The Effect of Game Design Elements on Team Emotion and Decision Satisfaction

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Abstract

Existing studies have found that both internal and external incentive mechanisms of gamification and game design elements are effective for human behavior and performance incentives.However, for the team work which is more and more valued nowadays, the research on its impact on team emotions and decision-making satisfaction has not been involved.So the purpose of this paper is to study and analyze the two most basic elements of many game elements through experiments, the influence of badges and leaderboards on team emotions, and the moderating role of leadership style.It is found that the internal and external motivation of game design elements has a significant impact on team emotions and decision-making satisfaction, so its great potential is worthy of continuous research and exploration.

Keywords

Game design elements, team emotional atmosphere, decision satisfaction.

1. Introduction

The reason why game can change people's behavior successfully is that game mechanism can make use of the inherent motive attraction of game.That is to say, playfulness increases the value of people's behavior by increasing their experience in execution, thus increasing their intrinsic motivation[1].This view is based on the self-determination theory SDT [2].In this theory, people are born with three basic psychological needs, namely, ability, autonomy and relationship.To meet these three basic psychological needs, people's intrinsic motivation will be stimulated, and individual activities will continue in a healthy and effective way.In the research of influencing decision-making factors, especially team decision-making, emotion is always a factor that can not be ignored. In the process of decision-making, the positive or not of team emotions will directly affect the decision-making results, so it is of realistic theoretical and practical significance to study team emotional atmosphere and decision-making performance through the intrinsic motivation of gamification.Studying team emotional atmosphere and decision-making performance through game-based intrinsic motivation has practical significance for people-oriented management means nowadays.The role of leadership in team activities is crucial.Different leadership styles have different effects on the team[3].In the process of studying the influence of game elements on team emotional atmosphere, this paper introduces different leadership styles as moderating variables.In view of the insufficiency of empirical research on the intrinsic mechanism of game design, this paper makes an in-depth study on the influence of game design elements on team mood and decision-making.It mainly includes: (1) the influence of game design elements on team emotional atmosphere; (2) the influence of game design elements on decision satisfaction and team score; (3) the influence of leadership style as a moderator on the relationship between game design elements and team emotional atmosphere.

Gamification began in 2010 and extended to education, sports and other fields.Gamification is not to present things in the way of games, but to add game design elements to the process of things.There are basically three elements in the game quotation: points, badges and leaderboards.

2. Research Hypothesis

Kevin Werbach gives an answer to why we should take game-based practice seriously in real situations, that is, the core value of game-based: increasing participation, exploring more possibilities, and effectiveness[4].It is effective for decision-making process and results to add game design elements into team decision-making tasks according to game value.And from the perspective of self-determination theory and intrinsic motivation theory, game itself has intrinsic motivation and gives participants a strong heart-fluid experience.Therefore, team emotions in decision-making tasks are also affected by game play.Based on this, the following assumptions are proposed.

(1) Game design elements and team emotional atmosphere

Sailer found that game design elements had a positive effect on satisfaction of psychological needs through online item matching experiments[5]. Oliver Korn and others used Lego to study the negative impact of game-based facial expression analysis on emotions (unhappy value is greater than happy value). Gaming changed the concept of "relaxation", instead, it made people's mood and surrounding atmosphere tense.Mollick, Rothbard (2014) and Flatla, Gutwin and Nacke (2011) all found that the experimenters had high levels of positive emotions and enjoyment of tasks in the game context.Many scholars have proposed that game-based and game design elements as intrinsic motivation to meet people,s basic psychological needs, which has great research value for the intrinsic motivation of behavior and emotion.And badges and leaderboards are the most basic game design elements, so this study proposes the following assumptions:

H1: The badge positively affects the team emotional atmosphere.

H2: The leaderboards positively affect the team emotional atmosphere.

(2) Game design elements and decision performance

Elisa D. Mekle et al. found that badges and leaderboards had a positive impact on the quantity and quality of the results in the experimental study of describing a picture with limited labels. The same Jung Schneider and Valacich (2010) in the experimental situation showed that game-oriented methods were used in both quantity and quality (mainly by means of feasibility and innovation).Juho Hamari found that game design element badges can positively affect user behavior.Most of the existing studies have done empirical research on the impact of game on performance. The results show that it has a positive impact on performance. The main reason is that in the process of completing tasks, game takes into account the intrinsic needs of people, so that participants can voluntarily and actively enjoy the process of task completion, and the completion of tasks will be higher.Therefore, in the process of team decision-making discussion, members will actively participate in the process and contribute their ideas. Based on this, the following assumptions are put forward:

H3a: The badge positively affects the satisfaction of decision-making results.

H3b: The badge positively affects the satisfaction of decision-making process

H4: The badge positively affects the team score;

H5a:The leaderboards positively affects the satisfaction of decision-making results;

H5b: The leaderboards positively affects the satisfaction of decision-making process.

H6: Leaderbooards positively affect team scores.

(3) The regulating role of leadership style

In the case of team work, different leadership styles have a great impact on the team mood of employees.J.R.P. French (1960) believes that democratic leadership emphasizes the participation of subordinates, which reflects employees'own values, identifies work goals, and meets employees' independent needs, so as to achieve a higher degree of task completion.Strauss (1977) pointed out that democratic leadership style can make employees willing to accept decisions and actively implement them.Although command leadership style is quick and decisive in decision-making, more studies have found that command leadership style causes much more decision-making errors than democratic leadership style (Peterson R A, Larson J R, etc.). The main reason is that democratic

leadership can read more information for decision-making, and the decision-making results are popular.Therefore, in the process of studying the influence of game design elements on team emotional atmosphere, the moderating role of team leadership style is indispensable. Based on the previous research, democratic leadership has a positive impact on employees'identity and participation in team work, so the following hypothesis is put forward.

H7: Democratic leadership style has a positive moderating effect on the positive relationship between game design elements and team emotional atmosphere.

3. Experimental Tasks and Processes

In order to study the process and results of team decision-making, this experiment adopted the task of idea generation type.In order to solve the problem of route optimization in the process of logistics transportation, when materials enter the warehouse, they need to be operated in the way of handling (trolley, forklift, etc.) in the warehouse. Before they are transported to the designated storage location in the warehouse, the procedures of receiving, checking and counting points will be carried out.Aiming at the optimization of material transportation routes, the group will make decisions in the way of discussion within the prescribed time, and finally give the group plan.The time for formal discussion will be divided into three stages to facilitate the recording of results and to award badges and rankings at any time.

According to the comparison between the original problem and the optimal solution, the shortened time and distance are scored. In the process of calculating the badge, the shortened time and distance are divided into five grades, 80 into the lowest score, and each score is raised by one grade.The rankings will be ranked by scores (time and distance) after the results of the pre-experiment. There are five groups and five places in the rankings.

4. Result analysis

There are 180 valid data in the experiment. After the data are processed into team level data, the following results are analyzed by SPSS software. The reliability test is greater than 0.787, and the validity test KMO value is greater than 0.858.

According to the results of the experiment, the control group without game design elements scored very low, while the badge and leaderboard scores were almost the same. The democratic group scored higher than the command group, and the democratic group with game elements scored higher than the command group with game elements.Supports assumptions H4 and H6.

Relevant analysis results show that game design elements are positively correlated with team emotional atmosphere (r=0.552, p<0.01), hypothesis 1 and hypothesis 2 are preliminarily validated as a whole, game design elements are positively correlated with decision satisfaction (r=0.502, p<0.01), hypothesis 3 and Hypothesis 5 are preliminarily validated, and game design elements are positively correlated with team score (r=0.480, p<0.01), Hypothesis 4 is verified.

When exploring the influence of game design elements on team emotional climate and decision satisfaction, we use one-way ANOVA. The results show that the effect of game design elements on team emotional climate is more than 0.05 in the homogeneity test of variance, which shows that the variance is homogeneous. We can use this method to study it. We can find that the effect of game design elements on team emotional climate is obvious in the one-way ANOVA.The p value of the authors is less than 0.05, which indicates that there are at least two significant differences among the three groups. That is, game design elements have an impact on team emotional atmosphere. The subsequent multiple comparison tests show that there is a significant difference between no game elements and game elements (both P values are 0), and the mean difference shows that badges and rankings have significant positive effects on team emotional atmosphere.Influence.Hypothesis 1 and 2 are verified.

Similarly, when using this method to study the effects of game design elements on decision-making process and decision satisfaction, it is found that the significance P values in homogeneity test of

variance are greater than 0.05, and the significance P values in one-way analysis of variance are less than 0.05.In multiple comparisons, we can know that for decision-making results, decision-making process and team scores, the significant p value between no game element and badge and leaderboard is less than 0.05, indicating that no game element is significantly different from badge and leaderboard respectively, and the mean difference is negative. The badge and leaderboard are satisfied with the decision-making process, the decision-making results and so on.Team scores have a positive impact, assuming that H3a, H3b, H4, H5a, H5b, H6 are verified.

When studying the moderating effect of leadership style on the emotional atmosphere of game design elements such as badges, leaderboards and teams, the regression analysis of general linear model was used to analyze the main effects of leadership style and game design elements and their interaction.The results of intra-group effect test are followed. Significance of badges and leaderboards is greater than 0.05, indicating that there is no difference in team emotional atmosphere between the two without considering the moderating effect.Different leadership styles have different influence on team emotional atmosphere.The significant difference of the interaction between them is less than 0.05, which indicates that the regulation effect is significant.From this we can see that badges and leaderboards have an effect on team emotional atmosphere with the moderating effect of leadership style.

In order to see more intuitively the moderating effect of leadership style, the results of regression analysis are analyzed in the form of graphs, as shown in Figure 1.Under the regulation of democratic leadership style, leaderboards can enhance team emotional atmosphere more than badges, while under the regulation of command leadership style, badges can enhance team emotional atmosphere more than rankings.Whether it is badges or rankings, democratic leadership style has a more positive impact on team mood than command leadership style.Suppose H7 is verified.
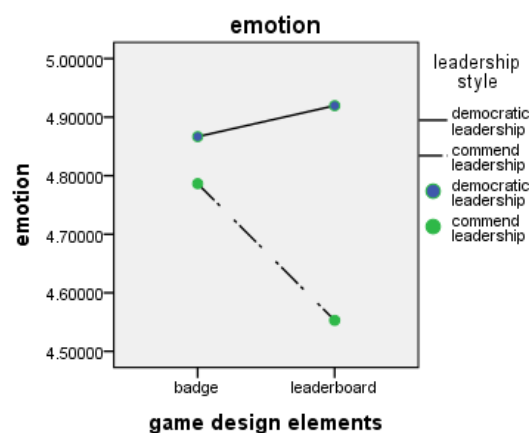

Figure 1: Leadership Style Adjustment Between Gaming Elements and Team Emotional Atmosphere

5. Conclusion

This paper mainly aims at the intrinsic motivation of the game element to study its impact on people's emotions and behavior. In Eiffel Cohen's book Punish by Reward, it was argued that the reward of work is a compensation for what we pay. Our brains see this compensation as a sunk benefit. Therefore, the external reward will significantly reduce the intrinsic motivation, and the significance of the task completion process will also be lost. Through the game elements to meet the basic needs of people's hearts to enhance intrinsic motivation, not only emotional upsurge, job performance will also be improved. This paper studies the effects of game design elements on team emotional atmosphere and decision performance through experimental methods, and draws the following conclusions:

First, according to the inherent incentive mechanism of gamification, it can meet people's basic psychological needs. Emotion in the process of team task is a factor that can not be ignored to

complete the task.This paper adopts the most basic and commonly used badges and leaderboards in game design elements. The experimental results show that badges and leaderboards have a significant positive impact on team emotional atmosphere in team work, and different leadership styles play a moderating role in the relationship between the two. Experiments show that democratic leadership can play a greater role in them.In the game based on self-determination theory, participants hope to be able to play their own role and show themselves more, so democratic leadership is more conducive to participants'commitment to team tasks and better completion of tasks.Secondly, the influence of badges and leaderboards on the satisfaction of decision-making results and decision-making process is also positive and significant.In the experimental group with badges and leaderboard, the decision-making score is higher than that of the observation group, which shows that the quality of decision-making has been significantly improved under the influence of badges and rankings.

To sum up, game design elements, badges and leaderboards show great potential for team emotions and decision-making performance. Enterprises or teams can improve employees' emotional and psychological experience and decision-making performance when they make good use of them. However, this study is not deep enough to explore. In the reading of the existing literature, the specific game design elements under what conditions, in what way, and what role they will play are worthy of our in-depth study. Therefore, it is worthwhile for us to continuously carry out theoretical and empirical research on the exploration of the internal and external motivation of game-based human beings.

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