

Analysis of User's Continuous Utilization of Social Apps Using the Model of Gamification

Xue-ping Gu¹, Hyun-Seok Lee^{2*}

¹Ph.D., Dept. of Visual Contents, Graduate School of Dongseo University,

²Prof., Dept. of Visual Contents, Graduate School of Dongseo University

게이미피케이션 모델을 이용한 사용자의 소셜 앱 지속 활용도 분석

구췌핑¹, 이현석^{2*}

¹동서대학교 일반대학원 영상콘텐츠학과 박사과정, ²동서대학교 일반대학원 영상콘텐츠학과 교수

Abstract The value and importance of Gamification has intensified as the way Gamification is applied to social networking applications has added to users' interest and involvement to the product. Gamification entails the adoption of gaming techniques and modes of thinking in non-gaming domains to elicit user engagement. To this end, the paper draws on Gamification's analytical model, Octalysis, with the aim of identifying user loyalty of the three major Chinese social networking applications and extracting their characteristics. In this regard, the first task in the advancement of the study is to establish an understanding of the components and characteristics of Gamification within the context of available examples. Next, a questionnaire survey covering China's three dominant social applications, WeChat, QQ, and Xiaohongshu, is administered and their user loyalty is examined through Octalysis's eight analytical frameworks. By virtue of analysis, the results demonstrate that the three elements of game mechanics, Point, Badge, and Leadboard, which are external to the game, fail to sustain the user loyalty, but are merely a means to an end. Only by including a combination of social application features, contents and user needs can Gamification considerations be maximized to ensure that users are subjectively engaged with the product.

Key Words : Gamification, Chinese Social Networking Applications, Octalysis

요 약 소셜 앱에 게이미피케이션 방식이 적용되면서 유저들의 흥미와 제품에 대한 몰입을 보다 더 유발시키며, 그 가치와 중요성이 커지고 있다. 게이미피케이션이란 게임이 아닌 분야에 게임의 기법과 사고를 적용하여 사용자의 몰입을 유도하는 것을 의미한다. 이에 본 논문은 게이미피케이션 분석 모델인 옥탈리시스를 차용하여 중국 3대 소셜 앱에 대한 사용자의 지속 활용도를 분석하여 그 특성을 도출하는 것을 목적으로 한다. 이를 위한 연구의 전개는 첫째, 게이미피케이션의 구성요소와 특성에 대해 기존 사례를 통해 살펴본다. 둘째, 중국 3대 소셜 앱인 위챗, QQ, 샤오홍슈에 대해 옥탈리시스의 8가지 분석 틀을 통해 설문조사를 실시하고 그 지속 활용도에 대해 분석한다. 분석 결과 게임 메커니즘의 외적 표현인 세 가지 요소 포인트(Point), 배지(Badge), 리더보드(Leadboard)는 사용자의 활용도가 지속되지 않았으며, 이는 단지 하나의 수단일 뿐임을 알 수 있었다. 반면, 소셜 앱의 특성과 콘텐츠 그리고 사용자의 욕구가 결합되어야 게임화 된 사고를 극대화 할 수 있으며, 이에 따라 사용자의 지속 활용도가 유지 됨을 알 수 있다.

주제어 : 게이미피케이션, 중국 소셜 앱, 옥탈리시스

*This work was supported by Dongseo University, 'Dongseo Cluster Project' Research Fund of 2020(DSU-20200010)

*Corresponding Author : Hyun-Seok Lee(hslee@dongseo.ac.kr)

Received October 16, 2020

Revised December 1, 2020

Accepted January 20, 2021

Published January 28, 2021

1. Introduction

1.1 Research Background and Objective

In the present day, there are a wide variety of Internet-related products around people, which provide us with a more convenient and efficient life experience in aspects such as clothing, food, housing and transportation, among which there are the indispensable social networking applications. Social networking applications are product forms designed to respond to the needs of people they interact in society. Broadly speaking, the concept encompasses social interactions, social communities, social groups and other Internet products concerning information exchange between people. It is the product with the highest degree of relevance to “people”, which requires a thorough knowledge of people’s needs. Hence, great social products are particularly sensitive to issues such as ways to boost user stickiness and user experience. This is where the concept of Gamification in which game elements and mechanics has been applied to a non-game environment has been applied to social networking applications, and the discussion of how to use Gamification elements to enhance the user experience has become trendy. The objective of Gamification is not merely the enjoyment of games, but rather the direct or indirect engagement of users in the resolution of social concerns through games. Accordingly, the concept of games can transcend the traditional territory, which was once confined to entertainment functions, and merge with multiple dimensions, for example, the coupling with social networking applications. It is in its essence a mindset that may be applicable to an area to revitalize and amuse, gratify the user’s requirements, and facilitate action. The objective of this paper is to assess the effects of Gamification in social networking applications, whether Gamification fosters user loyalty, and

what Gamification elements largely influence the application usage, and to explore the role and implications of Gamification in the context of non-game social networking applications.

1.2 Research Scope and Methodology

The scope of this paper is described as follows: the social networking applications in the free iPhone application rankings in China which had the Top 3 Monthly Active Users (MAUs) as of 2019, WeChat, ranked first with 1.112 billion, QQ, ranked second with 700 million, and Xiaohongshu, ranked third with 85 million, were targeted respectively by a literature review, benchmarked against Octalysis Gamification framework, combined with a questionnaire and unfolded in a way that first required an understanding of Chinese mobile social networking applications. Then there was the examination of the definition and principles of Gamification. For the purpose of comprehension of the definition and principles of Gamification, the game design framework and game elements were reviewed. Prior research on the elements of Gamification applicable to different domains as well as the content and characteristics of the Octalysis model were then examined. Based on the aforementioned, 50 users of the three social networking applications, WeChat, QQ, and Xiaohongshu who belonged to the age group of 20–30 were surveyed through a questionnaire and then the average values were entered into the Octalysis model generation site to generate Octalysis model plots for WeChat, QQ, and Xiaohongshu to analyze the Gamification elements and user loyalty in these three social networking applications.

2. Chinese Social Networking Applications and Gamification

2.1 Chinese Social Networking Applications

The social application has transformed into a necessary element in Social Network Service (hereinafter referred to as SNS) such as Facebook in less than 3 years. Social networking application is a web application that users select from the SNS application directory, set them in their profile space, and then enjoy them with their friends on SNS[1]. Following the growth of information technology, the Internet has gained unprecedented popularity, and people are exposed to or have access to the Internet anytime and anywhere in their daily routines such as in their jobs, studies, and entertainment, and their ties with network products have become more seamless. Additionally, with the shifting needs of people and the dawning of the mobile era, the demand for the social aspect of the medium has become a normal necessity, and almost all applications, whether they are designed for communication or video viewing, are set with social features, resulting in the proliferation of various mobile social products. Virtually every application, whether it's a chat app or a video app, packs a social function and there are an endless number of social products for mobile phones. In the broad sense of what is called mobile social networking has two main components, social networking and community, with social networking sites being mass-based and communities emphasizing the content-based function[2]. In the free iPhone application rankings in China, social networking applications such as WeChat and QQ fall into the social category, while Xiaohongshu belongs to the community category and these three secure the top three positions. As reported by ASKCI Consulting, Tencent announced its Q1 2019 results. It shows that Wei Xin and WeChat's combined MAUs reached 1.112 billion in the first quarter of 2019, up 6.9% year-on-year[3]. QQ's MAUs grew slightly to over 700 million, up 0.9%

year-on-year. As per the report of CSDN headlines, the world's leading Chinese IT technology exchange platform, the MAU of Xiaohongshu has exceeded 85 million as of 2019, in which the community content has grown 11.4 times in technology digital, 10.1 times in household products and decoration, 11.6 times in health care, 8.6 times in pets, 10.4 times in weddings, and 8.5 times in music[4]. These social apps are catching on quickly among mobile users due to their real-time, mobile and highly-private nature.

2.2 Definition and Principles of Gamification

The origins of Gamification can be traced as far back as 1980, when Richard Bartle, a professor at the University of Essex and a revolutionary pioneer in multiplayer online gaming, launched the concept[5]. It wasn't until 2002, when British game developer Nick Pelling founded his company and set out to design Gamification interfaces for electronic devices, that the concept of Gamification was first explicitly employed. As stated by Deterding S (2011)[6], the term Gamification originated in the digital media industry and was first used in 2008. In 2011, it became a major topic of discussion at the Gamification Summit with tremendous interest aroused[7]. So, what is Gamification? It is the application of game design tools to non-game scenarios and the use of game design elements in non-game settings. On a simpler note, it is the use of a game framework to tackle all non-game problems in work or everyday life. That being said, Gamification is fundamentally a method, a mentality, that can be applied to any realm to immerse the user in the product, which indirectly confirms that, in a non-gaming environment, the use of Gamification elements must be tailored to the user's needs and have impact on the user. Consequently, a first examination of the game design framework and

game design elements is necessary towards establishing an understanding of the definition, principles, and elements of Gamification.

2.2.1 Game Design Framework and Game Elements

When it comes to game design frameworks, it is the MDA framework that needs to be introduced. The MDA framework was first conceptualized by Hunicke, Robin et al. in 2004. Hunicke, Robin, et al. (2004) deconstructed the MDA framework in terms of Mechanics, Dynamics, and Aesthetics for games[8]. It is an approach by which to develop an understanding of games, an attempt to combine game design, game analysis and game technology research. This framework allows for a better insight into the relationship between the game system and the player and the impact it has on the player's experience. Through this experience and feedback, new designs can be taken forward. With regard to game elements, however, there have been diverse academic discussions so far about the game elements in the game mechanics that constitute the functional devices and rules of the game. For example, Jongwoo Kim, (2014) organizes game elements into four aspects: information, progress, compensation, and proximity[9]. Deterding S (2011), on the other hand, suggested that Gamification elements are infinite, as it is not possible to specify which typical elements constitute a game. So, when examining Gamification elements, it is appropriate to limit the study to the distinctive elements of the game. According to Mekler (2013), elements such as Point, Badge, and Leadboard have been used in a wide range of non-game environments with varying degrees of success, and are still widely known as being "the heart of the game system"[10]. Since these 3 elements are readily applicable to a multitude of non-game environments, they are typical of Gamification and a means of promoting user action, but these

alone cannot sustain user engagement over the long term (Mekler, 2013. Zicherman, 2011). An overview of the prior research revealed that game elements are not fixed but differ in specific game backgrounds. So, the conclusion that merely a few game elements compose all games cannot be drawn.

2.2.2 Difference Between Gamification and Serious Games

As there can be confusion among many scholars regarding the definition of Gamification and serious games. Gamification is understood, for example, as the application of a game (especially a video game) to a behavioral process (e.g., learning), which is a competitive exercise in a ready-made game (serious games) in order to motivate the user to better accomplish a goal. Yet at its core, a serious game is a game, and the content of learning is the "level design" or "data entered according to the plan. And through the process of playing, the user gains insight or consolidates their knowledge. But Gamification is, basically, a device to support a person's learning, increase his/her interest in it, pass the time, or build up the motivation (establish certain short-term goals). There are commonalities between them, but they are indeed concepts that are utterly different. As such, in order to properly understand Gamification, both Gamification and serious games are examined here. The concept of serious games began to be a topic of discussion after Clark C. Abt, an American scholar of German origin, published a book entitled *Serious Game* in 1970[11]. Specifically, they are functional games that are designed to impart knowledge and skills, provide specialized training and simulation, and embed a deeper objective (value) in a fun game. The prevailing academically accepted definition of Gamification is the application of elements with game characteristics to non-game environments as

proposed by Deterding S (2011), which distinguishes between Gamification and serious games in terms of five aspects, i.e. (i) application (not simple expansion), (ii) design (not the equipment, technology, or other game-related items that embedded in the game), (iii) elements (not the whole), (iv) gameplay characteristics (not play characteristics) so as to further the understanding of what Gamification is. Furthermore, from the figure by Deterding S (Figure 1), it is clear that Gamification and serious games belong to the same field of gaming. But as opposed to Gamification, where serious games are applications as a whole rather than game elements, Gamification is not the complete “game itself”, but incorporates game elements. In addition, Deterding S (2011) also stated that in identifying whether it is Gamification, it is possible to confirm whether it is a Gamification application or serious games, relying primarily on the designer’s intention or the user’s experience and action.

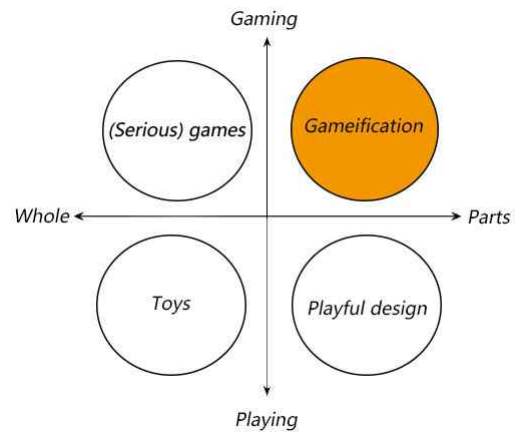


Fig. 1. Comparison of Gamification and serious games[12]

found that there is no clear benchmark for analyzing the elements of Gamification that social networking applications have, and this is where it is imperative to identify a model for analyzing Gamification as a benchmark for analysis.

It was mentioned earlier that Gamification is mindset that is designed to gratify the user’s requirements, and facilitate action. It means that the core value of Gamification is motivation ascription, and it is only by knowing that users are driven by certain motivations that user engagement can be increased, thus simultaneously increasing the quantity and quality of the output of a given activity. And Octalysis is a model to facilitate user behavior and analyze user’s primary motivation. In prior research, V. Yfantis (2017) analyzed Gamification in the public sector through the Octalysis model[16].

2.3 Octalysis Analytical Model of Gamification Elements

The Gamification element is deployed to accommodate the user’s needs and to engross the user in the product. As a result, the Gamification elements may vary in different domains based on the user’s needs. This paper has compiled the following table based on the literature survey. The table shows there are different Gamification elements in different domains, so this paper has

Table 1. Status of Research on the Gamification Elements in Different Domains[13–15, 7, 10]

Pilot Studies		
Subject	Author	Gamification Elements
gamers' flow experience and loyalty	Yang Eun Kim, Sang Ho Park (2007)	reward, Sense of challenge, Game efficacy, community
An Empirical Analysis of Common Gamification Elements	Mekler, Elisa D(2013)	Point, Badge, Leadboard
Healthcare Gamification	Park, Yoon Ha, Yun, Ray Jaeyoung (2016)	reward, challenge, achievement, competition, relationship, approach, self-expression
Gamification UX elements	Yoori Koo, Sunmin Lee (2017)	challenge, achievement, self-expression, community, status, competition
Gamification in Sport Brand Apps	Lee, Seung Young (2018)	challenge, level, shared, competition, achievement, reward

Economou (2015) also evaluated a simulated dynamic role-playing platform based on the Octalysis Gamification framework[17]. And Ewais (2015) used the Octalysis model to categorize pressure management applications[18]. In addition to those mentioned above, Luo Wenbin (2019) analyzed the key factors for the success of social applications, represented by WeChat, using Octalysis model[19]. So, by reference to the literature, this paper also chose the Octalysis model to analyze the Gamification elements in social applications. Octalysis is a Gamification model proposed by Yu-Kai Chou, an internationally renowned Gamification behavioral designer, to test several important Gamification elements for social networks. Gamification is not intended to merely incorporate PBL elements into a product, but rather to create a core driving force that promotes user action and prioritizes respect and satisfaction of human motivations and needs as “Human-Focused Design”. Octalysis is based on four motives – extrinsic, intrinsic, positive, and negative – and Chou lists eight core drivers to create the Octalysis model. Octalysis is designed as an octagon with a total of eight core drivers, each representing a Gamification element as illustrated by Chou. The Octalysis model is shown in Fig 2, and the results are shown in Table 3.



Fig. 2. Octalysis model[20]

Table 2. Content and Characteristics of Octalysis[20]

Octalysis	Characteristics
①Epic meaning and Calling	It is when users are highly motivated by the belief that what they are doing is of great significance.
②Development and Accomplishment	It is the users' internal drive to make progress, improve their abilities and overcome challenges, which will give a sense of achievement after serving the challenge.
③Empowerment of Creativity and Feedback	It drives the users to be fully engaged in the creative process, to constantly explore new things, and to receive timely feedback and adjustments.
④Ownership and Possession	It means that when the users perceive that they are the owner of a particular thing, they are motivated to improve it, protect it, and of course, have a desire to gain more of it.
⑤Social Influence and Relatedness	Social factors that motivate people, including mentorship, social identity, social feedback, partnerships, etc.. Users will gravitate towards people, places, or things they relate to, and are more likely to purchase products which would invoke nostalgia and stir up childhood memories.
⑥Scarcity and Impatience	A drive caused by a sense of craving. People naturally prefer things that are unavailable and inaccessible, and their brains intuitively seek things that are scarce, unusable, disappearing, or out of reach.
⑦Curiosity and Unpredictability	When people encounter the unknown, curiosity arises because without knowing exactly what will happen next, the brain becomes intrigued and will continue to pay attention to it.
⑧Loss and Avoidance	This is the motivation to avoid negative impacts. That is to say, people do not wish to see their previous efforts down the drain and, in a social context, they instinctively fear losing time, money and all other resources.

3. Case Analysis of Social Applications

3.1 Analytical Benchmarks

From a review of the literature, we have discovered that so far there is no clear definition of Gamification elements and that they are used differently in each domain depending on the user's needs. Meanwhile, literature research has led to the understanding that Octalysis is an analytical framework for the elements of Gamification designed to meet human psychological motivations and needs, and has been applied to the analysis of products. Therefore, this study uses Octalysis as a benchmark to analyze the elements of Gamification in WeChat, QQ and Xiaohongshu,

and then combines the data from questionnaires in an attempt to analyze the reasons for user loyalty as well as the commonalities, differences between the applications and aspects to be improved.

3.2 Objects of Analysis

Modern people are basically inseparably tied to their mobile phones and they are reliant on various social apps to communicate with others. In this paper, the top three free iPhone social apps in China, WeChat, QQ, and Xiaohongshu, will be analyzed for their Gamification elements and factors that promote sustained user engagement, as well as the similarities and differences between them. WeChat and QQ belong to the social domain, while Xiaohongshu belongs to the community domain, but both fall under the category of Social networking application with social functions. Among them is WeChat, a mobile instant messaging service being run by Chinese Internet company Tencent. When the service was launched in 2011, it was named “Wei Xin” in Chinese characters and was intended to provide services centered upon domestic users, but as the user base skyrocketed, the service name was changed to the current “WeChat” in April 2012 in order to regain global market share. The original name of QQ was OICQ, but due to disputes over trademark right it was changed to its current name, QQ. Also produced by Tencent, it is the third most used instant messaging software in the world. On the other hand, since its inception in 2014, Xiaohongshu has been thriving in the beauty sector, while covering tech and digital products, healthcare, pets and more. In May 2018, it received \$300 million investment from Alibaba and became China’s No. 1 beauty platform with the slogan “Mark My Life” and has been well received by many users.

3.3 Results of Analysis

The first stage of the analysis in the paper was to benchmark the Gamification elements of WeChat, QQ, and Xiaohongshu against Octalysis’s eight core drivers, and the results are shown in Table 3.

Table 3. Results of the Analysis of the Gamification Elements in WeChat, QQ and Xiaohongshu via the Octalysis Model

core drivers	Wechat	QQ	Xiaohongshu
①	Communication, charity, etc.	Communication, charity, etc.	Sharing of recommended commodities
②	Social functions, step count rankings, number of likes, etc.	Social functions, step count rankings, number of likes, etc.	Increase in followers count, article favorites and retweets, etc.
③	Comments, mini programs, etc.	Comments, mini programs, etc.	Shopping, commodity trading, etc.
④	Personal data, payments, memories, etc.	Personal data, payments, memories, etc.	Personal data, articles, memories, etc.
⑤	Relationships with friends and their influence	Relationships with friends and their influence	Relationships with fans and their influence
⑥	Communication	Communication	Communication and fans count
⑦	Viewing comments, replies from others, etc.	Viewing comments, replies from others, etc.	Viewing sharing from others, shopping, etc.
⑧	Amount of time, money, etc. invested	Amount of time, money, etc. invested	Amount of time, money, etc. invested

In the second stage, since the Octalysis model needs to be generated, values from 0 to 10 were entered and the higher the value the greater the impact on the user. Therefore, through the results of the above analysis, a questionnaire was conducted on 50 users belong to the age group of 20–30 who use WeChat, QQ and Xiaohongshu simultaneously, using the values from 0 to 10 as the standard. The 8 specific questions and results (omitting decimal point averages) are shown below.

In the third stage, the results of the questionnaire above were used as a benchmark. Next, the values were entered on the web page and then the Octalysis model diagram for

WeChat, QQ, and Xiaohongshu was generated, as shown below.

Table 4. Questionnaire Respondents and Pre-set Questions

Respondents	S./N	Question	Value
users belong to the age group of 20-30	Q 1	The extent to which WeChat/QQ/Xiaohongshu is meaningful to you (communication, charity, etc.)	0-10
	Q 2	The extent to which WeChat/QQ/Xiaohongshu allows you to progress and be productive (social functions, rankings, followers count, etc.)	
	Q 3	The extent to which WeChat/QQ/Xiaohongshu shows your level of creativity (comments, shopping, etc.)	
	Q 4	The extent to which WeChat/QQ/Xiaohongshu gives you a sense of ownership and access (personal data, payments, memories, etc.)	
	Q 5	The extent to which the use of WeChat/QQ/Xiaohongshu is influenced by social relationships (relationships with friends and followers and influence)	
	Q 6	The extent to which using WeChat/QQ/Xiaohongshu is indispensable (communication, followers count, etc.)	
	Q 7	The extent to which you use WeChat/QQ/Xiaohongshu because of curiosity (viewing comments, replies from others and shopping, etc.)	
	Q 8	The extent to which the continued use of WeChat/QQ/Xiaohongshu because of fear of loss (time, money invested, etc.)	

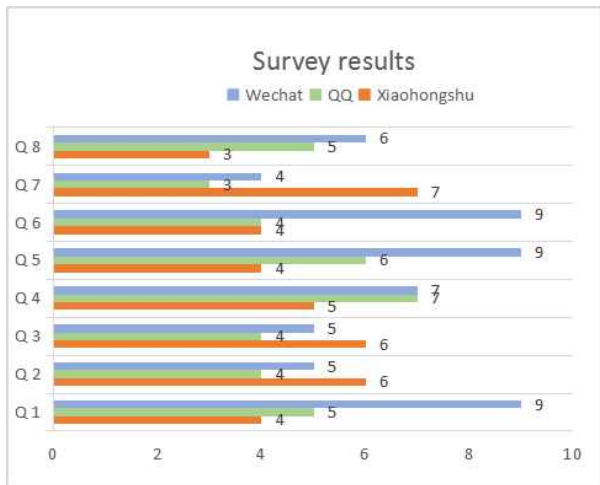


Fig. 3. Survey results

3.4 Sub-Conclusion

Through the results in Figure 4, the reasons for the continuous use of the three APP users can be analyzed, and some suggestions and methods for

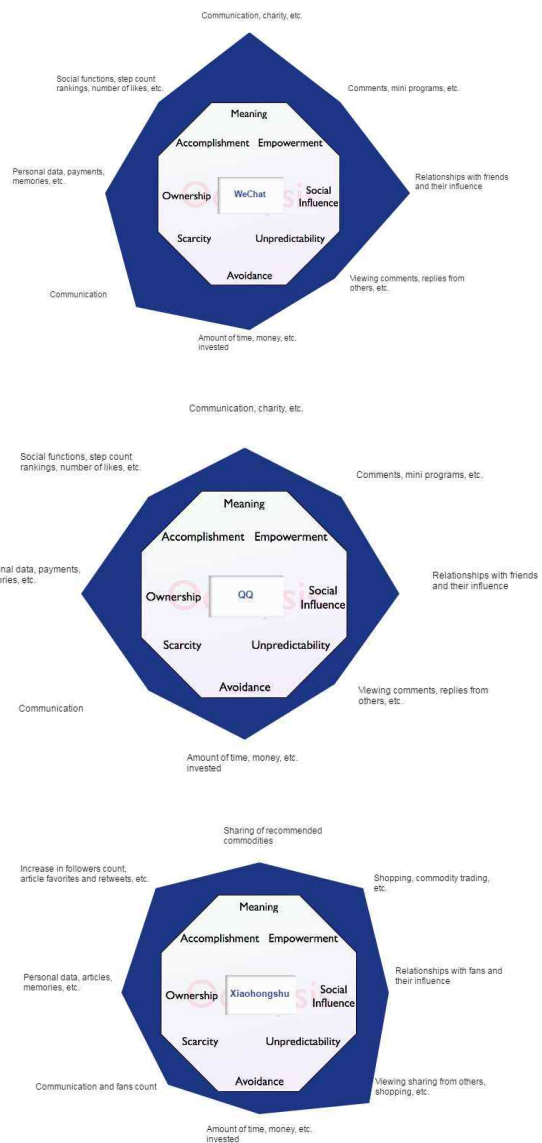


Fig. 4. From top to bottom are the Octalysis models of WeChat, QQ and Xiaohongshu

improvement can be provided. First, data from WeChat shows that the principal reason for users to use WeChat is not curiosity (Curiosity and Unpredictability), but the most fundamental social functions and communication with friends (Epic Meaning and Calling). Afterwards, in the process of operation, if users have a sense of ownership of their accounts, profiles, and personal information, they are likely to diversify and update their accounts and acquire a stronger desire to supplement their account information (Ownership and Possession). Furthermore, it is

possible to stimulate the users to keep using WeChat messages through such elements as "Likes", comments and rankings (Development and Accomplishment, Empowerment of Creativity and Feedback), but the evidence shows that this is not held accountable for maintaining the user engagement. The social stimulation in WeChat (the function to make random friends by "Shake", "People Nearby", etc.) and social property (popularized social information and creating value of "Moments") can promote users to stay connected with others (Social Influence and Relatedness). This element of mutual interaction and social Gamification between users and others is the main contributor to the sustained use of WeChat. That's why WeChat has become vitally important. It is equally necessary to consider that when users delete WeChat, the time they have spent and data which has been generated will be lost, but the connection between friends will not actually vanish, which suggests that there is a possibility of substitution in the future of WeChat as a social networking application (Loss and Avoidance).

Second, the QQ-related data shows that its overall value is lower than that of WeChat, which means that in QQ, the Gamification element has a lower impact on the user age group of 20–23 than in WeChat. The core purpose for using QQ is also the most basic social functions and communication with friends (Epic Meaning and Calling), or under the influence of relationship with others (Social Influence and Relatedness). The overall data has a quite average result, with the highest data being Ownership and Possession, indicating that the most important Gamification elements affecting application usage are personal data, QQ payment wallets, albums, favorites, and memories.

Third, although Xiaohongshu also represents social software, it has a strong focus on sharing content and building social bonds between users through information sharing. This is why the

data from Xiaohongshu demonstrates that there are significant differences with WeChat and QQ. Through the feedback data, it is found that the main Gamification elements that induce the use of Xiaohongshu are sharing of recommended commodities, commenting and replying, and shopping (Curiosity and Unpredictability). Users establish social relationships with others by sharing useful or interesting things. While the number of followers, shares, purchases, article "likes" and comments, article retweets and favorites are all higher overall than QQ, indicating that these elements of Gamification are of greater importance in maintaining usage in Xiaohongshu (Development and Accomplishment, Empowerment of Creativity and Feedback). An added point is that it has the lowest sunk cost, which also accounts for the fact that of the three, Xiaohongshu is the easiest for customers to abandon using.

4. Conclusion

Over recent years, Gamification has emerged as one of the buzzwords, but so far, no unifying element has surfaced that can be used to generalize the concept. Therefore, it can only be described as a mode of thinking. Rather than simply optimizing the efficiency of system functions, it prioritizes respecting and satisfying human psychological motivations and needs. Thus, Gamification is implemented to render the product stickier, i.e. to increase the user's willingness to keep using the product through the Gamification element. On the basis of Octalysis Gamification model proposed by Yu-Kai Chou, this paper analyzes the Gamification elements in three social software applications, WeChat, QQ and Xiaohongshu. The central purpose of the analysis is to identify whether Gamification elements are effective in social networking applications, whether they

contribute to sustaining application usage, and which Gamification elements perform the main role. Finally, a comparison of the similarities and differences between the Gamification elements in the 3 social software are made and the aspects to be improved are proposed. The results of the analysis make clear that the added PBL element does not suffice for the user loyalty; it is a tactic rather than a goal of the Gamification element. Furthermore, the addition of Gamification elements should be configured according to product features and user needs, so that the user's time on the product would be prolonged, which will highlight the product. For example, WeChat makes the product indispensable and increases user engagement through the employment of Gamification elements such as significance, social influence and relevance. Although the elements that trigger user curiosity such as reading comments and replies do not have the greatest impact on users in WeChat and QQ, the addition of Gamification elements such as sharing recommended commodities and shopping in Xiaohongshu spark strong curiosity and thus boosting user engagement. Therefore, it should be analyzed according to the specific users and the corresponding pain spots. It is hoped that this paper will serve as a reference for the appropriate use of Gamification elements in application software, and the influence on user behavior, user engagement and loyalty, as well as the provision of suggestions and methods for incorporating appropriate Gamification elements into certain products. The limitation of this article is that gamification is essentially a tool for establishing, solving and improving communication problems. Therefore, it can be used not only in social apps, but also in fields related to human behavior, and it also involves psychology, behavior, and sociology. However, the research scope of this article is limited, so subsequent research may expand the research field and deeply study the effects and impact of gamification.

REFERENCES

- [1] Kwang June Byeon. (2010). Social Application Market Status. *Information Science Society*, 28(3), 47–50.
- [2] Feng Shaodan. (2019). The development status and future trends of China's mobile social platforms. *Media*, 18, 38–40.
- [3] China Business Industry Research Institute. (2019). *The number of WeChat users reached 1.1 billion in the first quarter of 2019*. China Business Intelligence Network. <https://www.askci.com/news/chanye/20190516/1346051146282.shtml>
- [4] TechWeb. (2019). *Xiaohongshu sends an internal letter: the number of monthly active users has exceeded 85 million*. CSDN. <https://blog.csdn.net/rx3oyuyi/article/details/91129703>
- [5] MuXiaowen.(2017). *Gamified thinking*. CodeSheep. <https://www.jianshu.com/p/115aac824747>
- [6] Deterding S , Dixon D , Khaled R , et al. (2011). From Game Design Elements to Gamefulness: Defining "Gamification", *International Academic Mindtrek Conference: Envisioning Future Media Environments*. ACM. 9–15. DOI : 10.1145/2181037.2181040
- [7] Lee, Seung Young. (2018). A Study on the Utilization and Strategies of Gamification in Sport Brand Apps. *The Korean Society Of Design Culture*, 24(4), 277–289.
- [8] Hunicke, Robin, Marc LeBlanc, and Robert Zubek. (2004). MDA: A formal approach to game design and game research. *Proc. AAAI workshop on Challenges in Game*, San Jose, CA: AAAI Press.
- [9] Jongwoo Kim, Sangwook Kim. (2014). The Relationship of Game Elements, Fun and Flow. *The Korean Entertainment Industry Association*, 160–163.
- [10] Mekler, Elisa D, Brühlmann, Florian, Opwis, Klaus. (2013). Do points, levels and leaderboards harm intrinsic motivation?: an empirical analysis of common gamification elements. *In Gamification'13*. (pp. 66–73). Stratford, ON: ACM Press. DOI : 10.1145/2583008.2583017
- [11] Jang Joon hwan. A Study on the Activation of serious Game. *Korea Multimedia Society*. 23(1), 25–33.
- [12] Deterding S , Dixon D , Khaled R , et al. (2011). From Game Design Elements to Gamefulness: Defining "Gamification", *MindTrek '11: Proceedings of the 15th International Academic Mindtrek Conference: Envisioning Future Media Environments*. ACM. (pp 9–15). DOI : 10.1145/2181037.2181040
- [13] Yang Eun Kim, Sang Ho Park. (2007). A study on the effects of on-line game influence gamers' flow experience and loyalty. *Korean Association for*

Boarding & Telecommunication, 21(2), 179–208.

- [14] Park, Yoon Ha, Yun, Ray Jaeyoung. (2016). Convergent Strategies and Effects of Healthcare Gamification. *Korea Institute of Exhibition Industry convergence*, 25, 175–188.
DOI : 10.17548/ksaf.2016.09.25.175
- [15] Yoori Koo, Sunmin Lee. (2017). Developing UX Design Strategies for the Better Engagement of the Public through the Use of Gamification in the Public Service and Policy Sector. *Korean Society of Design Science*, 30(4), 87–106.
DOI : 10.15187/adr.2017.11.30.4.87
- [16] Yfantis, V., & Tseles, D. (2017). Exploring Gamification In The Public Sector Through The Octalysis Conceptual Model. *In Era-12 International Scientific Conference*.
- [17] Economou, D., Doumanis, I., Pedersen, F., Kathrani, P., Mentzelopoulos, M., & Bouki, V. (2015). Evaluation of a dynamic role-playing platform for simulations based on Octalysis gamification framework. *1st Immersive Learning Research Network Conference*. (pp. 388–395). Prague: IOS Press.
- [18] Ewais, S., & Alluhaidan, A. (2015). Classification of Stress Management Apps using Octalysis Framework. *Twenty-first Americas Conference on Information Systems*. (pp. 1–8). Puerto Rico: AIS.
- [19] Luo Wenbin. (2019). Gamification Design Framework—Application Research of Octalysis in Social Apps. *Western Leather*, 41(14).
- [20] Yu-kai Chou. (2015). *Actionable Gamification – Beyond Points, Badges, and Leaderboards*. Octalysis Media.

구 쉘 평(Xue-ping Gu)

[장학원]



- 2019년 2월 : 동서대학교 일반대학원 영상콘텐츠학과 (공학 석사)
- 2019년 3월 ~ 현재 : 동서대학교, 일반대학원 영상콘텐츠 학과 박사과정
- 관심분야 : 애니메이션, 문화 콘텐츠, 소수민족 애니메이션
- E-Mail : guxueping0823@gmail.com

이 현 석(Hyun-Seok Lee)

[장학원]



- 2012년 9월 : Loughborough University (영국), School of Arts (예술학 박사)
- 2013년 3월 ~ 현재 : 동서대학교, 일반대학원 영상콘텐츠 학과, 부교수
- 관심분야 : 애니메이션의 다큐멘터리, 애니메이션의 혼 성적 특성, 대중문화, VFX, 디지털 콘텐츠

· E-Mail : hslee@dongseo.ac.kr