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The Integrative Model Of Motivation In Massively Multiplayer Online Role-Playing Game

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Abstract*: This study is to investigate the motivation factors in the massively multiplayer online role-playing game (MMORPG). This study suggests the integrative model of intrinsic and extrinsic motivators, and includes environmental moderators for the engagement in multiplayer online role-playing game. For empirical analysis, this study gathered data from 228 university students in South Korean by a survey method. The results showed the followings. First, the results of intrinsic motivation show that the more fantasy, diversion or arousal participants pursue in MMORPG play, the more they are engaged in MMORPG. Second, the results of extrinsic motivation show that the more completion, challenge or social interaction participants pursue in game MMORPG, the more likely they are to be engaged in MMORPG. Third, regarding social presence, the positive relationship between diversion and engagement in game is shown to be stronger for gamers in MMORPG platform higher rather than lower in social presence. Finally, regarding social capital, the positive relationship between challenge and engagement in game is shown to be stronger for gamers in MMORPG platform higher rather than lower in social capital.

***Keywords*: Engagement in game, Intrinsic motivation, Extrinsic motivation, Social presence, Social capital**

I. INTRODUCTION

The video game industry has been experiencing tremendous growth both within the US and globally [1]. Academic research on game content and users has increased significantly over the past 25 years, but the research gap is significant. Much more research has focused on consumer attitudes and sponsorships of cinemas, on other entertainment areas such as television [2]. Thus, marketing academic contributions lag far behind actual video game industry practices. Since researches on video games have been dominant until recently, researchers have focused on research to identify potential side effects. The specific focus of these researches include the relationship between game and increasing abuse, aggression, and social isolation [3]. But recently, many researchers have focused on game coordination or pain relief for education or health interventions by taking advantage of the exciting appeal of video games [2]. Gradually, coordination-oriented researchers have shown that games can have a positive effect on psychological and physical well-being. Core research and intervention intensive research share a different but exploratory method.

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The theories and methods used do not examine the extent to which video games have a positive, negative, or emotional impact on a given outcome in a given situation. Less well-known and less widely studied is the mechanism underlying this positive and negative connection.

Especially, the massively multiplayer online role-playing games (MMORPG) are virtual heirs to emerging desktop games in the 20th century along with Dungeon and Dragon. Modern MMORPG is an adventure through the fantasy world and combines advanced graphics, endless performance, cooperative and competitive gameplay options. The game allows gamers to create a virtual identity and make it great in the online fantasy world. Outside of a realistic social structure, you can play a new role of your choice. MMORPG also allows gamers to communicate with other gamers in the virtual environment through on-line identity that allows them to feel social presence and build social capital [4].

Although the importance for practice increases, there is few quantitative researches on motivation that affects the participation of MMORPG participants. This paper explores the integral model of gamer motivation to play MMORPG. For the purpose of this study, the paper will be structured as followings. First, the following sections will present the theoretical background and hypotheses development. This study will adopt the perspective of two kinds of motivations for game engagement [5]. Especially, this study will propose a model of integrating intrinsic and extrinsic motivators. Even though two kinds of motivators may not show some conflicts, this study will hypothesize that two kinds of motivators can exist together in the game participation. This study will show that gamers who play MMORPG have similar motivators as in other general games. However, there are several factors to consider considering the characteristics of MMORPG. The term of social presence is regarded as one of the essential aspects by researchers who study virtual worlds [6]. Relevant studies have investigated social presence in aspects of media [6]. They have paid their attention to the technological aspects of an environment for social presence. Therefore, this study intends to include the social presence in the integrative model for MMORPG, taking into account the features of virtual reality provided by MMORPG. And, trust is a constant in all definitions of social capital [7]. MMORPGs can be areas that require great trust because of the lack of specific knowledge of who is really behind other avatars means gamers have greater uncertainty due to less information on others in this community.

Therefore, this study intends to include social capital in the integrative model of gamer motivation in MMORPG, taking into account the necessary trust in MMORPG play. Second, the following section outlines the sample and methods. Third, the analysis results will be explained. Finally, in conclusion, the study discusses the results, explained research contributions and practical implications, suggests limitations and future research directions.

II. THEORY AND HYPOTHESIS

A. Engagement in game

The term “engagement” has been examined in many areas, including psychology, sociology, politics and organizational behavior. The marketing field reduced research on the terms "consumer engagement" and "customer engagement" [8]. Customer engagement is regarded as "the state of mind arising from a collaborative creative customer experience interacting with some object (e.g., video game)" [8]. Adults and children play games in their free time. Get the best entertainment experience using a variety of technologies. Many scholars emphasize the importance of participation in virtual environments [9]. Engagement in the game was proposed as a suitable research topic for future [10]. The study is responding to the request by reviewing the participation of gamers in other genres and how it affects the intent to purchase games. The ultimate goal for marketers and game developers is to bring gamers into the game. For example, Warcraft III designs games in a way that encourages gamers to create meaningful stories together, but developers did not fully take into account the differences in gamers' psychological factors and motivations [11].

However, no definition agreement has been reached on how to label subjective experiences during video games [12]. They used the term 'engagement' as a standard indicator of game participation. Other terms include immersion, flow, dissociation, psychological absorption, and presence. These are conceptualized as indicators of deeper engagement in game. There are theoretical and empirical grounds for distinguishing the subjective experience of flow, existence, immersion, and psychological absorption concerning the interactive media experience. Murray, Fox, and Petifer [13] looked at many aspects of the virtual reality experience and found that there was a positive and significant correlation between absorption and the Harry scale with the participant's scores, but no relationship between absorption and existence. Gow, Lang and Chan [14] suggested a significant amount of correlation for dissociation and absorption. These finding have the theoretical assumption that while presence and absorption are distinguished by induction of a changed state (from psychological absorption), psychological absorption represents a non-pathological enemy form of dissociation. There is an estimate of the state of consciousness that has changed in both flow and absorption. It does not occur during the presence experience. However, it is essential to recognize that some individuals' experiences can continue to deepen participation from existence to flow.

B. Hypothesis development

The theory of self-determination argued that motivations have two kinds including intrinsic or extrinsic ones [15]. While intrinsic motivation comes from intrinsic value associated with a given activity, external motivation is associated with external pressure. Lindenburg [5] suggested two intrinsic motivations such as the enjoyment derived from enjoyment derived from the activity itself and values obtained by acting appropriately. Relevant studies have distinguished these motivations by the extent of relationship with others [16] that supplements the conceptualization of Lindenburg [5]. For example, Economic gains from efforts to enjoy the activity are not directly affected by the opinions of others. And, reputation and confirming to norms are based on how other people reflect their activities. Considering the characteristics of game and MMORPG, this study operationalizes these motivational factors as followings: regarding intrinsic motivations this study considers (a) fantasy, (b diversion), (c) arousal and regarding extrinsic motivations, (d) competition, (e) challenge, (f) social interaction.

a. Intrinsic motivation for game engagement

People tried to fly and swim deep in the sea. Like the Wright brothers who built a successful airplane, there are a handful of people who have tried to do something that is not something anyone can do. People also want to be zombies and not be in real life. The early generation of movies and video games allows people to imagine things that are not like they are flying, becoming ghosts and being animals. But today's games allow gamers to be different from others. For example, gamers can create ideal physical avatars in games and pretend to be avatars. Besides, people who are engaged in simulation games can fly the plane even if they are not pilots. Games give gamers fantasies of becoming something else, such as professional NFL gamers, pilots, and even reason [17]. The level of gamers' fantasy will be able to predict their degree of engagement in MMORPG.

H1: Fantasy motivation has positive relationship with a gamer’s engagement in MMORPG.

Escapism such as diversion refers to avoiding real-life problems by engaging in games and other kinds of activities [18]. People are different at their level of escapism. Some prefer to take a long break to get out of their lives, while others prefer a short break to escape. Also, male and female gamers have significant differences when it comes to game realism [19]. Thus, the level of escape for gamers predicts their level of engagement [20]. Moreover, entertainment is considered as an opportunity to move from the boring life to a fantastic world of interesting and charming features. Selnow [21] argues that people play games to escape life. The author found that escapism is significantly correlated with game engagement. Thus, the motive for gamers' escapism could predict the level of gamers' participation in MMORPG. H2: Diversion motivation has a positive relationship with a gamer’s engagement in MMORPG. Gamers play games for their arousal and companionship. The level of excitement that gamers are trying to reach is the level of excitement in gamers. Arousal is one of the motivations of arcade gamers [22]. The level of arousal can be a high level of motivation to participate in game play.

For example, one gamer would say "When I am enjoying a video game, I often felt crazy. And, when I am jumping up and down, I am yelling and screaming" [23]. The excitement of gamers will affect their level of engagement. For example, a high degree of excitement may lead to psychological absorption. However, gamers are not interested in the game unless they are so excited about it. Thus, the level of excitement among gamers will be able to predict their participation in MMORPG.

H3: Arousal motivation has a positive relationship with a gamer's engagement in MMORPG.

b. Extrinsic motivation for game engagement

Sherry et al. [23] suggested that competition was a critical incentive to gain from video games. Competition in video games refers to competing and proving that gamers are more proficient than other gamers. Also, gamers compete to enjoy the game itself. Researchers in the past have proven that men are more competitive than women. However, if that is entirely true, we will not see a competitive woman in any professional sport [24]. Women and men have different motivations for competing in games. The power of competition comes from establishing relative positions in the hierarchy of peer groups. Gamers, for example, run to solidify his position among his new friends. He will try to be good at it to join the game and impress his friends. Also, he may buy the game to practice in his time. Competition is the most important reason why people play games in any genre, such as sports or fighters [23]. Furthermore, games can raise the level of people's competitiveness, meaning since victory is an important social goal for them, they feel more competitive for other activities in societies [17]. Competition is different from a competitor's personal best or the challenge against the game itself [25]. Therefore, competitive gamers will become more engrossed in MMORPG.

H4: Competition motivation has a positive relationship with a gamer's engagement in MMORPG.

Challenges are what the person is doing well unlike competing with other gamers. Games challenges range from learning a new language to losing weight. People challenge themselves to be better people in certain activities. In the video games context, gamers go beyond the game level and challenge for progress. Women may shy away from "masculine" games to avoid direct competition with them. However, they play these games to challenge themselves which they will feel more control [25]. The challenge is one of the main motivations identified early in playing video games [26]. The state of flow of gamers will be a balance between their challenges and their technics in game. If the game is more challenging than their skills, they will soon leave the game and have anxiety. Also, if games don't challenge gamers' skills, they will be bored, and they will leave the game. The ideal position is when the challenge in the game is closer to the skills of gamers. Under such circumstances, gamers will reach a flow state and enjoy the game [27]. Gamers of this level participate in the game. Thus, gamers' motivation may be able to predict their level of participation in MMORPG.

H5: Challenge motivation has a positive relationship with a gamer's engagement in MMORPG.

People pursue social awareness and status within society. People want to belong to a group as Maslow explains in the hierarchy of needs. The second level of Maslow's pyramid is the need to belong [28]. People can belong to a particular group by interacting with that group. So people interact with a group of people to determine the compatibility that can occur between the group or individuals. Also, people seek social capital. The capital may, in some cases, replace financial capital. For example, a person with a lot of social capital may not need high financial capital [23]. In the video game environment, gamers have an incentive to interact with other gamers to obtain social capital. Also, social interaction can be one of the main reasons many gamers have to play. For example, a game console called up friends and slept. When many gamers play games, they intend to learn about other people's personalities by interacting with their friends [23]. The motive implies their level of engagement in MMORPG.

H6: Social interaction motivation has a positive relationship with a gamer's engagement in MMORPG.

c. The moderating effect of social presence on the relationship between intrinsic motivators and game engagement

Scholars suggests that social presence is one of the important aspects of virtual environments [6]. Shen and Khalifa [29] define social presence as the feeling of existing with others in some media. Social presence is described as the sense of or keeping in touch with other people or entities in some media [30]. Even though researchers establish no antecedents for social presence, they have agreed that information about social cues provided by the system and social interactions with other users is related to social presence [30]. Relevant researches examined social presence in the perspective of media [29]. Many studies of virtual worlds tend to emphasize the technological characteristics of the situation for social presence. In MMORPG, using avatars and marking the online status of individuals can create social presence. [29]. By using verbal and nonverbal communication media and using avatars, individuals can easily connect both psychologically and socially [31]. It has been argued that the need to belong, that is, to form and maintain a minimum interpersonal relationship, should be prepared naturally among humans [32]. One of the environmental infrastructure that deals with a person's sensitivity to social connections is social presence. When people experience more social presence, they feel less social distance. Therefore, as people experience more social presence and then feel more social intimacy, they can show improved participants' behavior during MMORPG play. First, games give gamers fantasies of becoming something else, such as professional NFL gamers, pilots, and even the opposite sex [23]. However, since a participant alone may not achieve fantasies defined as motivators in MMORPG play, it is essential to engage in sharing-related activities with those involved in MMORPG play. Therefore, people who experience more social presence feel more social intimacy, so they can gain more satisfaction from fantasies based on MMORPG's sharing-related activities, making them more immersed in games.

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Second, gamers' level of motivation for diversion predicts their level of engagement [20]. Diversion from escape activities can be an incentive for active participation and may be the strongest indicator of the possibility of working together online [33]. Thus, since those experiencing more social presence feel more intimacy, they will gain more satisfaction in mood swings by working together in MMORPG play, which will make them more involved in the game.

Finally, arousal can be one of the motivators of the gamers who came to participate in the game [22]. Arousal, defined as a motivator in MMORPG play, can be achieved by the play of many participants, so it is necessary to engage in collaborative activities with those who participate in MMORPG play. Therefore, people who experience more social presence feel more social intimacy, so that they can gain satisfaction from the awakening based on MMORPG's collaborative activities, allowing them to become more immersed in games. Therefore, this study hypothesizes that social beings are the major moderators in the relationship between three intrinsic motivations and engagement in MMORPG.

H7: Social presence increases the positive effect of fantasy on a gamer's engagement in MMORPG.

H8: Social presence increases the positive effect of diversion on a gamer's engagement in MMORPG.

H9: Social presence increases the positive effect of arousal on a gamer's engagement in MMORPG.

d. The moderating effect of social capital on the relationship between extrinsic motivators and game engagement

Trust is a constant in all definitions about social capital. Trust is an asset if it is warranted. All people in a community are better off if they are honest to one another and not worried about betrayal. Trust relates to reciprocity. As Putnam [7] noted, an individual will not be trustworthy and honest in the face of persistent dishonesty. To be effective, an individual must trust that others around him or her are being honest in how they represent themselves. The capital that is developed comes in the reduction of what Putnam refers to as transaction costs. If people in communities trust each other, they can relax more, such relaxation and ability to let their guard down reduces the stress of worrying that a check will not bounce or that you were given the proper amount of change without counting it yourself. These stresses are a part of everyday commercial transactions and are the transaction costs. Putnam believed trust allowed people to feel better about their community and in the honesty of civic activities and exchanges. MMORPGs can be areas that require great trust because the lack of specific knowledge of who is really behind other avatars means gamers have greater uncertainty due to less information on others in this community. According to Vazquez [34], More information means that citizens don't have to trust to overcome uncertainty, which means they don't have to trust each other. In contrast, individuals have to rely on trust to interact with people they don't know, so the less information they have, the more trust they have. Users of MMORPGs need the help of others to rise to the highest levels of most MMOGs. So it is worth investigating whether the decision to trust other gamers in a guild or a realm is important to users.

Thus, people having higher levels of social capital can have a higher level of trust in those who play the MMORPG. These people can demonstrate improved behavior of participants in playing MMORPG. In other words, since competition, defined as a motivator of game participation, cannot be executed by a participant alone, so it is essential to trust that gamers participating in MMORPG will be competent. Therefore, the higher level of social capital, the more likely gamers will be to participate in MMORPG, because they trust that other people will participate in MMORPG as well as competition.

And, since the challenges, defined as motivators for MMORPG play, cannot be achieved if other gamers are cheating, trust about the person in MMORPG play will be required. Thus, the higher the level of social capital, the more gamers will be involved in MMORPG play, for they believe that others play honest plays.

Finally, since the social interactions, defined as motivators in MMORPG play, can be executed by the gamer's play, it is essential to believe that gamers participating in MMORPG will be interactive. Thus, the higher the level of social capital, the more likely gamers will be to participate in MMORPG play, for they believe that others will be involved in MMORPG as much as they want to have social interaction. Therefore, the study hypothesizes that social capital is an important moderator in the relationship between three extrinsic motivators and engagement in MMORPG.

H10: Social capital increases the positive effect of competition on a gamer's engagement in game.

H11: Social capital increases the positive effect of challenge on a gamer's engagement in game.

H12: Social capital increases the positive effect of social interaction on a gamer's engagement in game.

III. METHODOLOGY

A. Sample

Samples from this study consist of 228 college students who have participated in MMORPG in Korea. The sample consists of undergraduate and graduate students from engineering, social science, and business majors. Research participation criteria include past MMORPG participation and minimum age of 18. Samples are considered one of the convenience, but college students represent an important subset of the key participant segments focused on by MMORPG marketing personnel.

B. Data and measurement

The purpose of this study was to identify the factors of psychological behavior associated with game participation based on empirical analysis. You can identify these elements by measuring participants' perception of the MMORPG platform. Survey methods are beneficial for collecting data from large numbers of individuals in a relatively short time and at a low cost. Therefore, in this study, the survey was used to collect data.

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All participants received a paper and pencil questionnaire with a confident letter explaining the purpose of the study and emphasizing voluntary participation. Participants filled out the survey and asked for it back in an envelope collected by the researchers.

The questionnaire is used by the measurement of psychometric method [35]. This study measured each construct with 5-point Likert scale. Gamers' motivation scale was developed by Lucas and Sherry [25]. The scale measured three intrinsic motivators: four items for fantasy with reliability of 0.88 (e.g., "I enjoy the excitement of assuming an alter ego in a game"); four items for diversion with reliability of 0.89 (e.g., "I play video game instead of other things I should be doing"); and four items for arousal with reliability of 0.85 (e.g., "I play video game because they stimulate my emotions"). The scale measured three extrinsic motivators: four items for competition with reliability of 0.86 (e.g., "I got upset when I lose to my friend"); four items for challenge with reliability of 0.79 (e.g., "I feel prude when I master an aspect a game"); three items for social interaction with reliability of 0.81 (e.g., "I play with someone because I cannot play by myself"). Social presence is measured by the five items of Biocca, Harms, and Burgoon [36] with reliability of 0.87. Social capital is measured by the eleven items of Siitonen [37] with reliability of 0.82. Game engagement employs nineteen items [10] with reliability of 0.84. For example, "I lose track of time"

IV. RESULT

A. Reliability and validity

The validity of the variables was determined by analysis of the significant components and factors using the varimax method. The criteria for determining the number of factors are defined as 1.0 eigen values. Factors were applied to the analysis only if the factor loading was more significant than 0.5. (factor loading indicates the correlation scale between the element and other variables). The reliability of the variables was determined by internal coherence evaluated by Cronbach's alpha. I used a survey and only considered Cronbach's alpha value to be one measure each if it was 0.7 or more.

B. Common method bias

As with all self-reported data, CMV (Common Method Variance) is likely to occur [38]. Podsakoff et al. [38] propose to mitigate and assess the magnitude of common method bias. First, in the survey, respondents were assured of anonymity and confidentiality to reduce assessment anxiety. Also, the questionnaire was developed carefully to focus on the expression of items and to minimize item ambiguity. These procedures are more socially desirable, quieter, and less likely to edit the response to match the way researchers want to respond [38]. Second, Harman's single factor test was performed on all items. According to the principal component factor analysis, the first factor was only 34.1% of the variance. As a result, no single factor appeared, and the unique element did not account for most variations. The measurement model was also reevaluated by adding a latent technique variance factor [38]. All indicator variables in the measurement model have been loaded into the coefficients. Adding common variance coefficients left all metrics still significant and did not improve suitability for the measurement model without them. The results suggest that common method variances are not a big problem in this study.

C. Relationship between variables

Table 1 shows the Pearson correlation test results between variables and the degree of multi-collinearity among independent variables. Minimum tolerance of 0.825 and maximum variance inflation factor of 1.212 demonstrate that the statistical significance of the data analysis has not been compromised by multi-collinearity.

Table I: Variables' correlation coefficient

	1	2	3	4	5	6	7	8
Fantasy	1							
Diversion	.018	1						
Arousal	.025	.029	1					
Competition	-.102	.024	.035	1				
Challenge	.041	.105	.043	.029	1			
Social interaction	-.022	.102	.028	.029	.088	1		
Social presence	.025	.099	.066	.027	.035	.055*	1	
Social capital	.017	.077	.019	.052	.045	.042*	.022	1
Game engagement	.013*	.032*	.061**	.042*	.021*	.041**	.031*	.028*

*$p < .05$, **$p < .01$

D. Hypothesis testing

The study tested hypotheses in three steps using hierarchical multiple regression. In the first step, the demographic variables were controlled. Inherent and external sync factors were entered in the second step. In the last step, you directly tested the current hypothesis for intervention effects by entering a term of multiplication interaction between all motivators and two arbitrators. The results are shown in Table 2. First, the only gender among the control variables has a positive relationship with game participation. This means that men are more likely to participate in games than women. Second, to analyze the relationship between unique motivators and game participation, Model 2 in Table 2 shows that all motivators are statistically significant in game participation.

Regarding intrinsic motivators, fantasy is positively related with game engagement ($\beta = .061$, $p < .01$). Diversion is positively associated with game engagement ($\beta = .033$, $p < .01$). Arousal shows a positive association with game engagement ($\beta = .077$, $p < .01$). Hypotheses 1, 2, 3 are supported. And, regarding extrinsic motivators, competition is positively related with game engagement ($\beta = .051$, $p < .01$). Challenge is positively associated with game engagement ($\beta = .042$, $p < .01$). Social interaction shows a positive association with game engagement ($\beta = .061$, $p < .01$). Hypotheses 4, 5, 6 are supported.

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Table II: Variables' correlation coefficient

	Game engagement		
	Model 1	Model 2	Model 3
Sex	.055*	.039*	.033*
Age	-.022	-.015	-.011
Fantasy		.061**	.049**
Diversion		.033**	.026**
Arousal		.077**	.054**
Competition		.051**	.031**
Challenge		.042**	.037**
Social interaction		.061**	.054**
Social presence			.035*
Social capital			.041*
Fantasy * Social presence			.010
Diversion * Social presence			.039*
Arousal * Social presence			.055
Competition * Social capital			.101
Challenge * Social capital			.029*
Social interaction * Social capital			.032
Adj. R^2	.105	.182	.201
F	4.681**	14.901**	18.993**

*$p < .05$, **$p < .01$

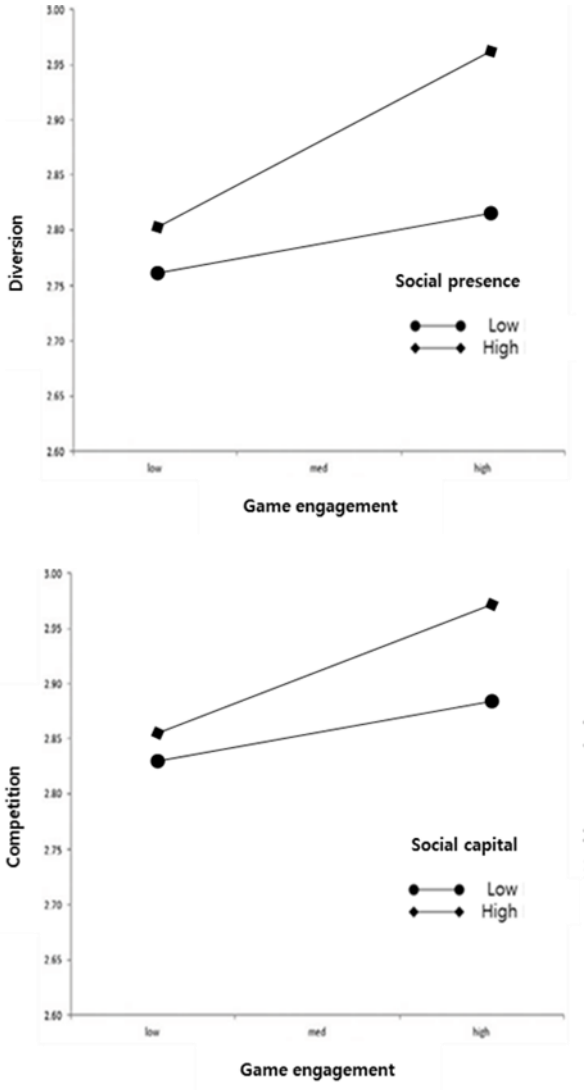

Fig. 1. Interaction effect

Finally, in the model 3, the results show the interactions between all of motivators and two moderators. For intrinsic motivators, social presence is shown to increase the effect of diversion on game engagement ($\beta = .039$, $p < .05$). However, social presence is shown not to influence the effect of other motivators on game engagement. According to these results, when MMORPG gamers have higher social presence, diversion has a stronger influence on their game engagement, which is expected in H8 (see Figure 1). For extrinsic motivators, social capital is shown to increase the effect of challenge on game engagement ($\beta = .029$, $p < .05$). Social capital is shown not to influence the effect of other motivators and game engagement. Based on these results, when participants in MMORPG have higher social capital, competition has a stronger influence on their engagement in game, which is expected in H10 (Figure 1).

V. Conclusion

A. Discussion

The purpose of this study was to investigate the relationships between various motivators and the game engagement in MMORPG and verify the environmental moderators on these relationships. First, the results of intrinsic motivation show that the more fantasy, diversion or arousal participants pursue in MMORPG play, the more likely they are to be engaged in MMORPG. Second, the results of extrinsic motivation show that the more completion, challenge or social interaction participants pursue in game MMORPG, the more likely they are to be engaged in MMORPG. Third, regarding social presence, positive effect of diversion on game engagement is stronger for gamers in MMORPG platform high rather than low in social presence. However, social presence is shown not to have any significance with the effect of other motivators on game engagement. This study shows that those who experience more social presence feel more intimacy. According to this, this study suggests that those people can show their enhanced behavior during MMORPG play. Therefore, the results show that the higher the level of social presence gamers perceive, the more they are engaged in game play because they can get more satisfaction from the diversion relatively than any others. Diversion is a kind of escapism which refers to avoiding real-life problems by engaging in games and other kinds of activities (Li, Riau, & Khoo, 2011).

In order to have a sense of avoiding real life, it is difficult for the gamer to achieve on MMORPG alone. Therefore, in MMORPG, the intimacy with other gamers through social presence can make gamers feel that they belong to a world other than real life. However, the results that both of fantasy and arousal that gamers expect in MMORPG play do not depend on participants' social presence. Unlike diversion, fantasy and arousal cannot be increased through the intimacy of gamers in the MMORPG play, but depend on the individual needs of gamers.

Second, in the results of extrinsic motivators, the positive effect of challenge on game engagement is stronger for gamers with high level of social capital rather than low level of one. However, social capital is shown to have no significance with the positive effect of other motivators on game engagement. This study argues that those who have the high level of social capital have the high level of trust in other gamers in the MMORPG play. According to this argument, this study suggests that those gamers show their enhanced behavior during the game play. Therefore, in the results, it is shown that the higher the level of social capital, the more likely participants are to be engaged in MMORPG play, for they believe that others play honest plays. Since the challenges defined as motivators for MMORPG play cannot be achieved if other participants are cheating, trust in the person involved in the MMORPG platform will be required. Therefore, in MMORPG, the trust in other gamers through social capital can make gamers increase the willingness of gamers to achieve high goals. And, this study anticipates that the higher the level of social capital the gamers in MMORPG have, the more they will be to engaged in game play because they will participate in the game play so that others may be competent or socially interactive. However, the competition and social interaction that participants expect from the MMORPG platform is a result of not relying on gamers' social capital. Unlike challenge, competition and social interaction cannot be increased through the trust among gamers in the MMORPG platform, but depend on the individual needs of gamers.

B. Research contributions and practical implications

To contribute to the study, this is the first study to investigate the integrated model of motivation involved in game platforms. Despite the growing real importance of the gaming industry, there is little quantitative research into the motivations that affect gamers' attitudes and intentions about the game. However, the study focused on participants' motivations, notably proposed an integrated model of integrating essential and external motivations rather than identifying fragmentary factors. While these motivators may not coexist or even show conflict, this study shows that they can coexist in gameplay. Second, this is the first study to investigate the interventions of an environmental arbitrator in game play. This study shows that because people who experience more social presence feel more intimacy, the more satisfaction they will get from the diversion based on collaborative activities in MMORPG play than any others, which will make them more engaged in game. Also, this study shows that people who participate in MMORPG games think that challenges can be realized by trusting others. Therefore, this study extends the scope of game research by proposing a review of the factors of the moderating effect on the relationship between motivational factors and game participation.

Regarding practical implications, first, these results show that the social presence of the gamers enhances the effect of motivators including diversion on game participation, but does not affect other factors on game engagement. Therefore, game platform managers need to increase social presence for gamers' diversion. Namely, to increase social presence of gamers, the intimacy among gamers need to be strengthened by communication in MMORPG. Therefore, it would be a good idea to allow various forms of communication (e.g., text, pictures, voice, video, etc.) between game participants. Second, these results show that the social capital of the gamers enhances the effect of motivators including challenge on game engagement, but does not affect other factors including economic benefits on game engagement. Therefore, game platform managers need to increase social capital for gamers' challenge. Namely, to increase social capital of gamers, the trust among gamers need to be strengthened by meeting. Therefore, it would be a good idea to allow various forms of meetings (e.g. on-line, off-line, recruiting team members, team building, etc.) among gamers.

C. Limitations and future research directions

By the results of this study, this study may have some insight into the motivations of game players. However, you must also acknowledge the following limitations of this study: First, the study collected answers from Korean university students. There may be some national cultural issues in the context of the study. Future findings will need to be retested in other countries to ensure the reliability of these results. Second, I am not sure that the relationship is constant because all the variables have been measured at the same time. To avoid additional issues, survey questions occurred in reverse order of the analytical model, but there is a possibility of causal relationships among variables. Therefore, future studies should take into account the end studies. Finally, this study used social presence and social capital as environment moderators. However, considering the personality, future studies may find other moderating factors. For example, the social identity perceived by the participants of MMORPG can be considered as a moderating factor.

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