JESK J Ergon Soc Korea 2021; 40(3): 185-197
https://dx.doi.org/10.5143/JESK.2021.40.3.185
https://jesk.or.kr eISSN:2093-8462

Motivations and Obstacles of Chinese Generation Z for Mobile Game Design

Liu Anni[1], Younghwan Pan[2]

[1]Kookmin University, Department of Smart Experience Design, Seoul, 02707
[2]Kookmin University, Interaction Design Lab, Graduate School of Techno Design, Seoul, 02707

Corresponding Author
Younghwan Pan
Kookmin University, Interaction Design Lab, Graduate School of Techno Design, Seoul, 02707
Email : peterpan@kookmin.ac.kr

Received : May 07, 2021
Revised : May 15, 2021
Accepted : May 30, 2021

Objective: Through a survey of Chinese Generation Z female game users, we study users' motivations and obstacles in games and summarize the generational characteristics of the Chinese Generation Z females in games. Through expert interviews, we summarize suggestions conducive to improving the satisfaction level of game application users.

Background: Although a large number of scholars have dedicated their effort to Generation Z group in game user research, most of them have not studied mobile games for a specific age and gender group. Particularly, under China's "one child policy", understanding Chinese Generation Z females' motivation and obstacles to participate in games can effectively improve the user satisfaction of game products.

Method: We derived a user travel map from a one-year internet ethnography study of Chinese Generation Z females. The user contact points were sorted out based on this map and were used for in-depth interview design. After conducting in-depth interviews with 40 Chinese Generation Z female game users, expert interviews were conducted to validate the results and to give game design and marketing suggestions for the Chinese game market.

Results: Motivations of Chinese Generation Z to participate in games are to pass time, satisfy social needs, relieve stress, and chase fashion. The reasons for users' continuous participation in games are intimate interaction, self-worth realization, and competition pursuit. The obstacles to users' participation in games are payment, single game mode, lack of social functions, and insufficient time.

Conclusion: As the new generation of game users, Chinese Generation Z females has great commercial value in the future. Understanding their needs in games is a significantly important way to target product development. Games of high product quality and fits for the psychological motivation of female players would greatly caters to the needs of users, together with well-planned promotion and marketing, is the key to its success. At the same time, the quality of the game is an effective means to maintain users. Keeping freshness and better prolonging the life cycle of the game is an issue that all game products need to focus on.

Application: User research is an important part in the process of game product development, and paying attention to the needs of female users of Generation Z can better improve product user satisfaction level.

Keywords: Mobile games, Chinese Generation Z, Motivation and obstacles, Generational characteristics

Copyright@2021 by Ergonomics Society of Korea. All right reserved.

1. Introduction

With the rise of mobile internet, mobile games have developed rapidly, and have become increasingly popular among players. In China, traditional action-adventure, strategy and battle games have always been dominated by male players, while there's a gradual increase in female players in light-hearted games including casual, social, and modus operandi games. In 2019, female game users in China exceeded 300 million, accounting for 46.2% of all Chinese game users. The sales revenue contributed by female users in the Chinese game market was 52.68 billion yuan (Figure 1), accounting for 22.2% of the overall game market revenue in China (China Game Industry Report, 2019).

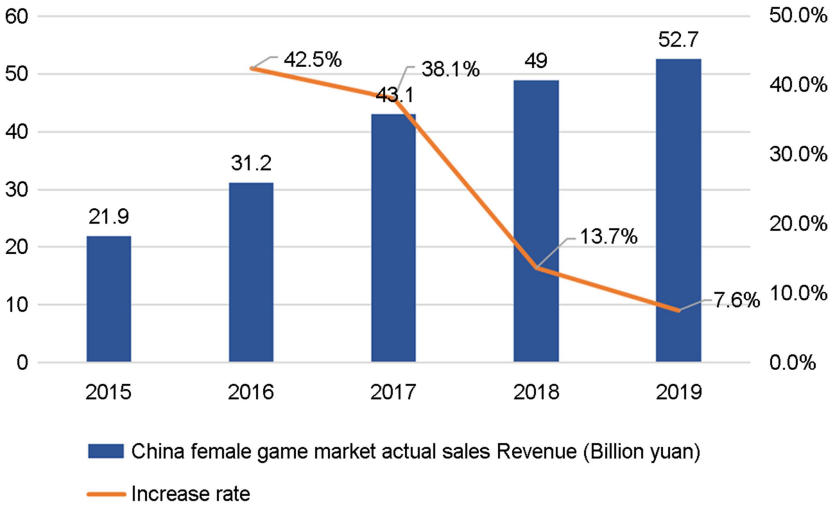

Figure 1. China female game market actual sales revenue and increase rate

This shows that females have become an increasingly important consumer group in the game market, and there is also huge business potential in the future development of the game industry. As Generation Z females becoming an active consumer segment, the Chinese government, companies, the market, and all segments of society are paying attention to them. Nowadays, games targeting female Generation Z are emerging. Game companies are developing games with various genres, styles, and promotions to attract more female consumers. In China, Generation Z refers to the population born between 1995 and 2005. With a total of about 260 million people, it accounts for about 19% of China's total population in 2018 (The State Council of the People's Republic of China, 2018). Generation Z grew up with the internet and mobile devices. As the first generation of digital natives, being tech-savvy is one of their attributes. They are "always online", accessing QQ, Weibo, WeChat, Facebook, Instagram, and any other social media applications. Unlike other generations, this generation seamlessly switches between online and offline channels, and is born into a digital world with lightning-fast internet, smartphones, video-on-demand, gaming devices, and social media (Schlossberg, 2019). The experience of online games seems to be a special right given to them by the times. According to a survey by market research firm Penguin Intelligence, 45% of Chinese Generation Z females have made online monetary top-ups in gaming platforms in 2019 (Penguin Intelligence, 2019). According to Bilibili's forecast, the contribution of Generation Z to China's online entertainment market size will grow from 59% in 2019 to 66% in 2023, corresponding to a market space of 879.12 billion yuan (Figure 2) (CITIC Securities, 2020).

Therefore, in this study, we researched the motivations and barriers of Chinese Generation Z females in gaming, and analyzed the characteristics and preferences of the gaming behavior of young people represented by Generation Z. It is not only valuable

for the current gaming products, services and brands for young people, but also has some reference significance for the longer-term future consumption direction.

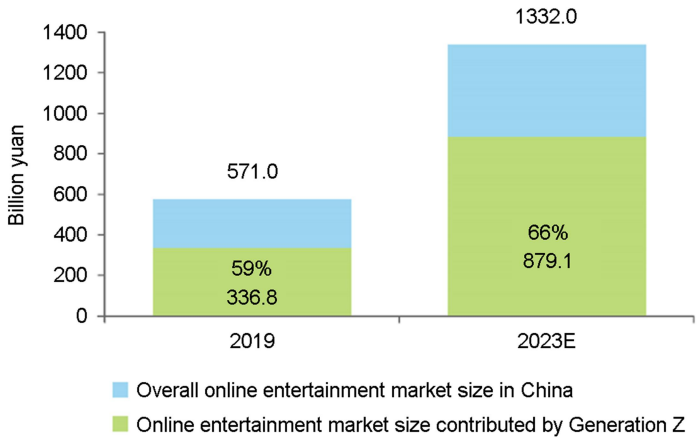

Figure 2. Generation Z's share of China's online entertainment market is increasing

2. Method

2.1 Research design

Based on the methodological characteristics of fieldwork, we attempt to introduce fieldwork into the study of online virtual communities. Online virtual communities are online spaces formed based on common preferences, transcending hierarchical, ethnic, racial, gender, and language obstacles. The researched object of this paper, the game APP, can be seen as a network virtual community, which also meets the basic characteristics of fieldwork: first, mobile gaming users gather together out of their interest in the new media form of game APP. Based on their common participations and interactions with the rich content and various game products, they show significant youth behavior. Second, different types of game APPs form different online communities with clear boundaries. Third, the behavioral characteristics and needs of game APP users can be studied and analyzed through participatory observation within a certain period, which is in line with the extension of field survey to internet ethnography research. Research results based on internet ethnography is beneficial for more precise and targeted questioning of interviewees during in-depth interview sessions.

2.2 Researched subjects

In this research, 40 Chinese Generation Z females were interviewed in depth. The average age of the interviewees was 20 years old, ranging from 15 to 25 years old. Among the 40 interviewees, 5 had never been involved in social games, and only participated in management, nurturing, and puzzle games such as Mr. Love Queen's Choice, Hundred Scenes of Jiangnan, Miracle Nikki, Shining Nikki, Eliminate, and Greedy Snake, and others of the kind. Other interviewees had not only participated in low social interaction games, but also in the following games to varying degrees, including Arena of Valor, Game of Peace, Onmyyoji, sky, Crossfire, One Dream world, QQ over speed, Clash of Clans, etc. Most of those games were mainly in the competitive category. All 40 females' participation time in games range from 10 minutes to 5 years. The top-ups made in the games varies from 5 to 10,000 yuan.

2.3 Data collection method

2.3.1 Virtual ethnography

This study used a virtual ethnographic research method for a one-year online observation period, from November 1, 2019 to November 1, 2020 (Figure 3). We directly participated in the games and met the Chinese Generation Z female user group through in-game social feature. We joined online social circles mainly constituted by Generation Z group via the recommendation from four Generation Z female gaming friends. Such circles include mainstream ones such as QQ groups, WeChat groups, and Weibo groups. By observing chatting conversations and participating in games together, we gained a broad understanding of real lives, social lives, games, and hobbies of Chinese Generation Z females.

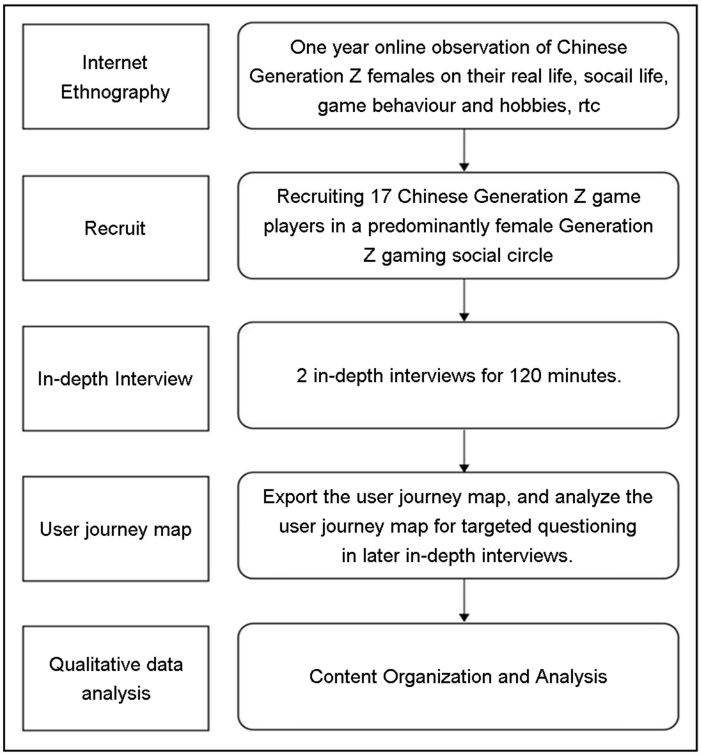

Figure 3. Shows the process from recruitment and study of interviewees to data analysis

2.3.2 User Journey Map

After a year of participatory observation, we derived the user journey map (Figure 4) to sort out the gaming and social paths of Generation Z female gamers. First, users download game products through online advertising or social behaviors. Second, during gaming sessions, users generate online or offline game socializations, such as discussing game strategy and game style with friends, or participating in games together. Finally, factors such as the difficulty level of game operation, social feature, and consumption amount influence whether users continue to use the game product. Through the analysis of user journey map, the contact points between users and game products are clarified for later in-depth interviews to be targeted.

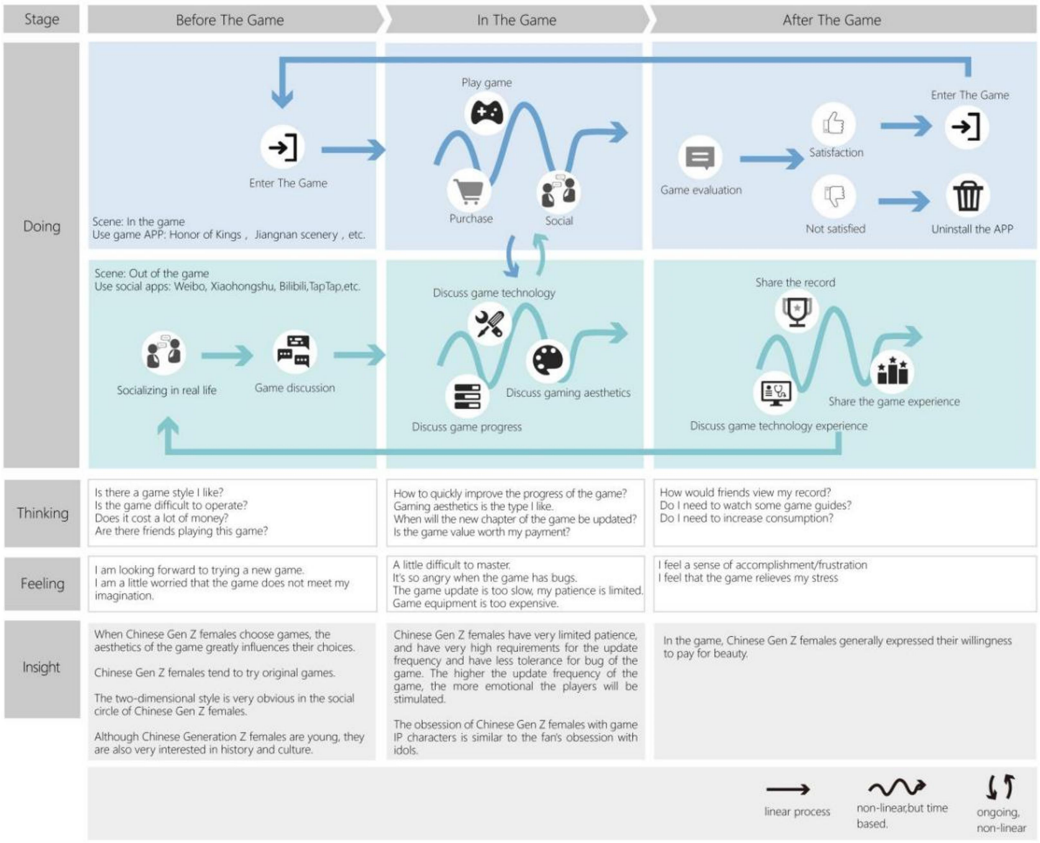

Figure 4. User Journey Map

2.3.3 Recruit interviewees

After a one-year long extensive participant observation, we recruited 40 interviewees from gaming social circles dominated by the Generation Z female via apps such as WeChat, QQ, and Weibo groups. Interviewees include school students, white-collar workers, new blue-collar workers, civil servants, private business youth, freelancers, and oversea students. Among the 40 interviewees, 66.4% were born in 2000-2004, followed by 22.5% born in 1995-1999, and 10.8% were born in 2005-2009.

2.3.4 In-depth interviews

We conducted interviews with 40 Chinese Generation Z female online mobile game users between November 15, 2020 and February 18, 2021. The interviewees ranged from 13 to 26 years old, included multiple occupations, and covered multiple game types. The average time length of the interview was one hour, and all interviews were conducted in a one-to-one half structured format. The in-depth interviews were conducted through online channels, mainly through WeChat voice and text, QQ voice, and text, etc. Because of the impact of the COVID-19, the interviewees were scattered all over the country. Before the formal interview, the author conducted preliminary communication with the interviewees to understand the basic information of the interviewees and to establish mutual trust, so as to obtain real psychological trajectory of the interviewees in the formal interview. The interview topics include the following aspects (Table 1).

Table 1. In-depth interview question list

No.	Main content of the interview
1	Personal characteristics: age, occupation, income, average daily gaming hours, favorite game types and specific games
2	What are the reasons for choosing this mobile game?
3	What do you mainly do in mobile games?
4	What situations in mobile games make you feel satisfied?
5	Why did you choose mobile gaming as a form of entertainment?
6	Do you have a preferred style of game?
7	What kind of service do you want the game to provide?
No.	Additional questions for the interview
1	How is your top-up condition in mobile games?
2	How are you interacting with other players in mobile game?
3	Beside mobile games, what other entertainment options do you usually choose?
4	Have you ever participated in an offline party or contest about mobile games?

After the interviews, the author mainly used class analysis method to categorize and summarize the interview data (Chen, 1996). The method of class analysis refers to classifying overall population into categories based on common attributes. Firstly, we converted the voice interview into text, and all the interview contents were included into the computer in text form and stored as original interview content. All the relevant descriptions about game motivations were also classified, sorted, and ranked by frequency of occurrence. Finally, the key words of motivation with the same attributes or characteristics were refined to form a preliminary list of concept types.

3. Results

Through analysis and organization, we extracted the interview results into 89 initial sentences, and after a preliminary pre-coding process, extracted them into 11 codes. The extracted codes were divided into 3 sub-categories and 2 categories, which were "motivation and obstacles" (Table 2).

Table 2. Codes and categories of game experience and generational characteristics

Codes	Subcategories	Categories
Spending the time	Motivation to play - internal psychological needs to start	Motivations
Social Needs		
Stress relief		
Popular		
Circle interaction	Factors of continuous play - External relations to maintenance	
Self-worth fulfillment		
Competition		

Table 2. Codes and categories of game experience and generational characteristics (Continued)

Codes	Subcategories	Categories
Payment	Factors for stopping the game - unmet internal/external conditions to satisfy	Obstacles
Freshness		
Lack of social function		
Lack of time		

3.1 Gaming motivations or obstacles of Chinese Generation Z females

3.1.1 Factors for playing games: internal psychological needs

The result of this study is that the main gaming motivation for Chinese Generation Z females is their psychological needs. 82% of the interviewees said that they were more willing to spend time with friends, and the social feature in games is an important influence on their choice of games.

"In 'Sky: Child of the Light'I can run hand in hand with my friends .... In fact, it's more fun to play with friends, sometimes I have no interest to play 'Arena Of Valor', but if I have a friend there, I could play with him together and speak double cross talk, it will be very interesting." (NO.12, student)

At the same time, since most of the Generation Z females are still in school, they also face a lot of academic pressure. Females new to workplace also have greater mental stress from work competition and family expenses, so they play games hoping to relieve stress.

"I play more games of management class during the exam period, it does not take time, you can always quit. Well, normally if there is no pressure, you can play 'Arena Of Valor'." (NO.3, student)

Trends are also a big factor for Generation Z females when it comes to game selection. They care about having something in common to talk about with their friends and don't want others to think they are out of touch because they don't know how to play a game.

"If they are all playing and I am the only one not, I can't understand what they are talking about, knowing nothing about it, it would be embarrassing." (NO.28, student)

3.1.2 Factors of continuous game playing: the maintenance of external relations

After entering the game for a period, the influence of external environment becomes important when deciding whether Generation Z females are willing to continue playing a game. When they can keep frequent interactions with their friends through games, they form more intimate relationships with friends through common topics.

"I've been trying to find a game with my boyfriend that we can play together, it is, I like the game and he can also accept it, but it's really not very easy to find, so 'Arena Of Valor' is a compromise." (NO.32, company employee)

Achieving high scores in the game and getting praise from others are also the reasons why they keep playing.
"My gaming skills has improved, friends and boyfriends all would praise me, and I always want to play with them, after all, who

doesn't like to hear others' appraisement?" (NO.40, government worker)

3.1.3 Factors for stop playing the game: inability to meet internal/external conditions

Most females in the Generation Z are students or have just entered the society with relatively low average income, so too much in-game consumption is also an important factor that causes them to uninstall the game.

"In order to collect four sets of clothing I spent more than 300 yuan, but still did not make it, I felt quite disappointed, and then I uninstalled it." (NO.11, student)

In the interview, it is obvious that females of the Generation Z are tired of the single mode of the game. We noticed the occurrence of common adjectives such as "dull" and "boring" in the interview. Even for beautifully designed games, they will still only try to play for a very short time, and uninstall the game soon after.

"It is very beautiful, but it is also quite boring to play, it survived only one day in my iPad, it feels very dull." (NO.16, freelancer)
"The plot is actually rather rigid, I can't substitute myself, so play a little longer and I will be bored because its game mode is too rigid." (NO.9, student)

The lack of social functions, the inability to interact with friends or to show their self-value in front of friends are also the reasons why females in the Generation Z uninstall the game.

"After all, I am playing alone, even though I bought a new clothing item, no one would know! And they do not even know what that game is." (NO.1, student)

Interviewees who were students said that they would only play games during free time, and they would not have time when busy with school, especially during examination period. Interviewees who were in and out of the workplace said that they had just started their internship and did not know much about their work, therefore they needed to spend time on self-improvement outside the workplace in order to have better life quality.

"That is, I only play a little when I am on vacation, after all, I still want to get a good university entrance exam." (NO.4, student)

3.2 Discussion

3.2.1 Game motivation

First, in order to attract more users, a prerequisite for game products is to meet users' psychological needs. According to the results of this study, the main motivations of Chinese Generation Z females to play games include spending time, social needs, relieving stress, and chasing fashion. When users need to spend time, they have different needs in terms of the type of games they choose. Chinese Generation Z females, who care about social attributes, are more likely to choose a game with social features to interact with their friends. The social features help them stay active in the game, and users are more willing to make consumption and stay engaged in the game. This result is similar to previous research findings (Zhou, 2019) that game players who are more socially motivated spend more time playing games, more money on games, and have higher user loyalty. Therefore, social feature in games is an essential part for Chinese Generation Z females.

Second, Chinese Generation Z females are more likely to interact online with their real-life friends than with unfamiliar online friends, a finding similar to previous studies on the post-1995 gaming cohort (Kang, 2016), which shows that for most Chinese Generation Z females who are still in school, gaming is not only a form of entertainment, but also a channel to communicate with

friends. In the young Generation Z group, users would communicate with friends to share new game products, which motivate potential users to use game products in order to have more common topics with their peers or to chase fashion.

Finally, users will play mobile games to relieve stress. According to the survey of 40 interviewees, when users have school or work pressure in real life and have limited time, they tend to choose low-competitive game products such as management games. When they have plenty of time, they tend to choose collaborative and highly competitive game products. In the case of low-competitive games, users prefer the fragmentation feature of such game products, and that they can choose to quit the game at any time without affecting the game performance. In contrast, in collaborative game products, quitting the game at any time will affect their game performance with their friends, and some interviewees said that if they are participating in the game with their real friends, quitting the game at will may produce some conflicts with their friends. In order to avoid unnecessary conflicts, some users choose different games according to the time sufficiency.

3.2.2 Reasons for continuous play

The reasons for Chinese Generation Z female users' continuous participation in games mainly include circle interaction with friends, the realization of self-worth, and competition. According to the survey, it was found that Chinese Generation Z females prefer to interact with their real-life friends in games, with obvious circle characteristics. Circles are essentially online social circles formed by people based on common interests, and capturing the culture of circles means capturing unlimited attention (Harvard Business Review, 2021). When interacting with friends who have common hobbies or similar tastes in games, it is conducive to strengthening the social intimacy between each other. During game interactions with friends, users discuss game sessions, game content or game cooperation with them, so they can reap a strong sense of belonging to the circle and a high sense of participation, which also make them want to stay in the circle.

Second, users feel the self-worth realization when they achieve victories, and it is even stronger when they are praised by their friends, which also makes them want to continue to play and realize their self-worth.

Finally, the survey found that 80% of Generation Z females prefer competitive games, consistent with previous survey results (Fu, 2018). A large number of female players can still be seen in the competitive genre game applications, and according to the data released from Aurora Big Data in May 2017, the female users of Arena Of Valor were as high as 54.1% (URORA, 2017), which overturned the public's usual impression of female players. In fact, female players prefer casual games, probably out of consideration for time constraints rather than for natural preferences (Benjamin et al., 2017). There is also a view that female gamers are generally not as good at gaming as males. However, one study found that although male players have a higher average gaming level than females, male and female have the same rate of skill accumulation, which means that if a female player plays a game for the same amount of time, her skill level will match that of a male player (Benjamin et al., 2017). Stereotypes of female players may also be a major factor influencing females' active exposure to competitive games. As Diane Carr et al. argue, one of the reasons why decryption and card games are more attractive to females is that "in these games, they can avoid entering an area that has been identified as exclusively male (Diane et al., 2009)". However, ever since competitive games such as "Arena of Valor" have become popular, many young females have started to try more competitive game applications. However, most of the interviewees reported that they have experienced gender discrimination in competitive games, which can make users feel less favorable towards the game app. It is also beneficial to retain more female players by taking the lead in creating a good atmosphere for users of both genders.

3.2.3 Game obstacles

On the other hand, factors that influence Chinese Generation Z females to stop playing in this study include lack of social features,

lack of time, payment, and freshness. As previous studies have shown, Chinese Generation Z females attach great importance to social attributes in games, and users will not continue to participate in games if they believe that the social features of the game do not meet their social needs during the game. At the same time, most Chinese Generation Z female interviewees who are still students said that they prioritize their studies and that they use games mainly as entertainment or stress relief.

At the same time, according to the in-depth interview, it is found that student users are more inclined to spend money on games than working users. This is because users in the working stage face more living pressure, while student users mainly rely on their parents for their living, and have pocket money that can be spent on game consumption and without having to compromise quality of life. In terms of game mode, Chinese female Generation Z users are full of curiosity to try all kinds of things, therefore the traditional or single game mode will make them lose interest in games. Even a game app with a novel game mode will lose its freshness one day after a long time of keeping a single game mode, so keeping the game mode renovated will prolong the freshness of users.

3.3 Expert interview

In order to validate the research results and to better understand the needs of Chinese Generation Z females in game applications, we conducted expert interviews with relevant game industry professionals, including researchers and technicians from NetEase, Tencent, Papergames, TapTap, Bilibili, and Sparkgame. The ratio of male to female experts interviewed was 2:5. The average age was 45 years old, with youngest being 32 and oldest being 50. Their positions were arranged as follows: 4 in user research center, 2 in game interaction design, and 1 in game company startup. The content of the interviews focused on understanding the market potential of Chinese Generation Z female users, their motivations and barriers to game participation, and the generational characteristics of gaming among them. The interviews were conducted while displaying Table 1 "Codes and categories of gaming motivations/barriers and generational characteristics" and analyzed after scripting. The questions were divided into game market trends and characteristics of Generation Z female users. For detailed questions about the interview, please refer to (Table 3).

Table 3. Expert interview questions list

Classifications	Questions
Game mainstream user trends	What is the age group of the most dominant game group in the current game market?
User characteristics	What are the most common factors that motivate Generation Z female users to participate in games?
	What are the most common factors that are barriers for Generation Z female users to participate in games?

3.3.1 Expert interview results

When summarizing the experts' suggestions, all of them expressed that currently the main targeted group for game development is the Generation Z. Although, there are some special categories, such as Simulation Game, or racing games, which target a higher age group of games, but other than that, the main direction is still Generation Z (Expert 2).

In terms of users' motivation to participate in games, one expert said, "Circle-based socialization is a distinctive feature of the Generation Z group, such as two-dimensional culture, Japanese and Korean school uniform culture, etc. They are surrounded by a large number of cultural elements, and growing up in such an environment, they will be more willing to participate in

games that are closer to their own circle" (Expert 3). In other words, it makes sense for Generation Z to chase fashion and make products based on the popular culture of their circle (Expert 1, 5). On the other hand, the current situation in Chinese society is caught in "involution" (it refers to the phenomenon of peers competing for limited resources by putting in more effort, but leads to a decrease in the individual's "effort-to-reward ratio"). This is also the same situation for Generation Z, most of whom are students, who start attending a lot of classes at an early age and occasionally play games to relax from the pressure (Expert 6). While casual games are traditionally the dominant genre in the female market and have the function of spending time and relieving stress, many competitive rivalry games are now also very popular among young females (Expert 3).

In terms of obstacles to user participation in games, the lack of freshness is the main reason, as one expert said, "After we did the survey, we found that some of the games they like that we have never heard of, they are a very distinctive style" (Expert 2). "But they often come and go quickly" (Expert 7), and it is not easy to keep the retention of users. "Continuous updating activities are needed to increase the freshness, and frequent return activities are also necessary" (Expert 1).

3.3.2 Chinese Generation Z female users prefers a combination of "hardcore" gameplay and feminine style

A typical example is a third-person shooter mobile online game named "Wildness" launched by NetEase in 2018. The game generated about 2 billion yen in revenue in the Japanese market within a single year, and topped the Japanese mobile game download list for a long time. "Wilderness" has been nicknamed "Wilderness Nikki" by gamer users, combining "Wilderness" with another female-oriented mobile game, "Miracle Nikki". The latter is a dress-up collection game with a female protagonist traveling around the world. The characters design of "Wilderness" is different from the "soldier" image in traditional shooting games that are more "hardcore". Characters of this game have beautiful appearances and tall figures, which are more in line with the aesthetics of female users. The game launched a variety of styles of appearance frequently, allowing users to buy their own game characters to dress up, which is also an important reason why it is called "Wilderness Nikki". The combination of such "hardcore" gameplay and feminine style design allows Chinese female Generation Z users to not only feel the satisfaction of competing in game, but also to enjoy the beautiful characters and fun of dressing up. The combination of these two factors will undoubtedly attract a large group of female users who love competitive "hardcore" games.

3.3.3 Focus on game content ecology: Two-dimensional surrounding culture

The content ecology of games includes both content and ecology. Content is provided to users through game operators with content products about graphics, gameplay, plot, etc. Ecology requires collective effort from game operators and users to establish a virtuous cycle of ecosystem. At present, China is showing three trends regarding digital content consumption: users are paying more attention to self-expression while consuming content; socialization is becoming an important carrier of digital content; and more and more consumers are becoming producers.

3.3.4 Technology Empowerment: "5G+VR+AR" to build a virtual social scene

The year of 2019 is called the first year of 5G commercialization. With the development of 5G technology, VR, AR, etc. have gained certain technical support. Problems such as delay lag, heavy equipment, and blurred picture quality have also been improved, users of VR social can use more diverse interaction methods, enter the scene with each other to listen to songs, play games, and establish social relationships in virtual scenes, etc. Each different scene, intelligent terminals for users to bring more free space and unlimited possibilities of scene use, the user's content and form of media needs will be different.

4. Conclusion

The female game market is gradually moving to maturity. As the new generation of game users, Chinese Generation Z females have great business value in the future. The motivations and obstacles of game users to participate in games can affect the profit level of companies, and the key for game companies to maintain their advantages in the increasingly fierce competition is to maintain users' participation in games. To achieve users' participation in games, it is necessary to understand what factors influence user motivations and obstacles to game participation. In this research, we analyzed the motivations and barriers to game play of Chinese Generation Z females and provided marketing suggestions for game practitioners. In the booming stage of female game market, they should be user-centered and understand the needs of Chinese Generation Z female users in games in order to make targeted product development. The success of a mobile game cannot be achieved without a quality product, a matured market and an accurate marketing. Games of high product quality and fit for the psychological motivations of female users would greatly cater to the needs of users, together with well-planned promotion and marketing, is the key to its success. However, it is worth noting that the effectiveness of set-up and viral marketing can never last, and the quality of the game is the most effective means to maintain users. How to better extend the game life cycle in its heyday is the problem that not only female oriented games but also all the game products need to focus on.

The limitations of this research and the main points of the follow-up research are as follows. First, the users' requirements for the value of game products still needs to be studied. For game practitioners, besides catering to the users' motivations to participate in games or addressing the barriers to users' participation in games, there are still many other influencing factors should be considered, such as the localization of games. etc., and more in-depth research of this direction needs to be conducted in the future. Second, this research mainly focuses on the influence of inter-generational characteristics of Chinese Generation Z females, and we did not make vertical comparison with other generations of females or horizontal comparison with males. In the future research, it is necessary to make vertical and horizontal comparisons in order to more precisely distinguish the needs of Chinese Generation Z female users in games.

References

Benjamin, P., Thekla, M. and Michelle, S., "What is a True Gamer? The Male Gamer Stereotype and the Marginalization of Women in Video Game Culture". *Sex Roles*, 76(7-8), 421-435, 2017. doi:10.1007/s11199-016-0678-y

CITIC Securities, Meet the new opportunities of Z-generation game industry: 2021 Game Industry Investment Strategy, *CITIC Securities*, https://img3.gelonghui.com/pdf/c7a46-a9c42fe3-b6dc-400f-b63d-65f6c73d46ed.pdf (retrieved October 27, 2020).

Chen, X.M., "Qualitative research methods and social science research". *Social Sciences in China*, 6, 1996. doi:CNKI:SUN:ZSHK.0.1996-06-008.

China Game Industry Report 2019, *Baidu Library*, https://wenku.baidu.com/view/e557c216356baf1ffc4ffe4733687e21af45ff98.html (retrieved October 27, 2020).

Diane, C., David, B., Andrew, B. and Gareth, S., "Computer games: Text, narrative and play". *British Journal of Educational Technology*, 40(3), 580-580, 2009. doi:10.1111/j.1467-8535.2009.00969_5.x

Fu, B.Q., "Research on Female Users of Mobile Games", *Research on Transmission Competence*, 2(33), 190-192+194, 2018. doi:CNKI:SUN:CBLY.0.2018-33-161.

Harvard Business Review, *HBR-China*, https://mp.weixin.qq.com/s/2JXjJuGG2LFPlAudIjlcbQ (retrieved January 25, 2021).

Kang, Y.Q., "Simple Fragments, No Addiction: The Gaming Life of the Post-95s", *Business Management Review*, 7, 45-46, 2016. doi:CNKI:SUN:SXYT.0.2016-07-019

Penguin Intelligence, 2019 Generation Z Consumer Power White Paper, *Tencent*, https://tech.qq.com/a/20190829/006320.htm#p=1 (retrieved June 2019).

Schlossberg, M., Teen Generation Z is being called 'millennials on steroids', and that could be terrifying for retailers, *Business Insider*, https://www.businessinsider.com/millennials-vs-gen-z-2016-8#retails-should-be-focusing-on-teens-rather-than-millennials--theyre-a-barometer-13 (retrieved February 13, 2019).

The State Council of the People's Republic of China, http://www.stats.gov.cn (retrieved, 2018).

URORA, Arena Of Valor Research Report, *Baidu Library*, https://wenku.baidu.com/view/3251c2ecef06eff9aef8941ea76e58fafbb04523.html (retrieved May 2017).

Zhou, Y., The influence of social motivation on competitive game players' game behavior: the case of "Arena Of Valor", *Chengdu Sports Institute*, 2019.

Author listings

Liu Anni: stranger517@163.com
Highest degree: Master of Art, Art & Design Department, Wuhan University Of Technology
Areas of interest: Interactive design, Interface Design, Service Design

Younghwan Pan: peterpan@kookmin.ac.kr
Highest degree: PhD, Department of Industrial Engineering, KAIST
Position title: Professor, Graduate School of Techno Design, Kookmin University
Areas of interest: User Experience Strategy, Service Design, Interaction Design