

Nothing's for Free: Identifying the Most Important Content Monetization Mechanics in Mobile Games

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Abstract

Mobile games are getting a lot of attention as a content-based sector of the digital economy. Especially considering "Free with In-App Purchase" as the mainstream business model of these games, designing the right economic structure to monetize the content of mobile games is crucial. However, there is limited knowledge about the mechanisms of persuading users to pay for in-game content and most of the studies are merely focused on the revenue models. Due to this knowledge gap, this study attempts to aggregate the game monetization methods into a multi-level classification and focus on identifying the main content monetization mechanics of five genres: Arcade, Sport, Puzzle, Racing, and Platformer/ Runner. For this purpose, interviews were conducted by game design and economics experts about successful mobile games. As a result, a new multi-level classification for mobile games revenue models is proposed which includes monetization via selling core items, selling performance items, and providing supplementary services in addition to retailing

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and in-game advertising. It also became clear that monetization mechanics for each of these methods vary in different genres and change depending on the type of game. The results of this study can be useful for digital game researchers, designers, and marketers to structure a better revenue stream.

Keywords: In-App Purchase, Digital Economy, Game Design, Content Monetization.



INTRODUCTION

Digital games are the intersections of ICT and creative industries and the combination of these two has economically made them one of the fastest-growing industries. This is reflected by the fact that the industry's total revenue by the end of 2023, is estimated at more than 200 billion dollars. However, the share of the mobile platform, including smartphones and tablets, is higher than console and computer games, and in 2020, 49% of total revenue was for mobile games (Newzoo, 2020).

This revenue generation also moves regional ecosystems, and game developers in different parts of the world are moving their businesses toward mobile gaming. In 2019, more than 29 million Iranian mobile gamers, have spent a total of 23 million dollars on mobile games, of which 28% is the share of Iranian localized games. The important point is that this share has been growing with 46% CAGR in the last 5 years and has increased significantly year by year (DIREC, 2020).

This steady growth has attracted many competitors to the mobile game development market, and by the autumn of 2019, there were about 350,000 gaming applications in the Google Play Store (Statista, 2021).

Therefore, mobile gaming can be considered an attractive, challenging, and competitive business sector. In addition, mobile games have changed the gaming industry from a product-based sector into a service-based sector (Prato et al., 2014). Currently "Game as a Service" is the main approach to the game business model development which focuses on the free access of users to the game and constantly creating newer content for potential In-App Purchases (Nasiri & Kolli, 2022). This content can be in the shape of newer levels, in-game challenges, virtual decorative & cosmetics items and etc.

Structuring the monetization mechanics to sell the content can be very lucrative but controversial at the same time. Švelch & Roessel (2021) suggest that while many users intend to pay for in-game content because of utilitarian, social or hedonic reasons, others criticize it, since they believe it is a cheat for players to pay to win. Golynchev (2019) suggests that "players are mostly displeased with the pay-to-win mechanics and fine with the cosmetics. For this reason, it is crucial to design the content monetization mechanics in a way that

increases the overall revenue and decreases the negative feedback.

In spite of the importance of content management in mobile games, there are fewer studies about the production and design side of game monetization mechanics. There is a special need to investigate this dimension for directing the successful design of mobile games. Hence, in this paper, the main question is: "What are the most important content monetization mechanics in mobile games?" Accordingly, in this research, an attempt has been made to review successful games in 5 genres of Arcade, Sport, Puzzle, Racing, and Platformer/ Runner, which are among the most popular mobile games genres (DIREC, 2018). By considering the opinion of game economy design experts, we have identified most common methods that facilitate the monetizing process in mobile games. These methods which are known as games monetization mechanics, are in fact parts of the gameplay that increase the user's purchase intention. Naturally, mechanics vary from one genre to another, so in this study, only the top 5 genres have been studied.

Literature Review

Business models of digital games

It is assumed that business model innovation is a key factor for game development studios' survival (Vanhala, 2015). Therefore, studying the business models of digital games covers the major part of research efforts in the field of games' revenue streams.

These studies emphasize the importance of offering and capturing the higher value between the firm and users by business model innovation (Komorowski & Delaere, 2016).

Osathanunkul (2015) classifies the business models based on two main schemes. In the first one, BMs can be classified into two models of Pay-to-Play and Free-to-Play based on customers' accessibility to the game. In the second scheme, BMs can be divided into coin operated, retail, digital distribution, advertising, subscription, micro-transaction, and player-to-player trading according to the game developer's revenue models.

The concept of Monetization in digital games

Generally, the price can be defined as the amount of money that customers have to pay to obtain a product or service (Kotler et al.,

2005); but in the field of mobile applications, monetization comes to have a special meaning that is not necessarily equal to revenue-generation. In fact, from a specialized point of view on mobile revenue generation mechanics, monetization can be defined as generating revenue directly from customers and end-users of the product, and other methods do not fall into this category (Fields, 2014). For this reason, mastering the mechanisms that can persuade the user to pay for the product; especially the game, is of particular importance. So, this part tries to provide a hierarchical overview from the general concept of revenue-generation of the gaming business to the issue of game direct monetization mechanics.

Various attempts have been made to categorize and identify revenue-generation methods. For example, Perry & DeMaria (2009) have introduced 39 ways for revenue-generation from digital games that can be mixed to create new business models. Although there are some new models to make money from the games, yet these models can provide a suitable insight into business models in the gaming industry. These methods are shown in Table 1.

Table 1- Revenue Generating Models of a Game Studio (Perry & DeMaria, 2009)

Model	Description
Retailing	Refers to a physical or non-physical (online) shop which offers games to the customer as a physical product.
Digital Distribution	Refers to the direct download of the game by the customer.
In-game Advertising	Including in-game banners or placing the product in the game or placing the advertisement contents in the main body of the game story.
Advertising Placement	Generating revenue through advertisement banners which surround the main window of the game story.
Payment of Customer Finder Fee (Gamer)	In this method, a percentage of the revenue from each player is paid to the references/ organization.
Advergames	In this method, all of the game experience is about a special product or service.
Testing Game before Purchasing	Providing a shortened or limited version for free in order to sell more of the full version of the game
Episodic Entertainment	Similar to TV series, the user will be able to purchase the game piecemea or in a lump sum.
Collective Betting	In this method, the players purchase a ticket for entering the competition. Then the money shall be collected

Model	Description
	increasingly and after cutting the game developer's share, the winner shall win the remainder of the money.
Member Club	For accessing the special benefits of the games and entering the special division of customers, people shall pay.
Subscription Model	Payments are monthly or in specific periods for continuing to use the desired digital game.
In-Game Micro-transactions	Purchases for saving time, better relations, increasing the player XP, etc.
Games Supported by Financial aid	Developing games which help society and therefore the charitable people, charities, and people send their financial aid to the developers.
Payment for Each Game/ Specific Period	Like traditional Arcade games, the user must pay for life (as long as you survive) or for a specific time period.
Trading of Virtual Items	In this method, the players are allowed to trade properties, lands, characters, items, etc. between themselves. The developer has a percentage as the trade fee.
Transactions of Foreign Broadcasting Right	Like the film industry, a part of the budget shall be provided with foreign broadcasting presale.
Selling access to the player	In this method, the revenue is generated from the customers' database; in such a manner that during the registration process, they get the personal information of the players; then the customized advertisement is presented to them.
Selling the Company	In fact, there is no plan for revenue generation; rather, the goal is that other large firms purchase the game, software, or studio.
Development of Supplementary Items	In this method, the game is sold at a very low price and this deal is utilized for selling other related things such as toys, television programs, films, etc.
Auxiliary Seduction	The game cannot be played without special equipment; therefore, the goal is to sell the needed equipment.
Betting of Player against the Player	In this method, two players pay the betting amounts before the game. The winner takes all after cutting the share of the game developer.
Content Generated by the User	This method allows users to generate new and unlimited content and sell it to each other or sell access to it. The game developers keep a share for themselves. For example, users can add new maps to the game.
Payment for Storage Space	To protect player progress, statistics, information, game data, etc.
Payment for the	Like renting multiplayer servers

Model	Description
Private Server of the Game	
Renting	Stores like BlockBuster or online shops like GameFly rent the games for a limited period.
Licensing the game	Such as signing a contract with certain Internet networks to provide game access to users of that network or allowing other companies to use the brand for advertising.
Selling Branded Items from Game Developer Websites	The branded items are sold to interested users through stores.
Presale of the Game to the Players	In this method, by presale, the fans remarkably help the games being developed financially.
Use the "Buy Something, Get the Game for Free" Model	Like buying a PlayStation Network subscription and enjoying free monthly games
Using "Purchase the Winning" Model	This method is used in online auctions. In this method, the winner of the auction pays only a percentage of the main price of the product; but the seller will own all the offers of the buyers. This method can be used for selling in-game items.
Insurance	Many games can offer insurance services for example against user hacking.
Payment of Game Cost by Installment	The player can postpone the payment of the game cost to other times or pay it through certain installments. In this method, a part of the cost is the interest amount of the installment period.
Supportive Layers	By paying specific amounts, the customers can benefit from more special support and services in comparison with the ordinary customers.
Changing to a Preeminent Member	This method differs from the customers' club and subscription models. In this method, the user has paid an amount to the company that he did not actually need to pay; therefore, the company considers many different ways to appreciate the user. In fact, by paying this amount, the user becomes the inner circle of the company and is informed of all important future events.
Sale of Consumable Items	One of the sub-categories of in-game micro-transactions is the sale of consumer items such as elixirs, ammunition, and even a virtual birthday card for users.
Payment to the Players who successfully accomplish special	In this method, it seems that the game developers are paying the players; but, the reality is that it is the players who buy more game items to win game prizes.

Model	Description
challenges	
Using Non-Profit Model	In this method, the game developer spends the gained revenue on charities and by doing so, obtains a desirable public image. In the future, it is possible to sell the company to larger firms.
Advertisement prior to starting a level	To play the game, the players must watch a specific video advertisement.
Sponsoring Virtual Items	This method requires a sponsor company to support the virtual items of the game. By doing so, the players receive these items for free and when they receive those items, for instance, they also receive an advertisement message from the sponsor.

However, what has been studied in the above-mentioned research is just methods for revenue-generation, and there are more precise categorizations for monetization and revenue-generation from games. It should be noted that most of the research in this field, has been conducted with a macro view of the gaming industry as a creative industry based on the information and communication technology sector. Therefore, these studies review the different ways of joining to the value chain of game development and depict different approaches of creating value for earning revenue. That's why in macro-level categorization, various models have been discussed including technological development of a company for selling it to larger firms, dealing data and services, using the user-base for advertisement, and also generating direct revenue via gamers. Yet, on a closer inspection, the focus can be placed specifically on the game's relationship with its audiences, and examine the direct methods for revenue generation. For example, according to Table 2, Baghbaniyazdi & Ferdosara (2017) have presented a category of revenue-generating methods of mobile games by reviewing six successful Iranian games.

Table 2- Business Model of Successful Iranian Mobile Games

Model	Description
Premium	Payment of download costs by the end users to the game developer (after cutting the share of the game publisher)
Free	The developer of the application provides free applications for users. In this method, the indirect purpose of revenue generation is desired.
Freemium	It is like the free model; the difference is that the users must pay if they want a better experience of the game.

Model	Description
In-App Purchase	A special model of freemium method; but, instead of simple conversion from the free version to premium, this method offers services to different users such as accessing higher levels or upgrading to the full version.
In-App Advertisement	The games are provided for free; while the developers provide advertisements for different products and services. This advertisement can be in the form of video, banners, or offer walls.
Combination Model	A combination of different models for the maximum benefit

According to the results presented in this table, which have been mentioned in various other studies, by excluding indirect methods (such as data selling or in-game advertisement) in general, there are three main categories for direct revenue generation through gamers, in which the payers are the gamers themselves:

- The first category is to purchase through retailing or premium, which is the traditional way of buying digital games, except in the case of packaged digital games, this purchase is done through physical stores, and in the case of mobile games, the place of supply is mainly digital stores.

- The second category is subscription payment, in which the user usually pays a monthly course subscription fee to access game content.

- The third category is the set of models with In-App Purchase (Freemium) in which the user has free access to the game and for various reasons, is persuaded to pay to improve the gaming experience. These costs are usually in the form of in-game micro-transactions. In fact, in these cases, usually the user for various purposes needs to spend in-game currency in the form of coins, diamonds, elixirs, or similar things, and in order to increase the in-game currency, in some cases, the user is persuaded to pay cash (Fields, 2014; Baghbaniyazdi & Ferdosara, 2017; Olsson & Sidenblom, 2010). In fact, monetization from gamers can be defined as designing the game in such a way that the gamer is persuaded to pay for the game.

It should be noted that of the total revenue of the digital games industry in 2019, 80% belonged to the expenses within the In-App Purchase process (SuperData, 2020); therefore, as the most important

part of monetizing methods, in the next step, we can make the issue even more precise and focus on studying the methods in which In-App monetizing takes place. For example, different categories of the In-App Purchase can be divided into four parts according to Table 3. Although in this reference, "Game Content" is only predicated on the main content of the game including new levels, maps and etc. It should be noted again that in our paper we conclude all in-game contents as "Game Content".

Table 3- Main Methods for Monetization through In-App Purchase (Fields, 2014)

Model	Description
Time Selling	The gamer accomplishes the in-game tasks (such as construction) faster
Selling Virtual Items	The gamer can gain some virtual equipment such as better avatars, & skins, more weapons, faster cars, etc.
Selling game content	Prepared content for the game can range from additional levels, maps, and environments for the game to hints and methods for gaining XP
The cost of game coverage	In this model, the players can download the game for free, but before actually starting the game they must pay an amount that can be covered as a part of the game scores or coins.

When the issue of monetizing from the game is highlighted by its given definition, the whole art of game economic design will focus on this principle that the gamer during playing, is such involved in gameplay that tends to purchase to enhance the experience. Naturally, placing purchase points in moments of the gameplay experience in a way that increases the probability of purchase and at the same time does not make the audience to be interrupted, is a very important and intricate issue. It requires the design of monetizing mechanics in a way that creates the ideal state of monetizing and maintaining user satisfaction. What has been studied as the core topic in this research is the appropriate and common mechanics of monetizing in mobile games.

Method

In this study, with the aim of identifying monetization mechanics in mobile games, both primary and secondary data types have been used. At first, by collecting secondary data from studies in this field, a general classification of monetization methods was obtained which

consists of general direct methods of revenue generation.

Afterwards, interviews with experts have been conducted for deepening into lower layers with more detailed monetization methods, focusing to identify main monetization mechanics in the 5 mentioned mobile game genres. For this purpose, a purposive and judgmental sampling method was used. Six experts were selected, of whom two were game design experts, two were project managers, and the last couple were game economics researchers. Each interview took 60-90 minutes with a semi-structured approach and focus on the most successful mobile games in each genre to explore the monetization mechanics especially for that genre. With the help of the MAXQDA software, the content of the interviews was analyzed and categorized based on different revenue methods and genres. Interviews continued until the research reached theoretical saturation. Based on Glaser et al. (1967): "Theoretical saturation refers to a situation in which no further data can be found by which the researcher can extend the characteristics of the concept. As the researcher observes the same data over and over again he experimentally ensures that a category has reached sufficiency". Accordingly, and in accordance with Table 4, in each genre, if new concepts are not reached in a new interview, it is assumed that the research has reached theoretical saturation.

Table 4- The Process of Theoretical Saturation

#	Total No. of Extracted Codes					Total No. of New Extracted Codes				
	Sport	Puzzle	Racing	Arcade	Platformer / Runner	Sport	Puzzle	Racing	Arcade	Platformer / Runner
1	2	-	2	3	3	2	0	2	3	3
2	4	5	4	3	5	2	5	3	0	4
3	3	5	4	3	1	2	4	4	1	0
4	2	2	2	3	4	0	2	0	3	2
5	4	4	4	4	4	1	2	1	2	2
6	2	5	3	4	3	0	0	0	0	0

Results

As we mentioned before, in general, the revenue-generation methods from mobile can be divided into indirect methods (Such as advertising) and direct methods such as subscription mode, game retailing (Premium Model), Advertising, and In-App Purchase.

Advertising and direct methods other than IAP have been reviewed in the previous studies. But this paper mainly focuses on

how to monetize in-game content by the mechanics which lead to In-App Purchases. Obviously the presented categories are reflections of the most important mechanics and do not include all possible cases. Yet, in this part, an attempt has been made to investigate the main structure of successful methods by analyzing the content of the interviews and linking it to the current research background in the mentioned subject.

The Mechanics of In-App Purchase

Among different categories of revenue generation methods, the category of IAP -as the most important method of revenue-generation from the mobile games- refers to a variety of ways in which downloading the game is free but after the installation, the gameplay convinces the gamer to pay for in-game contents.

Based on the results of this paper, In-App Purchase mechanics can be divided into four different types including monetizing by selling: 1. core items, 2. performance items 3. supplementary services, and 4. mixed packages which are introduced as follows.

Core items

In the present study, the items are placed in this category if they do not affect the direct performance of the gamer and enrich the content of the game by an In-App Purchase. The most important core items based on expert opinions are placed in Table 5.

Table 5- The Most Important Mentioned Core items (Authors' compilation)

Title	Description
Game Levels	Different levels of a game which were not free at the beginning and can be sold.
Decorative & Cosmetics Items	The items which are merely for beauty and identity-building.
Supplementary Contents	Including levels, challenges, and events which are not in the core main levels of the game. The player can reach and experience them by additional payments.
Entrance Fee	The cost that a player must pay to enter a challenge, competition, etc.

Performance Items

These items have a positive effect on the gamer's performance and

accelerate his progress. Performance items can be divided into two categories: Consumable and Permanent. Their durability is the difference between the two categories. Consumables expire after a certain period of time, or limited numbers of consumption, and must be repurchased, but permanent items are bought once and for all and have a lifelong impact on the game. Consumer items are also divided into 4 categories (Table 6).

Table 6- The Most Important Mentioned Performance Items (Authors' compilation)

Title	Description
Power-Up	In-game items which increase the life, armor, power, or score of the gamer.
Energy and Life	Items which give a second chance to a gamer or prevent failure.
Time	Saves gamer's time and speeds up the upgradation of items and gamer.
Skipping a Level or Giving Hints	These items either provide the gamer with hints during the difficult levels of the game or allow the gamer to skip them.

Providing Supplementary Services

In these cases, the gamer pays for certain supplementary services such as membership in the VIP club, use of exclusive servers, insurance (against being hacked), increased storage space, fast support, etc. In fact, paying for supplementary services promotes the user from a regular gamer to a VIP. Subscription fees can be compared to this method. Although paying a monthly subscription fee to access the game is one of the possible ways of revenue-generating from mobile games, this method is more common in console or computer games and despite few instances in mobile, paying for supplementary services, considered to be a good alternative.

One of the most widely used supplementary services in mobile games is paying for the elimination of advertising content. In this method, the user will no longer see any advertising content during the game by paying a certain amount (example in Figure 1).



Figure 1- In Flip Master, one of the supplementary services is the removal of advertisements

Mixed packages

Mixed packages are in fact a combination of different types of In-App Purchase mechanics that present a set of offers to the gamer in the form of a package. In Candy Crush, mixed packages consisting of gold bars (in-game currency) and power-ups are offered as Bundle in the game shop (Figure 2).



Figure 2- Mixed packages in Candy Crush

Main monetization methods in Arcade games

The Arcade genre in mobile games mainly includes games that have less mental and movement complexity and are played in a simpler way. The top-selling reviewed games in the Arcade genre were: The Impossible Game, Streets of Rage, Fruit Ninja, Cut The Rope, Threes, Swipe Brick Breaker, and 2048. It is worth mentioning that according to experts, many Arcade games are premium type and are mostly used to generate revenue through retailing.

Performance items in Arcade games prevent the gamer from losing and increasing his chances of success in the game. These items can be energy and life or shortcuts and hints; for example, after each defeat, by using this energy and life, the game can be resumed from where the gamer lost (checkpoint). For example, as shown in Figure 3,

there is an "undo" button in the 2048 game, and we can use it to undo our previous wrong moves so that the gamer can have another life or another chance.

Some core items produced by game developers are similar to episodes of TV series, each one can be purchased separately. In other words, up to a distinct level of the game, the gamer can play the game for free; but from that level onwards the gamer needs to buy more levels. For example, in Fruit Ninja, there are different ancillary levels that can be played by paying a certain amount of in-game currency.

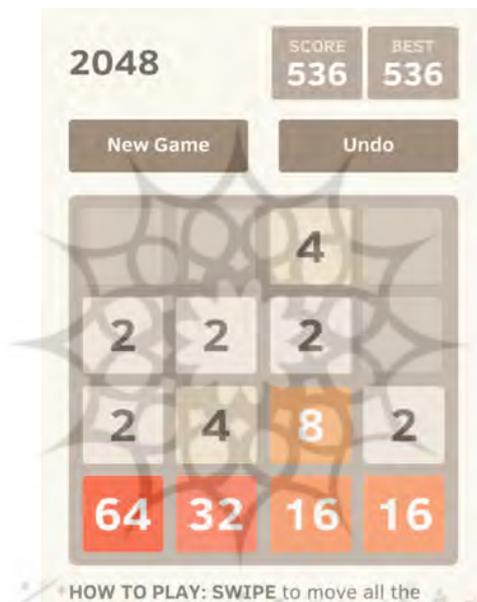


Figure 3- The "Undo" button in 2048 as another chance

Main monetization methods in Sport games

The Sport genre refers to games in which various Sports such as soccer, basketball, volleyball, tennis, billiards, etc. are simulated. Experts have described the kind of games as Sport games in which the rules and principles of a Sport are reflected. For example, games such as football management simulation belong to the strategy genre rather than a game in Sport genre because of the gameplay design features. The most popular mobile games in this genre include Soccer Stars and 8 Ball Pool.

Performance items are a critical part of Sport games. These items

improve and accelerate the gamer's progress; but at the same time, it is very possible that they make the game unfair, and since Sport games are mostly a situation of direct competition, they can cause the audience to lose their balance and leave the game. In fact, while the sale of performance items in Sport games, in form of sales of teams, athletes, or Sports equipment with higher power is common that careful attention should be paid to maintaining the game balance and limited increase in the ability of the gamer if the purchase happens (Figure 4).

The next common method is selling the contest entrance fee. In the Sport genre, usually, the entrance fee is gained through Sport betting; in the way that the competitors pay a certain amount of in-game currency (coins, diamonds, points, etc.) to enter the game, and the winner of the contest takes all the currency paid by both competitors.

Selling decorative & cosmetics items is the next most common way to monetize in the Sport genre. Usually, these items make each gamer, unique and increase their sense of ownership over their in-game assets. Examples of these decorative & cosmetics items can be skins, personalization of the game avatars, and its clothing and accessories.

Supplementary services are also one of the methods of monetization in the Sport genre. Usually, they reduce common paid expenses for competitions and allow the gamer to attend extra competitions and earn special points. In fact, the main customer for subscription payments are players who subscribe to manage their costs.



Figure 4- Sale of cue sticks with different features in 8 Ball Pool game

Main monetization methods in Puzzle games

As the name suggests, Puzzle games present several Puzzles to the gamer and the goal is to solve these Puzzles and reach higher levels. A wide range of games can be defined in this genre, which in the mobile platform, quiz and word games, as well as tile-matching games also fall into this category. Some of the successful games in this genre are Amirza, Fandogh, Angry Birds, Candy Crush, and Doors.

In these games, performance items that have consumable nature, are very useful. Most of them are categorized as hints and skips. For example, in word games, when it is hard to answer a question, the gamer can get hints by paying in-game currency. Also in games like Candy Crush selling items such as "hammers" to facilitate the color matching process and passing the level, is common as a power-up.

The usual way to sell core items in Puzzle games is like selling episodes of a TV-show. In this case, different levels of the game are sold by paying in-game currency. For example, as shown in Figure 5, in Candy Crush, some episodes are not available to the gamer, and there are different ways to achieve them, one of which is to purchase that episode by in-game gold bars.



Figure 5- Sale of episode in Candy Crush game

Another type of core item that is very useful in Puzzle games is selling supplementary content in the form of side challenges, quests, and events. The gamer must spend in-game currency to experience them. These supplementary events are sometimes designed for special occasions such as Christmas and other special holidays.

Finally, in Puzzle games, purchasing supplementary services can come with special options. These services, which are usually offered in the form of VIP packages, offer special capabilities to the player to skip the levels.

Main monetization methods in Racing games

Studied successful games in the Racing genre include GT: Speed Club, Top Gear 2, Real Racing 3, and Need for Speed. In these games, performance items improve and accelerate the gamer's progress. But there is the issue of disrupting the balance between players in the competition. In particular, items that make the gamer's vehicle boost by In-App Purchase and outperform other competitors may reflect this sense of imbalance. That's why usually vehicles in these games, are sold under conditions that enhance the gamer's performance to a limited extent. An example of this is selling different cars in GT, in which each car, has special decorative & cosmetics, and performance items to itself (Figure 6).



Figure 6- Sale of different cars in GT: Speed Club game

In these games, core items are usually decorative & cosmetics items that have an aesthetic and personalization aspect and do not affect the gamer's performance. Usually, these items make each gamer unique and increase their sense of ownership over their in-game assets. Examples of these items can be decorative & cosmetics items such as car accessories.

Purchasing supplementary services is also one of the popular monetizing methods in the Racing genre. For example, the gamer can access special cars or special services for cars, in case of paying a membership fee. For example, in Real Racing 3 the gamer can pay a

special membership fee for each car and benefit from its services such as faster delivery and updates (Figure 7).

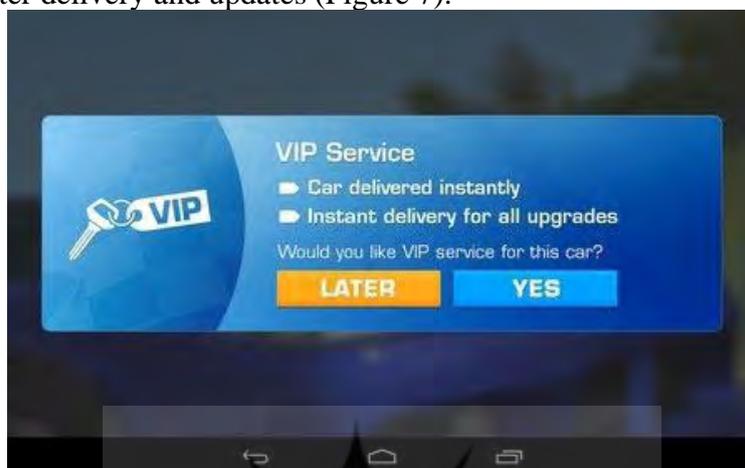


Figure 7- Sale of VIP subscription in Real Racing 3 game

Main monetization methods in Platformer/ Runner games

The main goal in games of this genre is to jump or climb in the environment or overcome obstacles that stand in the way of the game's character. In addition, the game's character may have other abilities such as throwing or shooting. The best-selling games reviewed in this genre are Jenab Run, Subway Surfers, and Temple Run.

Performance items in Platformer/ Runner games prevent the player from losing and increasing the chance of success in the game. These items can be energy and life; for example, after each failure, by using this energy and life, the game can be resumed from where the gamer lost. Power-ups are also common to strengthen the gamer's ability in Platformer/ Runner games, like double jumping or running faster. According to Figure 8 in Subway Surfers, the moment the player loses, the game offers to use energy and another life to continue the level.

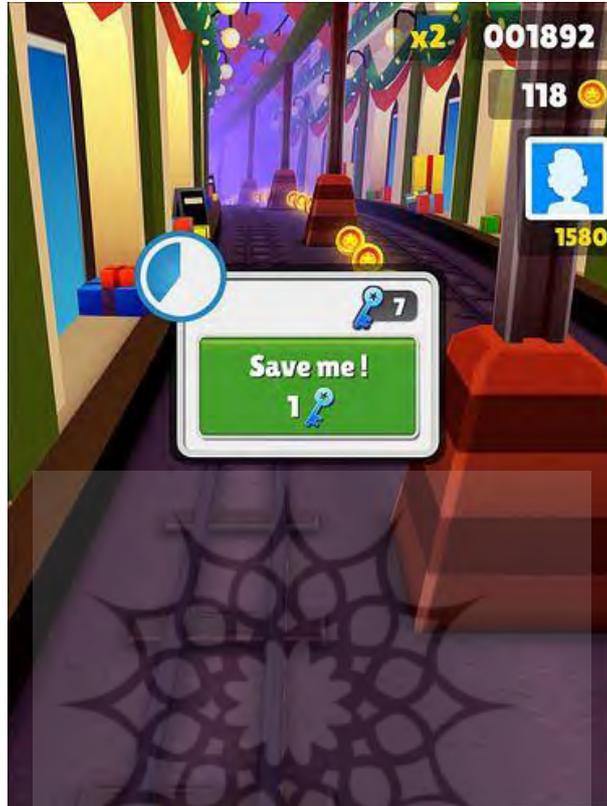


Figure 8- The chance of resuming from where the gamer lost in Subway Surfers

Selling core items in this genre usually includes tailored items that make a player unique. Examples of these items could be special skins, costumes, and avatars. On the other hand, purchasing supplementary services is less common in this genre (Figure 9).



Figure 9- Different avatars in Subway Surfers' shop

Discussion & Conclusion

Examining the methods of revenue-generation and content monetization in mobile games is an important part of the game's economy design and development. In this paper, an attempt was made to take a more coherent look at previous efforts to answer "What are the most important content monetization mechanics in mobile games?". In the first place, the emphasis is on the importance of gaining a correct understanding of the depth of design of revenue-generating models. Therefore, according to Figure 10, it is suggested that the study of revenue-generation methods be possible with a multi-level approach. Investigating the game's business models by a multilayer approach can be found in previous studies. For example,

Klimas (2017) classifies the game developers' business models into three different types including selling paid games, selling free games, and selling IPs. She then gets deep in each type in different layers. But our multi-level approach points out the importance of content monetization mechanics as the core of designing business models. Accordingly, in the first layer, user-based methods are divided into direct and indirect categories. Then in the second layer, among the direct methods of generating revenue from users, which is known as monetization, more emphasis was placed on monetization methods through In-App Purchase, and finally, in each of these monetizing methods, there are some more common mechanics for game content design.

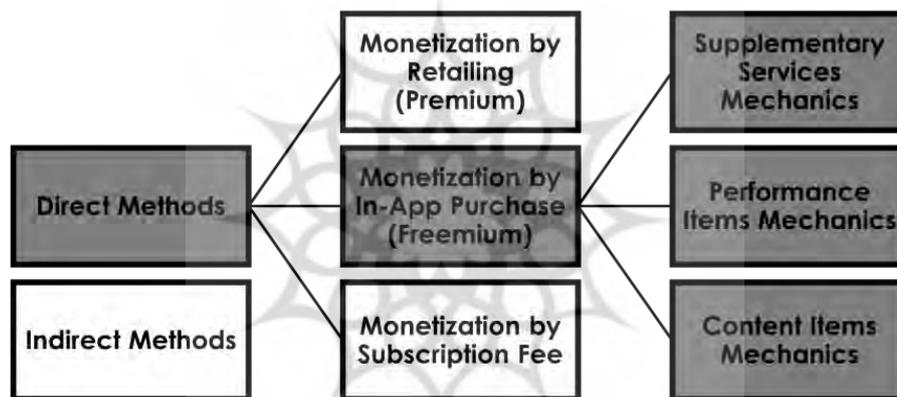


Figure 10- The layers of the game content monetization (Authors' compilation)

Table 7 summarizes the best game content monetization mechanics for 5 popular mobile game genres. It should be emphasized that in the Arcade genre, one of the most common monetization methods is selling premium games.

In addition, as well as implementing different mechanics, designing mixed packages from a variety of mechanics and incentives, is also a key factor in the success of monetization. In this case, the results of this study are in accordance with previous research and game developers should design these mixed packages, in practice (Baghbaniyazdi & Ferdosara, 2017). It was also emphasized in line

with previous research that the design of monetizing mechanics should not cause the imbalance of the game, and the game's economic cycle can be justified and developed to the extent that it does not create an of payment to win situation. In fact, games in which paying more money is equal to winning will fail (Fields, 2014).

Table 7- Best game content monetization mechanics (Authors' compilation)

Genre	Core items Mechanics	Performance Items Mechanics	Supplementary Services Mechanics
Arcade	Selling levels and episodes	Selling life & checkpoints	(Less common)
Sport	- Betting for a contest - Selling decorative & cosmetics items such as skins, avatars, etc.	Selling special teams, athletes or equipment	- Cost management - Access to the special contests and events
Puzzle	- Selling levels & episodes - Selling especial quests	- Hints & skipping chances - Selling power-ups to solve Puzzles	Offering special abilities to solve Puzzles
Racing	Selling vehicle accessories	Selling booster vehicles equipment	- Access to special vehicles - Access to special vehicle services
Platformer/ Runner	Selling avatars	- Selling checkpoints Strengthening Platformer/ Runner abilities (such as jumping or running)	(Less common)

Implications, Limitations & further research suggestions

Erlebach (2021) suggests that designing accurate monetization tools can help the sustainability of the game, especially in the field of online games. Accordingly, this paper seeks to provide a more detailed understanding of the economy of mobile games, emphasizing on the importance of content monetization mechanics to make the researchers and developers of this field more skilled in designing successful mobile games. Compliance with the results of this paper

can be helpful for game designers to target the best content monetization mechanics for a better IAP revenue stream.

Nevertheless, the mechanics and methods mentioned in this study do not cover all the options. It is important to find the main methods and focus more on them. In addition, the methods & mechanics of game content design will change according to the changes in the gaming industry. Thus game studios most innovate in their business models constantly (Landoni et al., 2020).

This paper is limited to the investigation of 5 popular mobile game genres. But there is definitely a considerable difference between different genres and gamers' attitudes towards monetization mechanics (Hagseth & Kjenes, 2020). In addition, console and computer game developers are inspired by the success of mobile games IAP and tend to design freemium mechanics in these kinds of games. For this reason, studying other genres and platforms and players' characteristics regarding content monetization is suggested for further research.

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