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Research on the Influence of Gamification Marketing Mechanism and User Participation Intention

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Abstract: With the widespread application of social media, the discussion around gamified marketing mechanism and user participation intention has gradually entered the public's view. Based on the existing research framework of consumer behavior, this paper further discusses and analyzes the factors affecting users' willingness to participate, and introduces and empirically analyzes four dimensions: the individual-environment matching theory, flow theory, network security trust, and the perceived ease of use of the marketing mechanism itself. The role of flow theory as a mediating effect in the whole research framework is discussed.

Keywords: gamification, marketing, user engagement, flow theory, individual-environment matching theory

1. Introduction and Literature Review

Kevin W. and Dan H first proposed the concept of “gamification", whose definition is "the technology of applying elements of game and in non-game scenarios" [1]. Li Qianshu analyzed typical cases and proposed that gamification marketing directly influences consumer behavior [2]. Wang Zhen et al. explored the influence of gamification elements in virtual innovation communities on users' creativity and introduced the mediating effect of flow experience between gamification marketing mechanism and user participation [3].

The theory of individual-environment matching is used to study the impact of the matching degree between organizational environment and individual employees on employee behavior in organizational management [4]. Zhao Jie et al. introduced it into the field of marketing. Congruent matching occurs when individuals and environments have similar characteristics. Complementary matching occurs when the individual and the environment have complementary characteristics [5].

Flow is when the user is fully engaged in the event in which he or she is, focusing on the task at hand. Therefore, flow theory has become an important indicator to measure user engagement in gamification marketing, and the trigger conditions of flow experience should also be considered when designing game elements [6].

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2. Theory Model

This paper adopts the model of "psychological cognition-emotional response-behavioral intention" to study the influence of gamification marketing mechanism on users' participation intention, shown as Fig.1.

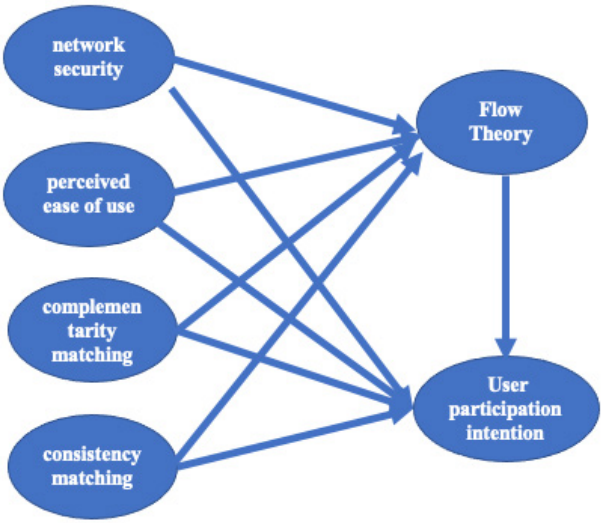

Figure 1: Theory model.

3. Hypothesis

H1: Users' perception of the independent variables of this paper can positively promote the generation of flow experience.

H2: User flow experience in gamified services positively promotes user engagement intention.

H3: Flow experience has mediating effect between the independent variables of this paper and user participation intention.

4. Demonstration and Analysis

4.1. Demographic Characteristics

The research method adopted in this paper is questionnaire survey, in which the scale of consistency and complementary matching is obtained from literature [7]. The scale of flow experience is from literature [8]. The questionnaire was divided into two parts. The first part was about demographic variables. The second part is about the participant's experience in gamification marketing and related experiences. The scale is based on a five-point scale from 1 (strongly disagree) to 5 (strongly agree).

In this paper, 300 questionnaires were formally distributed, and 277 valid questionnaires were recovered, among which women accounted for 46.6% and men for 53.4%. In terms of education level, college and bachelor's degree accounted for a relatively large proportion, accounting for 81.6%. The main occupation was company staff, accounting for 50.9%. The respondents of this questionnaire tend to be younger, which is in line with the main audience groups of gamification marketing.

4.2. Test of Reliability and Validity

This paper studies the structure and dimensions of the questionnaire by using factor analysis. Firstly, KMO and Bartlett spherical test were used to obtain the KMO value of 0.893, and the significance level of Bartlett method was $P<0.005$, indicating that the questionnaire data had good scale construct

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validity. As can be seen from the above table, if the selected eigenvalue is more than 0.5, the total deviation can be explained by six common factors, and 65.22% of the total variance can be obtained. Reliability indicates the consistency and stability of the scale, and its consistency reliability ranges from 0.773 to 0.876, indicating that the scale has high homogeneity.

The confirmatory factor analysis results of the latent dependent variables are shown in the following table. The standardized loading coefficients of each relevant variables are all greater than 0.6, reaching the statistically significant level. AVE of variables are all greater than 0.5; The CR of all variables was greater than 0.7. It indicates that each observed variable converges well to its corresponding latent variable, and the convergent validity of the model is ideal

Discriminant validity was used to detect the correlation between variables. The results show that there are some correlations and differences among the antecedent variables, and the overall identification validity is quite ideal.

Table 1: Discriminant validity table.

	S	P	Com	Con	F	I
S	0.583					
P	0.282	0.588				
M	0.273	0.288	0.548			
N	0.255	0.354	0.293	0.529		
F	0.423	0.389	0.390	0.447	0.537	
I	0.453	0.444	0.454	0.439	0.565	0.534

** The correlation was significant at a confidence (two-test) of 0.01.

4.3. Simulate the Fitting Situation

Generally, χ^2/df is used as an alternative test index, and the closer the value of χ^2/df is to 1, the higher the similarity between the sample covariance matrix S and the estimated covariance matrix E is [9]. According to the actual test, the data in this study had a good fitting degree with the constructed model.

Table 2: Model fitting results.

V	χ^2/df	NFI	IFI	CFI	GFI	AGFI	PGFI	PNFI	PCFI
M	1.537	0.871	0.951	0.95	0.88	0.855	0.726	0.772	0.842

V:Variables M:Models

Table 3: Path matching result.

H			B	β	S.E.	C.R.	P	R
F	<-	S	0.32	0.29	0.07	4.34	***	R
F	<-	P	0.19	0.16	0.08	2.47	0.01	R
F	<-	M	0.23	0.20	0.08	2.98	0.00	R
F	<-	N	0.34	0.31	0.08	4.27	***	R
I	<-	F	0.33	0.30	0.09	3.77	***	R
I	<-	S	0.26	0.21	0.08	3.32	***	R
I	<-	P	0.21	0.16	0.08	2.65	0.01	R
I	<-	M	0.28	0.22	0.08	3.45	***	R
I	<-	N	0.20	0.16	0.08	2.36	0.02	R

Where P is a significant value, the above paths are significant at the level, then the path is valid; β is the influence coefficient.

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In order to verify the internal influence mechanism of gamification design on user participation, we need to further verify the existence of the mediating effect of flow experience. Therefore, in this paper, we conducted a mediating effect analysis through Bootstrap to judge that the mediating effect of flow experience exactly exists [10]. The specific results are shown in the table below.

Table 4: Results of Bootstrap mediating effect test.

H	TE	DE	IE	BC	R
S→F→I	0.556	0.320	0.236	0.1425- 0.3352	E
P→F→I	0.543	0.323	0.220	0.1308- 0.3209	E
M→F→I	0.555	0.336	0.218	0.1289- 0.3170	E
N→F→I	0.515	0.273	0.241	0.1543- 0.3383	E

* p<0.05, **p<0.01, ***p<0.001, BC : A confidence interval,not including 0. TE means “Total Effect”. DE means “Direct Effect”. IE means “Indirect Effect”. R means “Result”. E means “Existed”.

As can be seen from the above table, confidence intervals of each path do not contain 0, and the mediation effect exists, which is part of the mediation.

5. Conclusion and Suggestion

When users experience gamified marketing, network security, perceived ease of use, complementarity matching and consistency matching can not only directly affect users' participation intention, but also affect users' participation willingness through the flow experience as a mediating effect.

Based on this study, the following suggestions are proposed. Improve users' trust in network security. Merchants need to pay more attention to the protection of user data privacy. Eliminate cheating during the game and aim to increase user engagement for the longer term. Optimize perceived accessibility in gamified marketing mechanics. While ensuring the fun, the difficulty and complexity should be controlled in a way that can balance with the user experience in both directions. Provide activities that match individuals to their environment. Businesses can offer games that align with the positive values of their users and provide services that are required by users' emotional value.

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