

Research on Gamification Incentive Mechanism of E-commerce Platform

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ABSTRACT

As a new marketing tool, gamification design has been used in marketing practice by e-commerce platforms, aiming to motivate consumers to participate. Based on this, by sorting out relevant domestic and foreign literature, analysis of actual business cases, in-depth interviews with users, experiments and data analysis, this study extracts and describes in detail the elements of the e-commerce platform gamification incentive mechanism. Draw conclusions through research: (1) The incentive mechanism of gamification design of e-commerce platform contains four main dimensions : The richness of symbols, The fun of gamification, The contagiousness of Social and The seduction of achievement. (2) The four elements are closely related, and these can work on a system at the same time and have significant mutual effects. (3) Achievement and fun can bring intrinsic motivation to consumers, while sociability and symbols can bring external motivation to consumers and promote internal motivation through external motivation. (4) The seduction of achievement and the richness of symbol are most closely related.

Key words: Gamification, Incentive mechanism, E-commerce platform, Consumer experience

1. INTRODUCTION

1.1 Background

With the development of the mobile Internet, on-line shopping has become one of the most important ways for people to shop. Take China as an example, according to the 48th Statistical Report on Internet Development in China released by China Internet Network Information Center (CNNIC) on August 27, 2021. The number of online shopping users in China had reached 812 million by June 2021, accounting for 80.3% of the total number of Internet users. And the number of e-commerce apps ranks third in the total number of mobile apps, accounting for 9.8% of the total number of Apps (Fig. 1).

After the rapid development of e-commerce in recent years, the competition between various e-

commerce platforms is increasingly fierce, and the product and content of the forum are seriously homogenized. As long as consumers tap the screen, they can easily switch from one e-commerce platform to another. In order to improve the competitiveness of the electronic commerce platform and improve customer loyalty and purchase rate, academia has spent a lot of energy on research in consumer behavior, hobbies, interests, habits, experience, and the e-commerce platforms made great efforts, Based on consumer demand, to use marketing design like integral, coupons, the ranking methods in order to attract consumers (Fig. 2).

In 2010, DICE (Design, Innovate, Communicate, Entertain) conference proposed the concept of gamification, which is defined as the application of game elements and game mechanisms to non-game scenarios [1]. Landers point out that gamifi-

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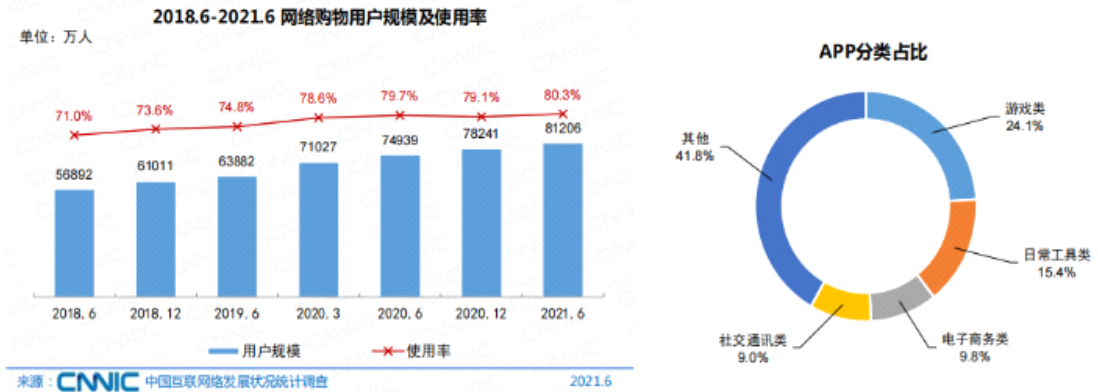


Fig 1. CNIC (The 48th Statistical Report on Internet Development).



Fig. 2. The practical case study of gamification of e-commerce platform.

gamification can be a solution for engaging people in personal and socially sustainable behavior if the elements of gamification design are right [2]. Since then, the concept of gamification has attracted wide attention and gradually become a popular trend. It is widely used in education, industry, commerce, enterprise management, commercial marketing, and other industries or situations. As a new marketing tool, gamification design has been applied in many fields, including e-commerce, and has become an effective way to attract user participation and improve user loyalty [3–5].

1.2 Research significance and necessity

At present, academic studies on gamification

mainly focus on the gamification of education, but there are few empirical studies on gamification marketing, especially on the gamification design of e-commerce platforms, and there is still no research on the incentive mechanism of gamification of e-commerce platform. Therefore, in all fields, gamification as a medium with positive possibilities, namely immersion, is seeking functional applications[6]. In fact, major e-commerce platforms around the world have incorporated gamification design into their marketing practices, allowing users to have game-like experience, thus encouraging user participation, enhancing user engagement, strengthening brand experience, and achieving marketing goals at low cost [7]. Compared with

the traditional marketing of online shopping platforms, gamification design has incomparable advantages in attracting user participation, improving user experience, enhancing user engagement, and increasing user purchase rate.

It is worth noting that, Werbach believes that the essence of gamification is to skillfully select, apply, implement, and combine various game design elements, use them to attract users [8]. Therefore, the incentive mechanism of gamification is crucial. The current e-commerce platform game is usually a simple copy of electronic game elements and then combined with virtual red envelope money or vouchers elements such as encourage consumers to participate. The formation of e-commerce platform gamification incentive mechanism, tends to focus on the design part of the external motive factors, ignoring the consumer e-commerce circumstances is the internal motive factors. This leads to a poor consumer experience during the game, which weakens consumers' willingness to participate and fails to achieve the goal of increasing user engagement.

1.3 Research purpose

This paper will explore the influencing factors of consumers' attitude towards and willingness to use gamification of e-commerce platform, extracts and describes in detail the elements of the e-commerce platform gamification incentive mechanism, discusses and analyzes the role and value as well as the interaction of each element. This paper fills the research blank of the gamification incentive mechanism of e-commerce platforms, and provides theoretical suggestions and reference materials for designers to update the gamification design of the e-commerce platform and to improve user participation and platform user loyalty.

1.4 Research method

The overall structure of this paper consists of five parts: introduction (Research background, Research necessity, Research purpose, and Research method), theoretical research, empirical research, result in analysis, and conclusion (Fig. 3).

Step 1. Through the investigation of research background and actual cases, find the problems existing in the gamification design of e-commerce

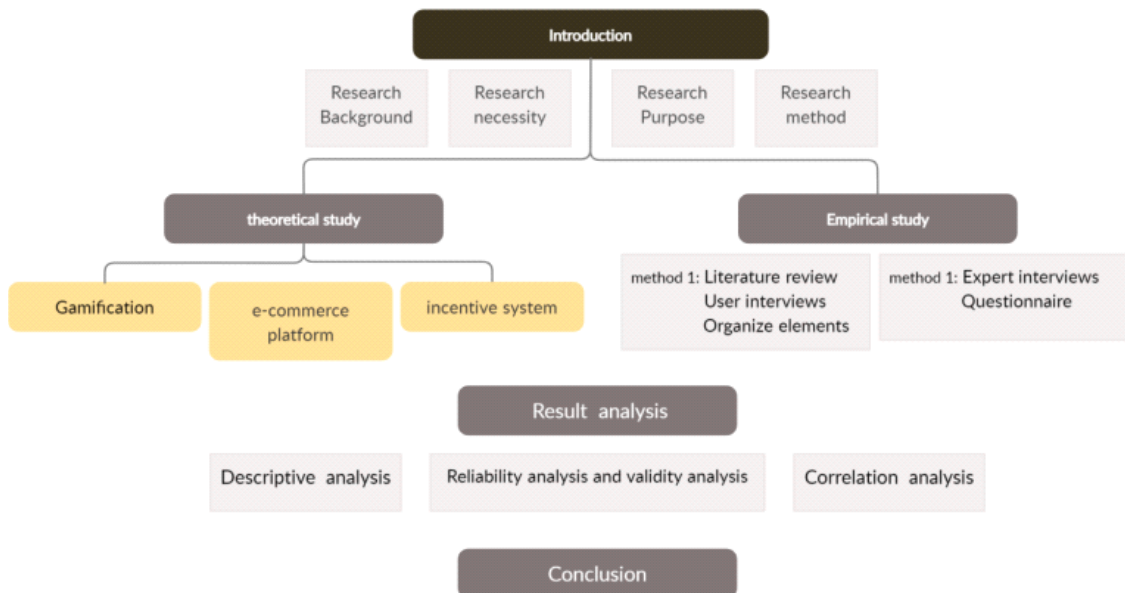


Fig. 3. Research Process.

platform, and put forward the importance of gamification incentive mechanism.

Step 2. Through literature review and user interviews, the elements of the gamification incentive mechanism in e-commerce platforms are extracted and summarized. The parts are sorted and outlined in combination with the expert interview.

Step 3. The factors are sorted out into a questionnaire and distributed to the subjects. SPSS22.0 is used to process the data to verify the credibility and validity of the questionnaire. The elements of the gamification incentive mechanism are differentiated by Exploratory Factor Analysis. Through correlation analysis to verify the relationship between the elements and interaction patterns.

Step 4. Combined with the data results, draw research conclusions.

2. THEORETICAL RESEARCH

2.1 Gamification and Gamification Marketing

Gamification comes from the digital media industry (Deterding et al., 2011) [9]. The main difference between gamification and games is that games only stay at the level of fun. In contrast, gamification must go beyond mere fun, and the goal of gamification is to influence user behavior (Deterding et al., 2011) [10]. In enhancing services, gamification related features are used to help users create more experience prices and solve problems related to user experience [11]. Deterding et al. (2011) define gamification as the application of game design elements in non-game situations [12]. However, this definition does not clearly define the purpose of gamification. To remedy this defect, Dominguez et al. defined gamification as "adding game elements into non-game software applications to improve user experience and engagement" [13]. On this basis, De-Marcos et al. added situational factors. They defined gamification as "using game elements and game design techniques to attract users and solve problems in a non-game con-

text" [14].

For gamification marketing concept, academic circles have not made a clear definition of the previous literature. This study believes that, gamification marketing refers to the use of game elements and mechanisms in commercial marketing situations to carry on the design and guidance, to provide consumers participation motivation, and through external factors and mechanism for consumers to produce inner class gaming experience, improve the satisfaction of the consumer, to achieve platform gamification design purpose of a marketing concept and way.

To sum up, gamification can essentially be considered an incentive system for commercial platform design. It enhances user experience by setting achievable goals, setting constraint rules and providing appropriate feedback based on voluntary participation, and combining with social interaction.

2.2 Incentive Mechanism

Werbach & Hunter pointed out that the essence of gamification is an incentive mechanism, which is to provide fun and improve users' voluntary participation [15]. In terms of motivating users to use, Karatassis et al.'s study shows that gamified design can encourage users through game elements and improve their ability to operate and use the system [16]. Galli et al. pointed out that game elements and game mechanisms can motivate users to actively and effectively participate in and use the system at different stages [17]. In terms of user experience, domestic and foreign scholars mainly apply internal and external motivation theory, two-factor theory, and use satisfaction theory (Table 1). These views put forward the correlation between user motivation and gamification incentives. Users' intrinsic motivations include practical needs (such as information needs), pleasure needs (such as entertainment), and social needs (such as making friends, etc.) [18,19].

Gamification marketing is different from tradi-

Table 1. Gamification incentives factors that affect user motivation.

Researcher	Motivational factors
Malone & Lepper (1987)	Challenge, wonder, control, fantasy, respect, competition, cooperation
Hakan Tuzun (2004)	Identity, social relationships, fun, learning, achievement, reward, fantasy, uniqueness, creativity, curiosity, control
陳怡安 (2001)	Belonging, respect, self-actualization
James Belanich (2005)	Challenge, realism, adventure, control
Garris (2002)	Fantasy, rules, goals, sensory stimulation, challenge, mystery, control
Asgari & Kaufman (2004)	Interaction, competition, control, fantasy, curiosity, challenge, feedback

tional marketing and has distinct game attributes. Game designer John McGonigal once summed up the key features of a game as four: goals, rules, feedback systems, and player participation. Specifically, users voluntarily participate in pursuing objectives by the game’s rules. In this process, the system will timely inform users of the gap between the current situation and the goal so as to provide motivation for players to continue to participate.

To sum up, gamification marketing design is essentially a mechanical system to motivate users to participate voluntarily and generate internal motivation.

3. EMPIRICAL RESEARCH

3.1 Method 1

The design of the gamification incentive mechanism is studied through literature review and user interviews, combined with actual business cases.

1. Firstly, the literature related to gamification marketing design is sorted out.

2. Conduct in-depth interviews with users based on business cases, extract and summarize elements of gamification incentive mechanism. Based on user interviews, the gamification incentive mechanism design of these four famous platforms is

analyzed.

(The United Nations Conference on Trade and Development (UNCTAD, According to ESTIMATES OF GLOBAL e-Commerce 2019 AND PRELIMINARY ASSESSMENT OF COVID-19 IMPACT ON ONLINE RETAIL 2020, Alibaba, Jing Dong, Pinduoduo and Meituan rank the top four in GMV of China’s e-commerce platforms in 2020)

3. Combined with expert interviews, the representative elements of gamification incentive mechanism of e-commerce platform are summarized and sorted out (Table 2).

3.2 Method 2

3.2.1 Research and Procedures

According to the literature and expert opinions, a questionnaire was developed to empirically analyze the relationship between various elements of the incentive mechanism of e-commerce platform. And use SPSS22.0 to process the data to verify the credibility of the questionnaire. Exploratory Factor Analysis is used to distinguish the elements of gamification incentive mechanism, and correlation Analysis is used to verify the mutual relationship and interaction mode of each element.

The composition of the questionnaire questions

Table 2. Representative Element.

The Representative Element of The Incentive Mechanism
Constraints, Emotions, progression, relationships, challenges, competition, rules, goals, growth, constraints, exploration, status, Cooperation, Points, leaderboards, feedback, rewards, roles, badges, missions, social, collections, levels

is to extract the questions suitable for this study from gamification related research. The specific questions are remade by this researcher with reference to gamification scenes and consumers' willingness to participate. Six basic questions (gender, age, educational background, monthly income, occupation and user proficiency), 28 gamification incentive mechanism elements and consumers' willingness to participate in the combination of questions, on a 5-point Likert scale. Exploratory factor analysis was carried out on the questionnaire data. In the principal component analysis, four main factors are extracted, and six basic problems and 21 questions of gamification incentive mechanism are obtained after eliminating the problems that do not meet the requirements.

3.2.2 Collect Datas

In order to extract and describe in detail the elements of gamification incentive mechanism of e-commerce platform, explore and analyze the role, value and interaction of each element, exploratory factor analysis and correlation analysis are conducted in this paper.

To verify the research question, this study conducted an open online questionnaire survey among users of gamification e-commerce platforms in China. A total of 219 questionnaires were collected from May 12, 2022 to May 17, 2022, among which 211 were valid questionnaires.

Among them, 81 are male, 130 are female, 18 are senior high school students or below, 129 are college students, and 64 are masters or above.

4. DATA ANALYSIS

4.1 Exploratory Factor Analysis

In order to extract the influencing factors for this study, factor analysis and reliability analysis were conducted by SPSS22.0 (Table 3). KMO and Bartlett verification results of influencing factors of gamification incentive mechanism of e-commerce

platform on consumer attitude showed that $P < 0.05$, $KOM = 0.943 > 0.6$, $Sig = 0.000 < 0.01$, indicating high validity and suitable for factor analysis. Factor analysis extracted four factors :

- (1) The seduction of achievement,
- (2) The fun of gamification
- (3) The richness of symbols
- (4) The contagiousness of Social.

After the non-conforming questions were removed, there were 21 questions.

4.2 Reliability Analysis

In order to understand the relationship between various elements of gamification incentive mechanism of e-commerce platform, we conducted correlation analysis. The richness of symbols, The fun of gamification, The contagiousness of Social and The seduction of achievement. The correlation values of the four factors are greater than 0.4, indicating that the four factors are closely related and can be used together in the same system.

Among them, The seduction of achievement is most closely related to The richness of symbols ($r = .760^{**}$). At the same time, there is a significant positive correlation between the factors. The Fun of Gamification is closely related to The Seduction of achievement ($r = .745^{**}$). The contagiousness of Social and The richness of symbols are closely related ($r = .722^{**}$) (Table 4).

5. CONCLUSION

Through literature review, practical case analysis, user interview and questionnaire, this study extracted and studied the elements of gamification incentive mechanism of e-commerce platform, with good reliability and validity, and found the relationship between these factors through correlation analysis.

(1) The incentive mechanism of gamification design of e-commerce platform contains four main dimensions : The richness of symbols, The fun of

Table 3. Factor Load of Elements.

Factor	Questionnaire title	Composition				Cronbach alpha
		Factor1	Factor1	Factor1	Factor1	
The richness of symbols	Q12. Different items in the game attract me to play	.777				.900
	Q10. Beautiful characters in games attract me to play games	.740				
	Q9. Interesting scenes in games attract me to play	.728				
	Q11. Good looking badges in games attract me to play	.728				
	Q13. The progress bar/status bar in the game keeps me playing	.641				
	Q8. The accumulation of points in a game keeps me playing	.534				
	Q27. The different level designs in the game attract me to play	.513				
The fun of gamification	Q20. I think simple and understandable rules of the game are important		.785			.876
	Q23. Clear game tasks attract me to play		.763			
	Q22. I want to get more discounts by playing games		.759			
	Q18. In the game, I can tell the distance to the mission target by the progress chart		.589			
	Q17. I want to get more rewards than my opponents		.547			
The contagiousness of Social	Q15.I want to be a team player in the game			.848		.862
	Q16. I want to communicate with other players in the game			.802		
	Q19. I want to share my game with my friends			.594		
	Q21. I like to compete with other players in games			.540		
	Q14. The leader boards in the game keep me playing			.504		
The seduction of achievement	Q23. Clear game tasks attract me to play				.745	.884
	Q24. I want to get more badges by playing games				.729	
	Q25. I want to get more points by playing games				.624	
	Q26. I want to earn rewards through points or badges				.552	
Intrinsic value		11.005	1.511	1.133	.957	
KMO		.943				
Bartlett's Test of Sphericity		Approximate cardinality			3181.644	
		df			210	
		Sig			.000	

Table 4. Reliability analysis.

		The richness of symbols	The fun of gamification	The contagiousness of Social	The seduction of achievement
The richness of symbols	Pearson Correlation	1			
	Sig. (2-tailed)				
The fun of gamification	Pearson Correlation	.705	1		
	Sig. (2-tailed)	.000			
The contagiousness of Social	Pearson Correlation	.722	.660	1	
	Sig. (2-tailed)	.000	.000		
The seduction of achievement	Pearson Correlation	.760	.745	.697	1
	Sig. (2-tailed)	.000	.000	.000	

gamification, The contagiousness of Social and The seduction of achievement.

(2) This study found a close correlation between four elements of gamification, proving that all four elements can work on a system at the same time and have significant mutual effects.

(3) Achievement and fun can bring intrinsic motivation to consumers, while sociability and symbols can bring external motivation to consumers and promote internal motivation through external motivation. The four elements constitute gamification incentive mechanism to attract consumers, thus improving consumer participation and enhancing consumer experience.

(4) In the relationship between the elements of gamification incentive mechanism, it can be seen that the seduction of achievement and the richness of symbol are most closely related. This is in line with the stimulation-response theory in psychology, which can be interpreted as that consumers can get an internal sense of achievement when there are red envelopes, badges and other symbols in the process of gamification. An infectious social approach allows consumers to share their rewards with more users, and to team up with other users in order to get more rewards. Fun and achievement in gamification go hand in hand. Fun can engage

users and earn achievements and rewards along the way.

6. RESEARCH LIMITATIONS AND FUTURE RESEARCH

(1) This paper also has some limitations: the experimental method is interview questionnaire, and the research method is subjective. Therefore, future studies will further improve the reliability and validity of research conclusions.

(2) This paper research the elements of gamification incentive mechanism on e-commerce platforms. Next, the variable of consumer attraction will be added to explore the influence of gamification incentive mechanism on consumer participation in combination with the proficiency of consumer participation in gamification.

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