and willingness to share your experiences. I appreciate your input!

A casual mobile game (CMG) is a mobile video game designed for a broad audience, characterized by simple gameplay, quick play sessions, simple controls, and a low entry barrier. CMGs can be found in various genres, such as puzzle, match-3, simulation, arcade, endless runner, word games, card games, and board games. Some online casual mobile game examples are Candy Crush Saga, Angry Birds, Subway Surfers, Doodle Jump, Fruit Ninja, Pokémon GO.

Q1: Have you played an online CMG in the past 30 days? -> *Yes/No. If no, end of survey.*
Q2: What is the name of this online CMG? If there are multiple, please enter your favorite. -> *Enter name*
Q3: Are you currently still playing this game? -> *Yes/No. If no, interpret the question in past tense.*

Q4: How often do you play this CMG within a week? -> *1-3 times, 3-7 times, 7-14 times, 14-21 times, 21+ times.*
Q5: How long is the average duration of each play session? -> *0-5 minutes, 5-10 minutes, 10-15 minutes, 15-25 minutes, 25+ minutes.*
Q6: How many days have you been playing the CMG consistently? -> *Under 3 days, 3-7 days, 7-15 days, 15-30 days, 30+ days.*
Q7: How often do you interact with other players, through clans/guilds, social media/chats, friend lists? -> *5-point likert scale on frequency.*
Q8: How satisfied are you with the game? -> *5-point likert scale on satisfaction.*
Q9: Do you agree feeling emotionally attached with the game/brand? -> *5-point likert scale on attachment.*
Q10: How often do you recommend the game to friends and family? -> *5-point likert scale on frequency.*
Q11: How often do you experience boredom or frustration while playing the game? -> *5-point likert scale on frequency.*
Q12: How likely are you to stop playing the game within a week? -> *5-point likert scale on likelihood.*
Q13: To what extent do you agree obtaining fun from the game? -> *5-point likert scale on agreement.*

Q14: To what extent do you agree feeling absorbed into the game's world, and if present, it's visuals, sounds and story? -> *5-point likert scale on agreement*.

Q15: To what extent do you agree experiencing enjoyment by interacting with other players through the game? -> *5-point likert scale on agreement*.

Q16: To what extent do you agree feeling concentrated on the game while playing? -> *5-point likert scale on agreement*.

Q17: To what extent do you agree how fast time passes by while playing? -> 5-point likert scale on agreement.

Q18: To what extent do you agree experiencing skill-improvement through playing? -> *5-point likert scale on agreement*.

Q19: How important are social features, such as friend lists, guilds/clans, multiplayer models, and leaderboards, for you in online casual mobile games? -> *5-point likert scale on importance*.

Q20: How often do you notice new content, features, special/seasonal events in online casual mobile games? -> *5-point likert scale on frequency*.

Q21: Age: *-Select age-*

Q22: Gender: *Male, Female, Other, Prefer not to say*

Q23: Highest education level: *Not completed high school, high school diploma, bachelor's degree, master's degree or higher, Prefer not to say*

Q24: Occupation: *Unemployed, Student, Employed, Self-employed/Freelancer, Retired, Other, Prefer not to say*

Q25: Mobile gaming experience in years: *Under 1 year, 1-3 years, 3-5 years, 5-10 years, 10+ years*

Thank you for completing this survey, I appreciate your time and support!

Appendix C: Survey 2

Welcome! Thank you for taking the time to participate in this survey. My name is Gaspar Kruyzen and I'm a bachelor student at the Erasmus School of Economics. I'm conducting research to better understand what motivates players in casual mobile games, and what their preferences are in web3 gaming. Your feedback is valuable and will help us improve the web3 gaming experience together.

This survey should take approximately 5-7 minutes to complete. Your responses will be kept completely confidential and are stored safely. If you have any questions, please contact me at 541125gk@eur.nl.

Please answer the following questions and note that your participation is voluntary, and you are free to stop at any point during the survey if you feel uncomfortable or no longer wish to continue.

Thank you again for your time and willingness to share your experiences. I appreciate your input!

Q1: Are you familiar with web3 gaming? *Yes/No. If not, end of survey.*

Web3 games, also known as blockchain games, are a type of video games that use blockchain technology to provide players with true ownership of in-game assets and a more decentralized gaming experience. Web3 games are often known for their play-to-earn models, cross game/world assets usage, and in-game assets ownership through non-fungible tokens (NFTs). Examples of popular web3 games/platforms are Axie infinity, Star Atlas, DeFi Kingdoms, PlayZap.

The following 12 questions will each consist of two optional choice sets. Each choice set contains four features that differ in combinations with one another. The four features are: Acquisition method (How the reward is acquired), Difficulty or Stake value (How difficult it is to acquire the reward/How high the stakes of the match are), Reward type (The type of reward, with NFTs and cryptocurrency having a monetary value), and Customization method (Which method is used to buy/use in-game assets).

Please choose the option that you find most appealing overall, even if you don't like every single feature in that option.

Q2: Would you rather choose option A or B?

Option A	
Acquisition through:	Gameplay
Difficulty or Stake-value:	High/10
Reward Type:	NFTs
Customization method:	Cryptocurrency

Option B	
Acquisition through:	Gameplay
Difficulty or Stake-value:	Small/1
Reward Type:	In-game currency
Customization method:	Cryptocurrency

Q3: Would you rather choose option C or D?

Option C	
Acquisition through:	Winning
Difficulty or Stake-value:	High/10
Reward Type:	Cryptocurrency
Customization method:	In-game currency

Option D	
Acquisition through:	Gameplay
Difficulty or Stake-value:	Medium/5
Reward Type:	NFTs
Customization method:	In-game currency

Q4: Would you rather choose option E or F?

Option E	
Acquisition through:	Gameplay
Difficulty or Stake-value:	Medium/5
Reward Type:	Combination of all
Customization method:	Cryptocurrency

Option F	
Acquisition through:	Gameplay
Difficulty or Stake-value:	Small/1
Reward Type:	Cryptocurrency
Customization method:	NFTs

Q5: Would you rather choose option G or H?

Option G	
Acquisition through:	Winning
Difficulty or Stake-value:	Medium/5
Reward Type:	Cryptocurrency
Customization method:	Cryptocurrency

Option H	
Acquisition through:	Winning
Difficulty or Stake-value:	Small/1
Reward Type:	Combination of all
Customization method:	In-game currency

Q6: Would you rather choose option I or J?

Option I	
Acquisition through:	Gameplay
Difficulty or Stake-value:	Small/1
Reward Type:	In-game currency
Customization method:	In-game currency

Option J	
Acquisition through:	Gameplay
Difficulty or Stake-value:	High/10
Reward Type:	Combination of all
Customization method:	NFTs

Q7: Would you rather choose option K or L?

Option K	
Acquisition through:	Winning
Difficulty or Stake-value:	Medium/5
Reward Type:	In-game currency
Customization method:	NFTs

Option L	
Acquisition through:	Winning
Difficulty or Stake-value:	High/10
Reward Type:	In-game currency
Customization method:	Cryptocurrency

Q8: Would you rather choose option M or N?

Option M	
Acquisition through:	Winning
Difficulty or Stake-value:	Medium/5
Reward Type:	In-game currency
Customization method:	NFTs

Option N	
Acquisition through:	Gameplay
Difficulty or Stake-value:	Small/1
Reward Type:	Cryptocurrency
Customization method:	Cryptocurrency

Q9: Would you rather choose option O or P?

Option O	
Acquisition through:	Winning
Difficulty or Stake-value:	Small/1
Reward Type:	NFTs
Customization method:	Cryptocurrency

Option P	
Acquisition through:	Winning
Difficulty or Stake-value:	Small/1
Reward Type:	Combination of all
Customization method:	Cryptocurrency

Q10: Would you rather choose option A or O?

Option A	
Acquisition through:	Gameplay
Difficulty or Stake-value:	High/10
Reward Type:	NFTs
Customization method:	Cryptocurrency

Option O	
Acquisition through:	Winning
Difficulty or Stake-value:	Small/1
Reward Type:	NFTs
Customization method:	Cryptocurrency

Q11: Would you rather choose option E or P?

Option E	
Acquisition through:	Gameplay
Difficulty or Stake-value:	Medium/5
Reward Type:	Combination of all
Customization method:	Cryptocurrency

Option P	
Acquisition through:	Winning
Difficulty or Stake-value:	Small/1
Reward Type:	Combination of all
Customization method:	Cryptocurrency

Q12: Would you rather choose option I or K?

Option I	
Acquisition through:	Gameplay
Difficulty or Stake-value:	Small/1
Reward Type:	In-game currency
Customization method:	In-game currency

Option K	
Acquisition through:	Winning
Difficulty or Stake-value:	Small/1
Reward Type:	NFTs
Customization method:	NFTs

Q13: Would you rather choose option C or M?

Option C	
Acquisition through:	Winning
Difficulty or Stake-value:	High/10
Reward Type:	Cryptocurrency
Customization method:	In-game currency

Option M	
Acquisition through:	Winning
Difficulty or Stake-value:	Medium/5
Reward Type:	In-game currency
Customization method:	NFTs

Q14: Age: *-Select age-*

Q15: Gender: *Male*, *Female*, *Other*, *Prefer not to say*

Q16: Highest education level: *Not completed high school, high school diploma, bachelor's degree, master's degree or higher, Prefer not to say*

Q17: Occupation: *Unemployed, Student, Employed, Self-employed/Freelancer, Retired, Other, Prefer not to say*

Q18: Web3 gaming involvement: *Less than 1 month, 1-3 months, 3-6 months, 6-12 months, 1-2 years, 2+ years*.

Thank you for completing this survey, I appreciate your time and support!

Appendix D: Tables and figures

Descriptor	Meaning	Values
Frequency	How often the player plays the CMG within a week.	1-3 times, 3-7 times, 7-14 times, 14-21 times, 21+ times
Session length	The average duration of each play session.	0-5 minutes, 5-10 minutes, 10-15 minutes, 15-25 minutes, 25+ minutes.
Retention	Number of days the CMG has been played consistently.	Under 3 days, 3-7 days, 7-15 days, 15-30 days, 30+ days.
Social engagement	Level of interaction with other players, through clans/guilds, social media/chats, friends.	5-point likert scale on frequency.
Game satisfaction	Level of satisfaction with the game.	5-point likert scale on satisfaction.
Game attachment	Level of emotional connection with the game or its brand.	5-point likert scale on attachment.
Word-of-mouth behavior	Level of recommending the game to friends and family.	5-point likert scale on frequency.
Boredom/frustration	Level of experiencing boredom or frustration while playing.	5-point likert scale on frequency.
Intention to churn	Likeliness of stop playing the game within a week.	5-point likert scale on likelihood.
Core enjoyment	Level of overall fun and pleasure obtained from the game.	5-point likert scale on agreement.
Immersion	Level of absorption in the game's world and if present, it's visuals, sounds and story.	5-point likert scale on agreement.
Social enjoyment	Level of enjoyment by interacting with other players through the game.	5-point likert scale on agreement.
Concentration	Level of concentration on the game while playing.	5-point likert scale on agreement.
Time distortion	Level of how fast time passed by while playing.	5-point likert scale on agreement.
Skill-improvement	Level of perceived skill-improvement through playing.	5-point likert scale on agreement.
Social features	Level of how important social features are in online CMGs.	5-point likert scale on importance.
Game innovation	Level of how often new content, features, special/seasonal events are noticed.	5-point likert scale on frequency.

Table 2: Description of the descriptors

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Variance	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Frequency	186	4	1	5	3,11	,886	,137	,178
Session_length	186	4	1	5	4,11	1,188	-,924	,178
Retention	186	4	1	5	3,41	,870	,067	,178
Social_engagement	186	4	1	5	3,66	1,241	-,531	,178
Game_satisfaction	186	3	2	5	4,05	,468	-,471	,178
Game_attachment	186	4	1	5	3,75	,652	-,578	,178
Word_of_mouth	186	4	1	5	3,16	1,127	-,234	,178
Boredom_frustration	185	4	1	5	3,11	1,075	-,101	,179
Intention_churn	186	4	1	5	2,88	1,060	,041	,178
Core_enjoyment	186	4	1	5	3,81	,943	-1,154	,178
Immersion	186	4	1	5	3,55	,746	-,830	,178
Social_enjoyment	185	4	1	5	3,68	,664	-,509	,179
Concentration	186	4	1	5	3,81	,730	-,668	,178
Time_distortion	185	4	1	5	3,84	,745	-,704	,179
Skill_improvement	186	4	1	5	3,63	,775	-,448	,178
Social_features	186	4	1	5	3,78	1,167	-,512	,178
Game_innovation	186	4	1	5	3,66	,984	-,339	,178
Age	185	51	13	64	25,39	38,121	1,450	,179
Gender	185	3	1	4	1,27	,264	2,235	,179
Education	185	5	1	6	3,11	1,753	,996	,179
Occupation	185	6	1	7	2,69	1,499	1,482	,179
Experience	185	3	2	5	3,52	,718	,113	,179
Valid N (listwise)	183							

Table 4: Descriptive statistics from survey 1

ANOVA

Loyalty

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4,051	4	1,013	4,851	,001
Within Groups	37,788	181	,209		
Total	41,839	185			

Table 8: One-way ANOVA for loyalty and skill-improvement

Post Hoc Tests

Multiple Comparisons

Dependent Variable: Loyalty

LSD

(I) Skill_improvement	(J) Skill_improvement	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	,182539683	,340565985	,593	-,48945049	,854529855
	3	-,01212938	,329128837	,971	-,66155226	,637293502
	4	-,14367816	,326781831	,661	-,78847003	,501113710
	5	-,37912088	,335285573	,260	-1,0406920	,282450210
2	1	-,18253968	,340565985	,593	-,85452986	,489450490
	3	-,19466906	,124650065	,120	-,44062322	,051285091
	4	-,3262178*	,118314042	,006	-,55967003	-,09276566
	5	-,5616606*	,140100903	,000	-,83810164	-,28521948
3	1	,012129380	,329128837	,971	-,63729350	,661552262
	2	,194669063	,124650065	,120	-,05128509	,440623216
	4	-,13154878	,079616665	,100	-,28864496	,025547401
	5	-,3669915*	,109402302	,001	-,58285942	-,15112358
4	1	,143678161	,326781831	,661	-,50111371	,788470032
	2	,32621784*	,118314042	,006	,092765657	,559670030
	3	,131548781	,079616665	,100	-,02554740	,288644963
	5	-,2354427*	,102124618	,022	-,43695063	-,03393481
5	1	,379120879	,335285573	,260	-,28245021	1,04069197
	2	,56166056*	,140100903	,000	,285219478	,838101645
	3	,36699150*	,109402302	,001	,151123577	,582859421
	4	,23544272*	,102124618	,022	,033934810	,436950627

*. The mean difference is significant at the 0.05 level.

Table 9: LSD Post-Hoc test for loyalty and skill-improvement

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	799,046			
Final	753,393	45,653	9	,000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	2236,215	2315	,877
Deviance	730,506	2315	1,000

Link function: Logit.

Pseudo R-Square

Cox and Snell	,219
Nagelkerke	,221
McFadden	,055

Link function: Logit.

Table 10: Model Fitting Information, Goodness-of-Fit, and Pseudo R-Square tests for the ordinal logistic regression on the effect of the presence of social features in CMGs on players' churn

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[Churn = 2,166666666666667]	-7,123	1,196	35,459	1	,000	-9,467	-4,778
	[Churn = 2,333333333333334]	-6,710	1,123	35,675	1	,000	-8,912	-4,508
	[Churn = 2,500000000000000]	-6,413	1,085	34,948	1	,000	-8,539	-4,287
	[Churn = 2,666666666666667]	-5,679	1,023	30,838	1	,000	-7,683	-3,675
	[Churn = 2,833333333333334]	-5,139	,996	26,627	1	,000	-7,091	-3,187
	[Churn = 3,000000000000000]	-4,073	,964	17,853	1	,000	-5,963	-2,184
	[Churn = 3,166666666666667]	-3,155	,945	11,149	1	,001	-5,008	-1,303
	[Churn = 3,333333333333334]	-2,389	,932	6,567	1	,010	-4,217	-,562
	[Churn = 3,500000000000000]	-1,677	,924	3,296	1	,069	-3,488	,134
	[Churn = 3,666666666666667]	-,483	,920	,275	1	,600	-2,287	1,321
	[Churn = 3,833333333333334]	,484	,934	,268	1	,605	-1,348	2,315
	[Churn = 4,000000000000000]	1,118	,958	1,361	1	,243	-,760	2,997
	[Churn = 4,166666666666667]	2,265	1,066	4,512	1	,034	,175	4,355
	[Churn = 4,333333333333333]	3,382	1,342	6,349	1	,012	,751	6,013
Location	Age	,022	,022	1,009	1	,315	-,021	,065
	Gender	,034	,285	,014	1	,905	-,526	,593
	Education	-,065	,104	,390	1	,532	-,269	,139
	Occupation	-,330	,117	7,963	1	,005	-,560	-,101
	Experience	-,313	,165	3,594	1	,058	-,636	,011
	[Social_features=1]	-1,161	,977	1,413	1	,235	-3,076	,754
	[Social_features=2]	-1,926	,492	15,353	1	,000	-2,890	-,963
	[Social_features=3]	-1,310	,378	12,026	1	,001	-2,051	-,570
	[Social_features=4]	-,041	,339	,015	1	,904	-,706	,624
	[Social_features=5]	0[a]	.	.	0	.	.	.

Link function: Logit.

a. This parameter is set to zero because it is redundant.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	753,393			
General	687,225[b]	66,168[c]	117	1,000

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

b. The log-likelihood value cannot be further increased after maximum number of step-halving.

c. The Chi-Square statistic is computed based on the log-likelihood value of the last iteration of the general model. Validity of the test is uncertain.

Table 11: Ordinal logistic regression on the effect of the presence of social features in CMGs on players' churn and the test of Parallel Lines

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	796,509			
Final	748,538	47,971	9	,000

Link function: Logit.

Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	2062,668	2245	,997
Deviance	721,962	2245	1,000

Link function: Logit.

Pseudo R-Square

Cox and Snell	,228
Nagelkerke	,231
McFadden	,058

Link function: Logit.

Table 12: Model Fitting Information, Goodness-of-Fit, and Pseudo R-Square tests for the ordinal logistic regression on the effect of the importance of consistent game innovation in CMGs on players' churn

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[Churn = 2,166666666666667]	-9,300	1,260	54,470	1	,000	-11,770	-6,831
	[Churn = 2,333333333333334]	-8,841	1,190	55,228	1	,000	-11,173	-6,509
	[Churn = 2,500000000000000]	-8,525	1,153	54,712	1	,000	-10,784	-6,266
	[Churn = 2,666666666666667]	-7,721	1,086	50,524	1	,000	-9,850	-5,592
	[Churn = 2,833333333333334]	-7,130	1,055	45,672	1	,000	-9,198	-5,062
	[Churn = 3,000000000000000]	-6,042	1,016	35,395	1	,000	-8,032	-4,051
	[Churn = 3,166666666666667]	-5,101	,988	26,642	1	,000	-7,038	-3,164
	[Churn = 3,333333333333334]	-4,333	,969	20,005	1	,000	-6,231	-2,434
	[Churn = 3,500000000000000]	-3,657	,955	14,677	1	,000	-5,528	-1,786
	[Churn = 3,666666666666667]	-2,487	,941	6,986	1	,008	-4,331	-,643
	[Churn = 3,833333333333334]	-1,520	,949	2,564	1	,109	-3,380	,341
	[Churn = 4,000000000000000]	-,880	,971	,822	1	,365	-2,783	1,023
	[Churn = 4,166666666666667]	,277	1,077	,066	1	,797	-1,834	2,387
	[Churn = 4,333333333333333]	1,398	1,352	1,068	1	,301	-1,253	4,048
Location	Age	-,011	,022	,270	1	,603	-,055	,032
	Gender	-,336	,264	1,611	1	,204	-,854	,183
	Education	-,116	,103	1,261	1	,262	-,318	,086
	Occupation	-,296	,117	6,448	1	,011	-,525	-,068
	Experience	-,402	,167	5,798	1	,016	-,730	-,075
	[Game_innovation=1]	-5,424	1,149	22,270	1	,000	-7,677	-3,171
	[Game_innovation=2]	-1,690	,504	11,255	1	,001	-2,678	-,703
	[Game_innovation=3]	-1,262	,386	10,675	1	,001	-2,019	-,505
	[Game_innovation=4]	-,721	,361	3,981	1	,046	-1,429	-,013
	[Game_innovation=5]	0[a]	.	.	0	.	.	.

Link function: Logit.

a. This parameter is set to zero because it is redundant.

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	748,538			
General	660,851[b]	87,687[c]	117	,980

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

a. Link function: Logit.

b. The log-likelihood value cannot be further increased after maximum number of step-halving.

c. The Chi-Square statistic is computed based on the log-likelihood value of the last iteration of the general model. Validity of the test is uncertain.

Table 13: Ordinal logistic regression on the effect of the importance of consistent game innovation in CMGs on players' churn and the test of Parallel Lines

```
Coefficients:
                                  Estimate Std. Error t value Pr(>|t|)
(Intercept)                      3,0171243  0,0122210 246,881   <2e-16 ***
factor(x$Acquisitionmethod)1     0,0088821  0,0122173   0,727    0,467
factor(x$Difficulty)1            0,0125787  0,0173513   0,725    0,469
factor(x$Difficulty)2           -0,0135289  0,0173072  -0,782    0,434
factor(x$Rewardtype)1            0,0005779  0,0212610   0,027    0,978
factor(x$Rewardtype)2            0,0161313  0,0210079   0,768    0,443
factor(x$Rewardtype)3           -0,0050296  0,0209751  -0,240    0,810
factor(x$Customizationmethod)1 -0,0049431  0,0173155  -0,285    0,775
factor(x$Customizationmethod)2 -0,0174152  0,0173524  -1,004    0,316
---
Signif. codes:  0 ‘***’ 0,001 ‘**’ 0,01 ‘*’ 0,05 ‘.’ 0,1 ‘ ’ 1

Residual standard error: 1,417 on 13455 degrees of freedom
Multiple R-squared:  0,0002835, Adjusted R-squared:  -0,0003109
F-statistic: 0,4769 on 8 and 13455 DF,  p-value: 0,8734
```

Table 14: Conjoint analysis output

Appendix E: Raw data survey 1

Q3 Are you	Q4 How ol	Q5 How lo	Q6 How m	Q7 How ol	Q8 How sa	Q9 Do you	Q10 How ol	Q11 How ol	Q12 How lil	Q13 To wha	Q14 To wha	Q15 To wha	Q16 To wha	Q17 To wha	Q18 To wha	Q19 How in	Q20 How ol	Q21 Entery	Q22 Gende	Q23 Highes	Q24 Occup	Q25 Mobile gaming experience in y	Loyalty Loyalty	Churn Churn	Enjoyment Enjoyment	Flow Flow	Boredom_inverted Boredom_inverted	Chum_inten Chum_inten
1																												
1	5	3	5	5	4	3	2	4	1	4	1	4	2	2	2	5	5	28	1	5	3	3	3,9	4,0	3,0	1,7	2	5
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
1	1	2	1	1	4	1	2	2	4	3	2	2	3	4	2	2	3	20	1	3	2	4	1,7	2,3	2,3	3,0	4	2
1	2	5	5	1	4	5	1	2	2	5	4	1	4	3	3	2	2	24	2	3	3	3	3,3	4,0	3,3	3,7	4	4
2	3	4	2	4	2	4	1	4	4	3	2	1	3	3	2	4	4	18	1	2	2	4	2,9	2,5	2,0	2,7	2	2
1	3	3	5	4	4	2	2	3	2	4	2	3	3	2	4	2	4	40	1	3	3	4	3,3	3,7	3,0	2,3	3	4
1	5	3	5	5	4	4	4	1	1	4	4	4	5	4	4	5	4	26	1	4	3	3	4,3	4,5	4,0	4,3	5	5
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
1	1	4	3	4	4	3	3	2	2	4	1	3	4	5	5	3	3	17	1	1	2	3	3,1	3,3	2,7	3,3	4	4
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
1	4	2	5	3	4	4	4	4	2	4	4	4	5	5	4	4	5	19	1	2	2	4	3,7	3,5	4,0	4,7	2	4
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
2	1	1	1	2	3	3	2	3	4	4	4	3	3	4	4	4	4	62	1	3	3	5	1,9	1,8	3,7	3,7	3	2
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
1																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
1	3	1	5	4	5	4	3	3	1	4	4	5	3	4	4	4	4	17	1	2	1	5	3,6	3,7	4,3	3,7	3	5
1	1	4	5	2	5	4	3	2	1	5	4	3	4	4	3	2	4	33	2	4	3	4	3,4	4,0	4,0	4,0	4	5
1	1	3	5	1	4	2	1	2	1	4	3	2	3	3	2	1	2	24	2	6	3	4	2,4	3,7	3,0	3,0	4	5
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
1	2	4	5	1	5	5	3	2	2	5	5	1	5	5	4	1	2	27	1	4	3	3	3,6	4,0	3,7	5,0	4	4
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
1	3	2	5	3	4	3	2	2	2	4	4	3	4	4	3	3	3	28	1	4	4	5	3,1	3,7	3,7	4,0	4	4
1	4	4	4	4	3	5	3	3	2	4	4	4	4	4	3	4	4	22	1	3	7	5	3,9	3,7	4,0	4,0	3	4
1	5	3	4	3	3	3	3	2	1	4	3	4	4	4	4	3	4	20	2	2	3	5	3,4	4,0	3,7	3,7	4	5
1	1	2	2	4	5	4	3	3	3	3	4	5	3	4	3	4	1	13	1	1	2	3	3,0	2,7	4,0	3,7	3	3
2	2	2	5	3	3	1	2	2	5	4	1	4	3	3	4	5	4	17	4	1	2	4	2,6	2,8	3,0	2,3	4	1
1	3	4	4	5	5	5	4	2	1	4	4	4	4	4	4	5	4	21	1	5	1	5	4,3	4,2	4,0	4,0	4	5
1	4	4	5	2	4	4	4	3	2	5	4	3	4	4	4	1	3	35	4	3	3	5	3,9	4,0	4,0	4,0	3	4
1	3	3	3	4	3	4	3	4	3	4	4	4	3	3	2	4	4	24	2	5	7	3	3,3	2,8	4,0	3,3	2	3
1	2	4	1	3	4	4	4	4	4	3	4		2		4	4	5	14	2	2	2	5	3,1	2,5	2,3	2,0	2	2
1	4	4	5	4	4	4	2	3	1	5	3	4	5	4	4	3	5	35	2	3	3	4	3,9	4,2	4,0	4,0	3	5
1	2	2	5	3	4	5	1	2	1	4	3	3	3	4	2	2	3	20	1	6	3	4	3,1	3,7	3,3	3,3	4	5
2	3	3	3	2	3	5	2	4	3	4	3	4	4	4	3	4	4	22	1	3	2	5	3,0	2,8	3,7	3,7	2	3
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
1	3	3	5	3	4	4	4	2	1	4	4	4	3	4	4	3	4	24	1	3	3	3	3,7	4,0	4,0	3,7	4	5
																							0,0	0,0	0,0	0,0	ONWAAR	ONWAAR

45	1	3	5	3	5	5	5	3	3	1	5	4	3	4	4	5	4	5	27	1	6	3	5	4,1	4,0	4,0	4,0	3	5
46																								0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
47	2	2	4	5	1	4	2	1	3	3	5	2	3	5	4	4	2	5	17	1	1	2	5	2,7	3,5	3,3	3,7	3	3
48																								0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
49	1	4	5	5	4	4	3	2	3	2	3	3	3	3	3	4	4	4	33	1	6	3	5	3,9	4,2	3,0	3,0	3	4
50	1	4	5	4	5	5	4	3	4	5	3	2	3	4	5	3	4	4	19	1	2	2	3	4,3	3,5	2,7	3,7	2	1
51	1	2	5	2	4	3	5	2	4	3	5	4	4	3	3	2	5	4	33	1	3	3	4	3,3	2,8	4,3	3,3	2	3
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67																								0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
68	1	3	5	3	5	4	4	4	4	3	4	4	4	4	4	4	5	4	21	1	2	2	4	4,0	3,3	4,0	4,0	2	3
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83	1	2	3	3	1	4	2	2	2	3	4	4	3	4	4	3	2	3	33	2	3	3	4	2,4	3,2	3,7	4,0	4	3
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85																								0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
86	1	3	4	4	4	4	4	4	4	5	4	4	4	3	4	4	4	4	19	2	6	2	3	3,9	3,0	4,0	3,7	2	1
87																								0,0	0,0	0,0	0,0	ONWAAR	ONWAAR

88	1	2	5	3	3	4	3	4	2	3	4	2	3	4	2	3	4	2	23	1	3	2	3	3,4	3,5	3,0	2,7	4	3
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93	1	3	5	3	5	4	4	5	4	3	4	4	5	4	4	4	5	4	23	1	2	2	4	4,1	3,3	4,3	4,0	2	3
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96	1	2	5	2	3	4	5	4	3	2	1	2	3	4	5	4	3	2	20	1	2	3	4	3,6	3,3	2,0	3,7	3	4
97	1	3	5	3	5	4	3	2	1	2	3	4	5	4	3	4	5	5	30	1	4	3	4	3,6	4,0	4,0	3,7	5	4
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100	1	2	5	2	3	2	4	1	5	4	3	2	3	4	5	4	3	5	30	2	3	1	2	2,7	2,3	2,7	3,7	1	2
101	1	3	4	3	3	4	5	3	4	4	5	3	4	5	3	4	5	3	23	1	3	2	3	3,6	3,0	4,0	3,7	2	2
102	1	3	5	3	5	4	3	2	3	4	5	5	4	3	4	5	5	3	30	2	3	1	3	3,6	3,3	4,7	4,0	3	2
103	1	4	4	3	2	4	3	2	2	3	4	3	3	4	5	4	3	3	24	1	6	4	4	3,1	3,7	3,3	4,0	4	3
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108	1	5	3	4	4	4	4	4	2	2	4	4	5	4	4	3	4	4	30	1	3	4	4	4,0	4,0	4,3	4,0	4	4
109	1	2	5	3	4	4	4	4	4	4	4	4	4	5	4	3	4	3	21	1	2	2	4	3,7	3,0	4,0	4,3	2	2
110																								0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
111	1	3	5	3	5	4	4	4	4	4	4	4	4	4	4	4	5	5	30	1	2	2	3	4,0	3,2	4,0	4,0	2	2
112	1	2	5	3	5	4	3	2	3	4	5	4	3	2	3	4	5	3	24	1	3	2	3	3,4	3,2	4,0	3,0	3	2
113	1	3	5	3	3	4	5	4	3	2	3	4	5	4	3	2	4	5	22	2	2	4	4	3,9	3,7	4,0	3,7	3	4
114	1	3	5	3	5	3	2	4	3	4	5	3	4	5	3	4	4	3	21	1	3	2	3	3,6	3,2	4,0	3,7	3	2
115	1	3	3	4	3	3	4	3	3	3	4	4	4	4	4	3	4	3		2	3	1	2	3,3	3,2	4,0	4,0	3	3
116	1	4	5	3	4	5	2	3	4	5	2	3	4	5	2	3	4	5	20	1	2	2	3	3,7	3,3	3,0	3,3	2	1
117	1	3	4	3	4	4	4	4	4	4	4	4	3	4	4	3	4	3	20	2	3	2	2	3,7	3,0	3,7	4,0	2	2
118																								0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
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121	1	2	5	4	3	3	3	5	5	1	2	2	3	2	2	2	4	4	22	1	3	2	3	3,6	3,3	2,3	2,0	1	5
122	1	3	4	4	3	4	3	4	3	3	4	4	4	4	5	2	4	2	22	2	3	2	3	3,6	3,5	4,0	4,3	3	3
123	1	3	5	3	5	4	3	2	3	4	5	4	3	2	3	4	5	4	29	1	3	3	3	3,6	3,3	4,0	3,0	3	2
124	1	4	5	4	5	5	4	4	3	2	1	2	3	4	4	5	5	4	30	2	2	1	3	4,4	4,2	2,0	3,3	3	4
125																								0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
126	1	2	5	3	3	3	4	4	5	5	4	3	2	1	2	3	4	5	22	1	3	2	4	3,4	2,5	3,0	2,0	1	1
127	1	3	3	2	3	2	4	1	5	3	5	2	4	5	4	3	5	4	30	1	4	3	5	2,6	2,3	3,7	3,7	1	3
128	1	2	5	3	2	3	4	5	4	3	2	3	4	5	4	3	2	3	23	1	3	2	3	3,4	3,0	3,0	4,0	2	3
129	1	3	5	4	5	4	3	2	3	4	5	4	3	1	3	4	5	4	33	1	3	3	4	3,7	3,5	4,0	2,7	3	2
130	1	3	4	3	3	4	4	3	2	2	4	3	4	3	4	3	5	3	30	1	3	3	4	3,4	3,7	3,7	3,3	4	4
131	1	3	5	3	5	4	4	4	3	4	4	4	4	5	5	5	5	5	23	1	2	2	3	4,0	3,3	4,0	4,7	3	2

131	1	3	5	3	5	4	4	4	3	4	4	4	4	5	5	5	5	5	23	1	2	2	3	4,0	3,3	4,0	4,7	3	2
132																								0,0	0,0	0,0	0,0	ONWAAR	ONWAAR
133	1	3	5	2	4	5	4	3	4	5	4	3	4	5	4	3	4	5	20	1	2	3	3	3,7	3,0	3,7	4,0	2	1
134	1	4	5	2	4	5	4	2	3	4	1	5	4	3	3	2	5	4	30	1	3	3	3	3,7	3,5	3,3	3,7	3	2
135	1	3	5	3	4	4	4	4	5	4	4	4	4	5	4	4	5	3	23	1	2	2	4	3,9	3,0	4,0	4,3	1	2
136	1	3	5	3	4	5	4	3	4	5	3	4	5	3	4	5	3	4	20	2	3	1	3	3,9	3,2	4,0	3,7	2	1
137	1	2	4	5	2	5	4	1	3	2	4	2	3	4	4	1	1	3	17	2	2	2	3	3,3	3,8	3,0	3,3	3	4
138	1	2	5	2	5	5	4	3	3	2	1	5	5	4	4	3	3	2	21	2	3	1	2	3,7	3,5	3,7	4,3	3	4
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153	1	3	5	3	5	4	3	2	1	2	3	4	5	3	4	5	3	3	29	1	3	3	5	3,6	4,0	4,0	3,7	5	4
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158	1	4	4	4	3	4	4	2	3	3	4	4	3	3	3	3	4	2	35	1	3	3	4	3,6	3,7	3,7	3,3	3	3
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160	1	4	3	3	4	3	4	2	3	4	3	2	3	3	3	4	2	2	31	2	2	5	3	3,3	3,0	2,7	2,7	3	2
161	1	4	3	3	3	4	4	3	2	3	4	3	3	4	4	3	3	3	26	1	6	3	4	3,4	3,5	3,3	3,7	4	3
162	1	3	5	3	3	4	5	4	3	2	3	4	5	4	3	2	3	4	30	1	3	3	4	3,9	3,7	4,0	3,7	3	4
163	1	2	4	3	2	3	4	1	3	2	4	2	3	4	4	3	3	3	24	1	4	3	3	2,7	3,2	3,0	3,3	3	4
164	1	4	2	4	3	3	4	2	3	3	4	3	3	3	4	3	3	3	20	1	6	4	3	3,1	3,2	3,3	3,3	3	3
165	1	3	3	3	3	3	3	3	3	3	3	3	3	4	4	3	2	3	30	2	2	6	3	3,0	3,0	3,0	3,7	3	3
166	2	2	3	2	4	3	2	3		3	1	2	5	4	1	5	2	1	37	1	6	2	2	2,7	2,2	2,7	2,3	ONWAAR	3
167	1	4	5	3	4	5	4	3	2	3	4	5	4	3	2	3	4	5	20	1	2	4	4	4,0	4,0	4,3	3,3	4	3
168	1	4	5	4	4	5	5	3	5	2	4	5	4	4	4	4	4	5	20	2	3	2	4	4,3	3,8	4,3	4,3	1	4
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170	1	3	4	4	4	4	4	3	3	3	3	4	4	3	4	4	2	3	29	2	6	1	3	3,7	3,5	3,7	3,7	3	3
171	1	5	2	5	5	5	5	4	1	1	5	4	5	4	5	4	5	5	35	1	4	3	5	4,4	4,5	4,7	4,3	5	5
172	1	3	5	3	5	4	3	2	3	4	5	4	3	2	3	4	5	3	22	1	3	2	3	3,6	3,3	4,0	3,0	3	2
173	1	4	4	4	2	3	4	3	3	2	4	4	3	4	5	4	3	4	25	1	4	3	4	3,4	3,7	3,7	4,3	3	4
174	1	5	4	3	3	5	4	3	1	3	4	4	4	4	5	4	4	4	18	1	2	2	3	3,9	4,2	4,0	4,3	5	3

174	1	5	4	3	3	5	4	3	1	3	4	4	4	4	5	4	4	4	18	1	2	2	3	3,9	4,2	4,0	4,3	5	3
175	1	3	2	3	3	4	5	4	3	2	1	2	3	4	5	4	3	2	26	1	3	3	3	3,4	3,2	2,0	3,7	3	4
176	1	4	4	3	4	4	4	4	4	3	4	3	3	4	4	4	3	3	32	2	3	4	2	3,9	3,3	3,3	3,7	2	3
177	1	3	3	3	2	3	3	3	3	3	4	3	3	4	3	4	3	3	32	2	6	1	2	2,9	3,0	3,3	3,3	3	3
178	1	4	3	4	3	4	3	3	2	2	4	4	4	4	3	4	3	5	24	1	6	4	4	3,4	3,8	4,0	3,7	4	4
179	1	3	3	4	3	4	4	3	1	3	4	4	3	4	4	3	4	4	25	1	2	6	4	3,4	3,7	3,7	4,0	5	3
180	1	3	5	3	4	4	5	4	5	4	5	4	4	5	5	4	4	5	34	1	2	2	3	4,0	3,0	4,3	4,7	1	2
181	1	5	2	4	3	4	4	3	2	3	4	4	4	4	5	2	4	4	22	1	2	4	4	3,6	3,7	4,0	4,3	4	3
182	1	3	5	3	4	4	5	5	4	4	3	3	2	3	4	5	4	3	20	1	2	2	4	4,1	3,2	2,7	3,3	2	2
183	1	3	5	3	5	4	3	2	3	4	5	4	3	2	3	4	5	4	30	1	3	3	4	3,6	3,3	4,0	3,0	3	2
184	1	3	3	3	2	4	3	2	2	3	4	4	4	4	3	4	5	4	19	1	3	4	3	2,9	3,3	4,0	3,7	4	3
185	1	4	5	4	3	4	4	3	3	4	4	4	3	4	4	2	4	3	21	1	2	2	4	3,9	3,7	3,7	4,0	3	2
186	1	3	5	4	5	4	3	2	3	4	5	4	3	4	5	4	3	2	29	1	3	3	4	3,7	3,5	4,0	4,3	3	2
187	1	3	5	3	2	4	4	1	2	4	4	3	3	4	4	3	3	3	20	1	6	2	4	3,1	3,5	3,3	3,7	4	2
188	1	5	3	4	4	4	4	3	3	2	4	4	4	4	5	3	4	4	22	1	6	4	4	3,9	3,8	4,0	4,3	3	4
189	1	5	4	5	3	5	5	4	1	2	4	4	3	5	5	3	4	3	32	1	3	6	5	4,4	4,7	3,7	4,7	5	4
190	1	3	5	3	4	5	4	3	2	1	2	3	4	5	4	3	2	1	18	1	2	2	4	3,9	4,2	3,0	4,0	4	5
191	1	3	4	3	4	4	3	4	4	2	4	4	4	4	4	3	3	2	23	2	4	4	2	3,6	3,3	4,0	4,0	2	4
192	1	5	4	4	2	4	4	1	2	2	4	4	4	4	5	3	4	3	19	1	6	2	4	3,4	4,2	4,0	4,3	4	4
193	1	5	5	4	3	4	4	3	2	3	5	3	4	4	5	3	4	4	18	1	2	2	3	4,0	4,2	4,0	4,0	4	3
194	1	4	2	3	3	4	3	2	3	3	4	3	4	3	4	2	4	4	20	1	3	2	3	3,0	3,2	3,7	3,3	3	3
195	1	5	2	4	4	4	4	3	2	2	4	3	4	4	5	4	4	4	33	1	4	6	5	3,7	3,8	3,7	4,0	4	4
196	1	4	4	4	4	3	4	4	4	3	3	4	4	3	2	3	3	2	29	2	3	1	2	3,9	3,3	3,7	3,0	2	3
197	1	4	2	4	3	4	3	3	1	2	4	3	4	4	3	3	3	3	29	1	2	6	4	3,3	3,8	3,7	3,3	5	4
198	1	5	2	4	4	3	4	2	2	3	4	2	3	4	3	3	3	3	28	1	5	4	4	3,4	3,5	3,0	3,0	4	3
199	1	4	2	4	4	4	4	3	2	3	4	3	4	4	4	2	4	4	23	1	6	4	3	3,6	3,5	3,7	3,7	4	3
200	1	3	5	2	4	5	4	4	4	4	5	4	4	5	5	4	4	5	32	1	2	2	3	3,9	3,2	4,3	4,7	2	2
201	1	4	3	4	4	4	3	4	3	3	4	3	4	4	3	4	3	4	22	2	6	2	2	3,7	3,5	3,7	3,3	3	3
202	1	3	3	4	3	4	4	3	3	3	3	3	4	4	4	4	2	2	31	2	5	5	3	3,4	3,3	3,3	3,7	3	3
203	1	3	5	3	5	5	4	4	3	3	2	2	3	4	4	5	5	5	33	1	3	3	4	4,1	3,7	2,3	3,3	3	3
204	1	3	5	2	5	4	5	4	5	3	4	4	4	4	4	4	5	5	30	1	2	3	3	4,0	3,0	4,0	4,0	1	3
205	1	3	3	4	4	5	4	3	2	3	4	4	4	3	4	3	3	3	30	1	5	3	5	3,7	3,7	4,0	3,7	4	3
206	1	3	5	3	5	4	5	4	4	4	4	4	4	5	4	5	5	5	32	1	2	2	3	4,1	3,2	4,0	4,3	2	2
207	1	4	4	4	3	3	4	4	2	2	4	4	4	3	4	4	3	3	34	2	5	7	3	3,7	3,8	4,0	3,7	4	4
208	1	3	4	3	4	3	3	4	4	3	4	2	4	3	4	4	3	3	18	2	6	2	2	3,4	3,0	3,3	3,0	2	3
209	1	4	4	4	4	4	3	3	4	2	3	4	4	3	4	4	2	3	24	2	4	4	3	3,7	3,7	3,7	3,7	2	4
210	1	5	5	5	3	5	3	2	4	2	5	4	4	4	5	4	4	4	19	2	3	2	3	4,0	4,3	4,3	4,3	2	4
211	1	3	5	3	5	4	3	2	3	4	5	4	3	2	3	4	5	4	22	1	3	2	3	3,6	3,3	4,0	3,0	3	2
212	1	3	4	3	2	4	3	2	3	3	4	4	2	4	4	4	3	3	30	2	4	4	2	3,0	3,3	3,3	4,0	3	3
213	1	3	5	3	5	4	3	2	1	2	3	4	5	4	3	4	5	4	20	1	2	2	4	3,6	4,0	4,0	3,7	5	4
214	1	4	5	4	5	5	4	4	3	2	3	4	4	5	5	4	3	4	19	1	2	2	3	4,4	4,2	3,7	4,7	3	4

Appendix F: Raw data survey 2

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18
2	Are you familia	Would you rat	Would you rat	Would you rat	Would you rat	Would you rat	Would you rat	Would you rat	Would you rat	Would you rat	Would you rat	Would you rat	Would you rat	Age	Gender	Education	Occupation	Experience
3	Yes	A	C	E	G	J	L	N	O	A	P	K	C	27	1	4	4	4
4	Yes	A	D	E	G	I	L	N	P	A	E	K	C	27	1	3	3	5
5	Yes	A	D	E	H	J	L	N	P	O	P	K	C	29	1	5	4	5
6	Yes	A	D	E	G	I	L	N	P	O	E	I	C	25	1	2	4	4
7	Yes	A	D	E	G	I	L	M	O	A	E	K	C	24	1	3	6	4
8	Yes	B	D	E	H	J	L	N	P	A	P	K	C	29	1	3	4	3
9	Yes	A	C	E	H	J	L	N	P	O	P	K	C	32	1	4	4	3
10	Yes	A	D	E	H	J	L	N	P	A	E	K	C	31	1	5	3	3
11	Yes	A	C	E	G	J	K	M	O	O	P	K	C	28	1	3	3	4
12	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
13	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
16	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
17	Yes	B	D	E	G	I	L	N	O	A	E	K	M	30	1	4	4	3
18	Yes	A	C	E	G	J	L	N	P	O	E	K	C	29	1	4	4	3
19	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
20	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
21	Yes	A	D	E	G	J	L	N	P	O	E	K	C	27	1	6	6	6
22	Yes	B	D	E	H	I	L	M	P	A	P	I	C	23	1	4	2	3
23	Yes	A	D	E	G	I	K	M	P	A	E	K	C	31	1	3	4	5
24	Yes	A	D	E	G	I	L	N	O	O	E	K	C	30	1	5	3	5
25	Yes	A	C	E	H	J	L	N	P	A	E	K	C	31	2	3	3	3
26	Yes	A	D	E	H	I	L	N	P	A	E	K	C	24	1	4	5	3
27	Yes	A	C	E	G	I	L	N	O	O	P	K	C	24	1	4	3	5
28	Yes	B	C	E	H	J	L	N	O	A	E	K	C	26	1	4	2	3
29	Yes	B	D	E	H	J	L	N	P	A	E	K	C	31	1	3	3	5
30	Yes	A	D	E	H	J	L	M	P	A	E	K	C	26	1	5	3	3
31	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
32	Yes	B	D	E	G	J	L	N	P	O	P	K	C	31	1	5	3	4
33	Yes	A	D	F	H	J	L	N	O	O	P	K	C	26	1	5	4	4
34	Yes	B	D	E	G	I	K	N	P	A	E	K	C	25	1	4	4	4
35	Yes	A	D	E	G	J	L	N	O	O	E	K	M	28	1	4	4	3
36	Yes	A	C	E	G	J	L	M	P	O	E	K	C	22	1	3	4	5
37	Yes	A	D	E	G	J	L	N	P	A	E	K	C	32	1	3	3	3
38	Yes	A	D	E	G	I	L	N	P	A	E	K	C	33	1	5	4	5
39	Yes	A	D	E	H	I	L	N	O	A	P	K	C	23	1	4	3	5
40	Yes	B	D	E	H	I	L	N	P	A	E	K	C	31	1	3	4	4
41	Yes	A	D	E	H	J	L	M	P	A	E	K	C	25	1	3	4	5
42	Yes	A	D	E	G	J	L	N	P	O	E	K	C	24	1	3	4	4
43	Yes	B	D	E	G	J	L	N	O	O	E	I	C	29	1	4	1	5
44	Yes	A	C	E	G	J	L	N	O	A	E	K	C	27	1	3	3	3
45	Yes	A	D	E	G	J	L	N	O	O	P	K	C	30	1	3	3	5
46	Yes	B	C	E	H	J	L	N	O	A	E	K	M	32	1	5	3	3
47	Yes	A	D	E	H	J	L	N	P	A	P	K	C	24	1	5	3	3
48	Yes	A	C	F	H	I	K	N	P	O	P	K	C	24	1	3	2	4
49	Yes	B	D	E	H	J	L	N	P	A	E	K	C	29	1	5	1	6
50	Yes	A	C	E	G	J	L	N	P	A	P	K	C	23	1	4	4	5
51	Yes	A	C	E	G	J	L	M	O	O	P	K	C	25	1	5	3	3
52	Yes	B	D	E	G	J	L	N	P	O	E	K	C	31	1	5	3	5
53	Yes	B	D	E	G	J	L	N	P	A	E	K	C	27	1	3	4	3
54	Yes	A	D	E	H	I	L	N	P	O	E	K	C	26	1	4	2	6
55	Yes	A	D	E	G	I	L	N	O	A	E	K	M	23	1	3	4	4
56	Yes	B	D	E	G	J	L	M	P	O	P	K	C	23	1	3	6	4
57	Yes	B	D	E	H	I	L	M	O	A	P	K	C	30	1	4	6	4
58	Yes	A	C	F	H	J	L	N	P	O	P	K	C	23	1	4	5	4
59	Yes	A	D	E	G	J	L	N	P	A	P	K	C	31	1	4	3	5
60	Yes	A	D	E	G	J	L	N	P	A	P	K	C	29	1	3	4	4
61	Yes	B	D	E	G	J	L	M	P	A	E	K	C	29	1	3	3	3
62	Yes	A	D	E	H	I	L	N	O	A	E	K	C	23	1	3	4	3
63	Yes	A	C	E	H	I	K	N	O	O	E	K	C	22	1	4	4	5
64	Yes	B	D	E	G	J	L	N	P	O	E	K	C	30	1	5	7	3
65	Yes	A	D	E	H	J	L	N	O	A	E	K	C	32	1	4	4	3
66	Yes	A	D	E	H	J	L	M	O	A	P	K	C	24	1	3	7	5
67	Yes	A	D	E	G	J	L	N	P	O	P	K	C	23	1	4	4	5
68	Yes	A	D	E	G	I	L	N	P	O	E	K	C	36	1	3	3	5
69	Yes	A	C	E	G	I	L	N	O	A	E	K	C	23	1	4	4	3
70	Yes	B	D	E	H	J	L	M	O	A	E	I	C	27	1	4	7	5
71	Yes	A	D	E	H	J	L	M	P	O	P	K	C	26	1	3	6	5
72	Yes	A	D	E	H	J	L	N	P	O	E	K	C	30	1	5	3	4
73	Yes	A	D	E	G	J	L	M	O	O	E	K	C	28	1	3	4	3
74	Yes	A	D	E	G	J	L	N	O	A	E	K	C	27	1	4	4	4
75	Yes	B	D	E	H	I	L	N	P	A	E	K	C	30	1	4	3	5
76	Yes	A	D	E	G	J	L	N	P	A	P	K	C	24	1	3	2	4
77	Yes	A	D	E	H	J	L	N	O	A	E	K	M	27	1	3	3	3
78	Yes	A	D	E	G	J	L	N	P	A	E	K	C	24	1	4	4	5
79	Yes	A	D	E	H	I	K	N	O	O	P	K	C	25	2	3	3	4
80	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
81	Yes	B	C	E	G	I	L	N	P	A	E	K	C	24	1	5	4	3
82	Yes	A	D	E	G	J	L	M	P	A	E	K	C	40	1	5	4	3
83	Yes	A	D	E	H	J	L	N	O	A	E	K	C	31	1	4	4	3
84	Yes	A	D	E	H	J	L	N	P	O	E	K	C	23	1	3	4	4
85	Yes	B	D	E	H	J	L	N	P	A	P	K	C	23	1	6	6	6
86	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
87	Yes	B	C	F	G	J	L	N	P	A	P	K	C	26	1	4	3	4
88	Yes	A	D	E	G	I	L	N	P	A	P	K	C	38	1	4	4	3
89	Yes	A	D	E	H	I	L	N	O	O	E	K	C	29	1	4	3	4
90	Yes	A	C	E	H	I	L	N	P	A	E	K	C	23	1	3	2	3
91	Yes	A	D	E	G	J	L	M	P	O	E	K	C	26	1	5	3	4
92	Yes	B	D	E	G	J	L	N	P	A	E	I	C	29	1	4	4	5
93	Yes	A	D	E	G	J	L	N	O	A	P	K	C	31	1	4	4	4
94	Yes	B	D	E	H	I	L	N	P	O	P	K	C	27	1	3	4	3
95	Yes	B	D	E	H	J	L	M	O	O	E	K	M	30	1	3	3	5
96	Yes	B	D	E	G	J	L	N	P	A	P	K	C	31	1	3	3	6
97	Yes	A	D	E	G	J	L	M	P	A	P	K	C	29	1	3	1	4
98	Yes	A	C	E	G	I	L	N	O	A	E	K	C	25	1	4	3	5

98	Yes	A	C	E	G	I	L	N	O	A	E	K	C	25	1	4	3	5
99	Yes	A	D	E	H	J	L	N	P	O	E	K	C	26	1	1	1	1
100	Yes	B	C	E	H	I	L	N	O	A	P	K	C	30	1	5	3	5
101	Yes	B	D	E	G	J	L	N	O	A	P	K	C	29	1	5	3	4
102	Yes	A	D	E	G	I	L	N	P	O	E	K	C	29	1	3	4	3
103	Yes	A	D	E	G	J	L	N	P	A	P	K	C	32	1	5	3	4
104	Yes	A	D	F	G	I	L	N	O	A	E	K	C	28	1	3	3	4
105	Yes	A	D	E	H	J	L	N	P	O	E	K	C	27	1	3	3	5
106	Yes	A	C	E	G	J	L	N	P	A	P	K	C	28	1	3	4	5
107	Yes	A	C	E	H	J	L	M	P	A	E	I	C	31	1	3	7	5
108	Yes	B	C	E	G	J	L	N	P	O	E	I	C	22	1	4	3	3
109	Yes	A	D	E	G	J	K	N	O	A	E	K	C	23	1	4	3	5
110	Yes	A	D	E	G	I	L	N	P	A	E	I	C	25	1	4	3	3
111	Yes	A	D	E	G	J	L	N	P	A	E	I	C	32	1	5	3	3
112	Yes	B	D	E	H	J	L	N	P	O	E	K	C	22	1	2	2	4
113	Yes	A	C	E	G	J	L	N	P	A	E	K	C	27	1	4	4	3
114	Yes	A	D	E	H	J	L	M	P	O	E	K	C	22	1	3	4	5
115	Yes	B	C	E	G	I	L	N	P	O	E	K	C	22	1	3	2	3
116	Yes	A	C	E	H	I	L	N	O	A	E	K	C	26	1	3	3	4
117	Yes	B	D	E	H	I	L	N	P	A	E	K	C	28	1	3	4	5
118	Yes	A	C	E	G	J	L	N	P	A	P	K	C	23	1	4	3	4
119	Yes	A	C	E	G	J	K	N	P	O	E	K	C	30	1	4	4	5
120	Yes	B	D	F	G	J	L	M	O	A	E	K	M	29	1	4	3	3
121	Yes	A	C	E	G	J	L	M	O	O	E	K	M	30	1	4	3	3
122	Yes	A	C	E	G	J	L	N	P	A	P	K	M	22	1	3	3	4
123	Yes	A	C	E	G	J	K	N	O	A	P	K	C	32	1	5	4	5
124	Yes	A	C	E	H	I	L	N	P	O	P	K	C	29	1	3	3	4
125	Yes	B	C	E	G	J	L	N	P	A	E	K	C	30	1	4	4	4
126	Yes	B	D	E	H	J	L	N	P	O	E	I	C	26	1	5	4	5
127	Yes	B	D	E	G	J	L	M	P	A	E	K	C	22	1	3	2	4
128	Yes	A	D	E	H	J	L	N	O	O	P	I	C	30	1	5	3	4
129	Yes	A	D	E	G	J	L	N	O	O	P	K	C	23	1	3	4	5
130	Yes	B	D	E	G	J	L	N	P	A	E	K	C	27	1	5	4	3
131	Yes	A	D	E	G	I	L	M	O	A	E	K	C	25	2	3	4	3
132	Yes	B	D	E	H	J	L	N	P	A	E	K	C	27	1	5	3	3
133	Yes	A	D	E	G	J	L	N	P	O	E	K	C	30	1	4	4	4
134	Yes	A	D	E	G	J	L	M	O	A	E	K	M	32	1	5	4	3
135	Yes	B	D	E	G	I	L	M	P	O	E	I	C	30	1	5	4	5
136	Yes	A	C	E	G	I	L	N	P	A	P	I	C	32	1	3	3	4
137	Yes	A	D	E	H	J	L	N	O	O	E	I	C	22	1	1	1	2
138	Yes	A	D	E	G	I	L	N	O	A	E	K	C	25	1	4	4	4
139	Yes	A	D	E	H	J	L	M	P	A	E	I	C	26	4	5	4	3
140	Yes	B	D	E	H	J	K	N	P	A	P	K	C	28	1	4	3	4
141	Yes	A	D	E	H	J	L	N	O	A	E	K	C	29	1	4	3	3
142	Yes	A	D	E	H	I	L	N	O	O	E	K	C	25	1	4	3	3
143	Yes	A	C	E	H	J	L	N	O	O	E	I	M	25	1	3	4	5
144	Yes	B	D	E	H	J	L	N	O	O	P	K	M	32	1	4	1	3
145	Yes	A	C	F	G	J	L	N	P	A	P	I	C	22	1	3	4	4
146	Yes	A	D	E	H	J	L	N	P	O	E	I	C	28	1	4	4	4
147	Yes	A	D	F	G	I	L	N	O	A	P	I	C	31	1	4	4	5
148	Yes	A	D	E	G	J	L	M	P	O	E	K	C	22	1	3	3	3
149	Yes	B	D	E	G	J	L	N	P	A	E	K	C	30	1	4	4	3
150	Yes	A	D	E	G	I	K	N	P	O	E	K	C	23	1	3	4	3
151	Yes	A	C	E	G	J	L	N	O	A	P	I	C	29	1	3	4	4
152	Yes	A	D	E	H	J	L	N	P	O	P	I	C	31	1	4	7	4
153	Yes	A	D	E	H	J	L	N	O	A	E	K	C	28	1	6	6	6
154	Yes	B	D	E	G	J	L	N	P	A	E	K	M	31	1	5	6	4
155	Yes	A	D	E	G	I	L	N	P	A	E	I	C	29	1	3	4	4
156	Yes	A	C	E	G	J	L	M	P	O	E	K	C	28	1	5	4	5
157	Yes	B	D	E	G	I	L	N	P	A	E	K	C	26	1	5	6	4
158	Yes	B	D	E	G	J	L	N	P	A	E	K	C	28	1	4	3	2
159	Yes	A	D	E	H	J	L	M	O	A	P	I	C	29	1	5	6	5
160	Yes	B	D	E	G	J	L	N	P	O	E	K	C	25	1	3	2	5
161	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
162	Yes	B	D	E	G	J	K	N	P	O	E	I	C	28	1	5	4	4
163	Yes	A	C	E	G	I	L	N	P	A	E	K	C	32	1	5	3	4
164	Yes	A	C	E	G	I	L	N	O	O	E	I	M	29	1	3	4	4
165	Yes	A	C	E	H	J	L	N	O	A	E	I	C	26	1	3	3	4
166	Yes	A	C	E	H	J	L	N	O	A	E	K	M	32	1	3	4	5
167	Yes	A	D	F	H	J	L	M	P	O	P	I	C	26	1	4	3	3
168	Yes	B	D	E	G	J	L	N	P	A	E	K	C	52	1	2	2	2
169	Yes	B	D	E	G	J	L	N	P	A	E	K	C	28	1	4	3	4
170	Yes	B	D	E	G	I	L	N	O	O	E	K	C	23	1	3	2	3
171	Yes	B	C	E	H	J	L	N	P	O	P	K	C	26	1	5	3	4
172	Yes	A	C	E	G	J	L	N	P	A	E	I	C	32	1	4	3	5
173	Yes	A	D	E	H	J	K	N	O	A	E	K	C	44	1	4	3	3
174	Yes	A	D	E	G	I	L	N	O	O	P	K	C	25	4	5	4	5
175	Yes	A	D	E	G	J	L	M	O	A	E	K	C	27	1	4	4	5
176	Yes	B	C	E	H	J	L	N	O	A	E	K	M	25	1	4	3	5
177	Yes	A	D	E	H	I	L	N	P	O	E	K	C	32	1	4	4	3
178	Yes	A	D	E	G	J	L	M	P	A	E	I	C	24	1	5	6	4
179	Yes	A	C	E	G	J	K	N	O	A	P	K	C	32	1	5	4	3
180	Yes	A	D	E	G	J	L	N	O	A	E	K	C	28	1	5	3	5
181	Yes	B	D	E	G	I	L	M	P	A	E	K	C	32	1	5	4	4
182	Yes	A	D	E	G	J	L	N	O	O	P	I	C	30	1	4	3	5
183	No	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
184	Yes	A	D	E	H	J	K	M	P	A	E	I	C	26	1	4	3	4
185	Yes	B	C	E	G	I	L	N	P	O	P	K	C	25	1	6	6	6
186	Yes	A	D	E	G	J	L	N	P	A	E	K	C	24	1	3	4	3
187	Yes	A	D	E	H	I	L	N	O	A	E	K	C	29	1	4	3	5
188	Yes	B	D	E	G	J	L	N	P	A	P	K	C	32	1	5	4	3
189	Yes	A	D	E	H	J	L	N	P	A	E	K	C	26	1	3	3	4
190	Yes	B	D	E	H	I	L	M	P	O	P	I	C	24	1	3	3	3
191	Yes	A	D	E	G	I	L	N	P	A	E	K	C	28	1	4	3	3
192	Yes	A	D	E	G	I	L	N	O	O	E	K	C	29	1	3	4	5
193	Yes	A	D	F	H	J	L	N	P	A	E	K	C	23	1	4	4	4
194	Yes	B	D	E	H	J	L	N	P	A	P	K	M	26	1	3	3	3
195	Yes	A	D	E	H	J	K	N	P	O	E	K	C	27	1	4	4	4
196	Yes	B	D	E	G	J	L	N	O	A	E	K	M	23	1	3	2	3
197	Yes	A	D	E	G	I	L	N	P	A	E	K	C	25	1	5	4	4
198	Yes	B	D	E	H	I	L	N	P	A	P	K	C	27	1	4	3	4
199	Yes	B	D	E	H	J	L	N	P	O	E	K	C	25	1	4	3	5
200	Yes	A	D	E	G	J	L	N	O	A	P	K	M	26	1	4	4	6
201	Yes	A	D	E	G	I	L	N	P	A	P	K	C	29	1	5	5	5
202																		