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게이미피케이션 요소의 문화적 차이에 대한 한국-오스트리아 비교 연구

(A Comparative Study on the Differences in Cultural Attributes of Gamification between Korea and Austria)

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요 약 게이미피케이션은 게임의 작동기제가 제공하는 흥미적 요소들을 통해 사용자의 자발적 참여 동기와 몰입을 유도할 수 있는 잠재가치가 상당한 바, 게임 산업뿐만 삶의 다양한 분야에 적용될 수 있는 기법으로 주목 받고 있다. 이전의 연구들은 게임요소와 몰입 또는 재미요소와 몰입간의 관계를 살펴보는 등 부분적 시각에 국한되어왔다. 이에 반해 본 연구는 게임요소와 재미 그리고 몰입으로 이어지는 일련의 과정 속에서 게임요소를 정의하고 재미를 정서적 재미, 인지적 재미, 그리고 사회적 재미로 구분하여 어떤 게임요소가 어떤 유형의 재미에 더 유의한 영향을 주는지 알아보고자 하였다. 특히 게임은 '재미'를 위한 것이며, '재미'는 문화적 요소와 관계가 있는 일종의 정서라는 점에 착안하여 본 연구가 출발하였다는 점에서 기존연구와 근본적 차이를 갖는다. 문화적 배경의 차이에 따라 느끼는 재미가 다를 것이며 그 재미에 영향을 미치는 게임요소도 다르게 나타날 것이라는 가설을 검증하고자 한국과 오스트리아를 대상으로 게임요소와 재미 그리고 몰입에 대한 상관관계의 차이를 알아보았다. 그 결과, 한국은 사회적 재미가 몰입에 영향을 주는 것으로 나타났으며 사회적 재미에 영향을 주는 게임요소로는 '관계'와 '보상'으로 나타났다. 한편, 오스트리아는 인지적 재미가 몰입에 영향을 주는 것으로 나타났으며 인지적 재미에 영향을 주는 게임요소는 '스토리'와 '보상'으로 나타났다.

핵심주제어 : 게이미피케이션, 게임요소, 재미, 몰입, 문화적 차이

Abstract Gamification is receiving much attention from a variety of fields of life as it has tremendous potential to help people get experienced with 'fun' by the elements of game mechanism and thus attract their voluntary participation eventually to reach the state of 'flow'. Some studies examined this process with a focus the relationship between game elements and flow while others regarded the game elements as fun elements and discussed the relationship between fun and flow. However, starting from the fact that the fundamental reason humans play a game is for fun and fun is in turn induced through game elements, our study defines fun as an emotion and uses it as

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factors are also introduced as control variables for the study on the belief that game elements affecting fun will apparently vary depending on the cultural dimensions. This study confirms that difference exists in correlations between game element, fun, and flow, depending on the different cultural settings. By comparing samples from Korea and Austria, each representing the east and the west respectively, it was found that 'social fun' affects flow and both 'relationship' and 'reward' are in turn affecting social fun in case of Korea. On the other hand, Austrian case reveals that cognitive fun affects flow and game elements affecting cognitive fun are 'story' and 'reward'.

Key Words : Gamification, Game Elements, Fun, Flow, Cultural Differences

1. Introduction

Since the idea of 'gamification' was first introduced at the Gamification Summit in 2011, it has received much attention from a variety of fields such as marketing business, education and learning, disaster simulation, crowdsourcing, healthcare, etc. In fact, it has a big potential to help people get experienced with 'fun' by the elements of game mechanism and thus attract their voluntary participation to reach the state of 'flow.'

Gamification by definition is the application of game-design elements and game principles in non-game contexts[1]. Gamification is the process of using game thinking and game mechanics to solve problems and to engage users[2]. For the successful gamification, what has been done is first to identify the elements involving in gamification and second to conceptualize how they work together to help users get immersed more effectively.

The previous studies reached an agreement that three constructs - game elements, fun, and flow are in gamification. However, as for the mechanism of gamification, some studies examined the relationship between game elements and flow[3] and others attempted to identify the relationship between fun elements and flow[4]. Neither was able to identify the relationship between game elements, fun and flow as a whole. As a result, little implication was provided by the previous studies as their fragmented view is like a puzzle with critical pieces missing.

For that matter, integrating game elements, fun and flow into a chain of experience process, we attempted to clarify which game element more effectively affects the types of fun and which type of fun more effectively affects flow[5]. As a result, fun, specifically emotional fun was found the most effective factor in inducing flow, and emotional fun is in turn more effectively induced by 'Level' and 'Leaderboard' than other game elements. This implies that unlike most research conducted so far, an integrated model covering game elements, fun, and flow in sequence, as adopted in our previous paper[5], makes it possible to identify what is the most effective game elements influencing fun and what is the most effective type of fun for flow. It has to be admitted, however, that our findings can hardly be generalized mainly due to overlooking differences by age and cultural factors.

Therefore revisiting the relationship of game elements, fun, and flow, this study attempts to empirically test the model by introducing cultural factors as control variables. It is for two reasons that only the cultural factors are added in the model. First, as most of game

users are in their twenties, it is difficult to obtain a variety of samples by age. Moreover, it is more difficult to obtain a diversity of age in the sample if we are to conduct a comparative study to see how cultural factors affect the model. Second, the influence of cultural differences is presumably far greater than the influence of age differences. The presumption is rooted in Huizinga's statement in his book 'Homo Ludens' that 'play' has a profound impact on human culture and society and cultural aspects of play is 'fun'[6]. If that is the case, the game elements that affect the fun will be apparently different.

The objective of this study, therefore, is twofold. One is to examine how game factors affect fun, and what fun has more significant effect on flow. The other is to investigate whether cultural differences in game elements affect fun and flow.

2. Literature Review

This study will keep the skeleton of the model used in the last study. However, a review of theoretical background would be necessary not only for helping the readers follow but for elaborating on the previous model by adding elements which are found in its course.

2.1. Game Elements in Gamification

Various components of Gamification were defined in many prior studies. Gamification is a kind of game design that uses game elements in non-game contexts. Hunike(2001) presents the MDA(Mechanism, Dynamics, and Aesthetics) framework which describes the relationship between the game systems and players[7]. Mechanism refers to the formal rules and concepts of a game system, while Dynamics refers to player's actions occurring in the ever-changing game playing process. Aesthetics used by game designers is to elicit certain intended emotional responses from players through dynamics which takes place between players and games.

This study sheds light on game elements which are relevant to the mechanics from the MDA framework to figure out which game elements are more coupled with emotional responses from users. Game elements vary across researchers as shown in Table 1.

Table 1 Game elements in previous studies

Researchers	Game Elements
Zichermann (2011)[2]	point, badges, levels, challenges, leaderboards, onboarding, social engagement loop, feedback
Bunchball Inc. (2012)[8]	points, levels, challenges, virtual goods, leaderboards, gifts and charity
Hamari, Koivisto & Sarsa(2014)[9]	points, leaderboards, badges/ achievement, levels, story/theme, clear goals, feedback, rewards, progress, challenge

Based on the common characteristics elicited from previous studies, the game elements are identified and redefined for the study as in Table 2.

Table 2 Definition of Game Elements

Game Elements	Definition
Status	Current states of players using Gamification
Goal	Clear purposes of users in Gamification
Story	'Brand new world' which excites players' curiosity
Competition	Competition or comparison with other players
Relationship	Collaboration or sharing with other players
Reward	Rewards corresponding to achieved goals
Onboarding	Basic features of a game that should be considered

Status means the current state of players using gamification. This is an element by which players can check their progress or mastery of skills such as points and levels.

Goals make players feel that they are doing something in a game. Players will be more focused on in-game activities and practicing their skills to achieve their goals in the game.

Stories give emotional experience to players, enabling them to go through the world of fantasy as heroes. Competition is the only activity with the other players and thus one of the elements which cannot be neglected in a game. Competition is enabled especially by leaderboards through which players see the records and achievements of other players and compare their records and achievements through progress bars.

Relationship is for the collaboration among the players, through which they can share the information about a game or help each other to achieve their common goals. Rewards take different forms. Badges or trophies are one of such rewards. When players achieve their goals, they get the rewards corresponding to the achieved goals.

Onboarding which provides information on the basic features of a game and their tips is especially useful to the new players who are in need of learning the basics of games.

2.2. Fun

Gamification contributes to user's attention and participation by fun. Whereas many studies discussed fun and its elements, this paper focuses on the fun as psychological state, instead of enumerating its elements. Fun can be classified into three types such as emotional fun, cognitive fun, and social fun. The first two types were proposed by Kintsch(1994)[10], and the third type was added by Choi and Kim(2004)[11]. Jeoung et al.(2013) defined more exquisitely the three types of fun through extracting the elements from the previous studies[12].

According to their definitions, emotional fun is direct reaction caused by certain events and it includes novelty, aesthetic and emotional arousal. It can generally be felt through empathy, sensation and reality.

Cognitive fun is fun which is induced in the active process when new information is inferred or understood. It is associated with problem solving, discovery and immersion. And social fun develops through social interaction in the group. It is developed by participation, cooperation and competition. and thus can be felt through a sense of accomplishment, competition, confrontation, and participatory collaboration.

Based on the prior literature, this study defines emotional fun, cognitive fun and social fun as shown in Table 3.

Table 3 Three Types of Fun

Type of Fun	Definition
Emotional Fun	Direct reaction caused by certain events (Novelty, Aesthetic, Emotional Arousal)
Cognitive Fun	Fun which is induced in the active process when new information is inferred or understand (Problem solving, Discovery, Immersion)
Social Fun	Fun through social interaction in the group (Participation, Cooperation, Competition)

2.3. Flow

According to Csikszentmihalyi(2008)[13], optimal experience means one's attention is paid just to certain goals. This is possible in the absence of external threats against which people need to protect themselves and it is referred to as flow. Many people

who interviewed with him said "feeling as comfortable as water flows" or "as if flying freely in the sky" when explaining the best experience. The flow is indicated by the action of two subjective factors. One is "perceived challenge," the recognition of the opportunity to perform some actions. The other is "perceived skills," meaning the recognition of the ability to do the desired action through given opportunity. Depending on the combination of perceived skills and perceived challenges as shown in Fig. 1, subjective experiences are divided into four types.

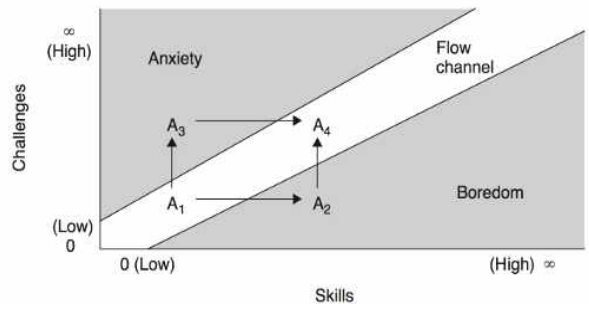

Fig. 1 The Flow Channel

Flow is also defined as "user recognition to enjoy and search the interaction with media," and people recognize the control of their interactions in the media environment, which is indicative of cognitive fun[14]. Flow is attended with subjective experience when the levels of difficulty are consistent with skill competence[15]. Flow experiences are formulated and expanded with playfulness. Hoffman and Novak(1996) assert that players who experience flow feel nothing important because they are so much involved in the networking activities on the Internet[16]. In addition, the conditions for easily reaching the flow include clear goals, abilities to solve problems given, obvious rules, immediate feedback and control, which are the typical characteristics of games that make it easy for people to reach the flow while playing games.

2.4. Cultural Difference

Hofstede[17], a Dutch scholar, conducted empirical studies using statistical techniques on cross-cultural differences among about 100,000 employees at 40 global companies in 1980. From this survey he presented the first four cultural dimensions, followed by 'long-term orientation' as the fifth cultural dimension in 1988. Finally, he added the 'indulgence vs. restraint' in 2001.

Adopting his model, cultural differences in the gamification attributes are compared and analyzed in six dimensions such as (1) individualism/collectivism, (2) power distance - aggressiveness or passivity of cultural acceptance, (3) uncertainty avoidance, (4) masculinity vs femininity, (5) long-term orientation, and (6) indulgence vs restraint.

3. Research Design and Hypotheses

3.1. Research Model

This study is designed to investigate how game elements affect fun, and what fun has more significant effect on flow and how cultural differences in game elements affect fun and flow as shown in Fig. 2.

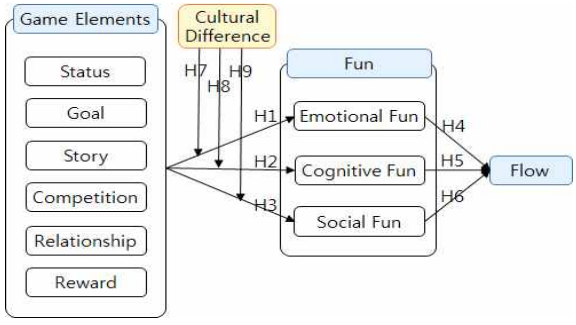

Fig. 2 Research model

Six game elements from Table 2 are adopted except 'onboarding,' because it simply explains the basic function and it will not have a significant influence on fun. Three types of fun such as emotional, cognitive, and social fun are included in the model.

3.2. Hypotheses

3.2.1 Game Elements and Fun

Why do people play games? In answer to this Malone(1981) presents three factors such as fantasy, challenge and curiosity[18]. Curiosity (What will happen if I do this?) in particular is identified as a common motive for playing games, because people become committed to games due to the immersive feeling gained through the suspension and expectation that something will happen. A survey result[19] support this belief. The primary reason for playing games is for "simple fun" (28.7%) followed by "to relieve stress," Except for the purpose of stress relief, people play games for simple fun.

Then, what is 'fun' in games? Fun in games occurs in the fulfillment process of desire and desire itself. Furthermore, game players find it fun to engage in and resolve conflicts. That is, they feel satisfied by taking the fun out of the experience of conflicts and the process of resolving them. This may apply to ordinary cultural content as fun in games is attributable to conflicts, desires, resolution and satisfaction.

Then, how do people satisfy their desires and how is it related to games? All players in games challenge themselves to satisfy their desires and act accordingly. To meet desires in games, it is necessary to make challenges. Each element is conducive to the fun of fulfilling the desires in games.

From the discussions in preceding studies can be developed the following hypotheses.

H1: Game elements have a positive(+) influence on Emotional Fun.

H2: Game elements have a positive(+) influence on Cognitive Fun.

H3: Game elements have a positive(+) influence on Social Fun.

3.2.2 Fun and Flow

Fun is similar to the concept of flow in the sense that the latter is also accompanied by the former when the condition is met in games[20]. In fact, the most notable experience in games is fun combined with interest and curiosity for the factors that users experience via flow[14-16]. Participating continuously in a game with interests and curiosity makes it possible for players to feel a sense of control and concentration in the immersive situations where they can have the optimal experience (flow). Furthermore, the flow state creates a continuous communication experience and a desire to repeat that experience. Therefore, the flow in a game is a way to understand how similar experiences are successively generated and how much users desire to sustain such experiences.

The following hypotheses, therefore, can be derived with reference to the assumption that pleasure influences immersion.

H4: Emotional fun has a positive(+) influence on flow.

H5: Cognitive fun has a positive(+) influence on flow.

H6: Social fun has a positive(+) influence on flow.

3.2.3 Cultural Difference

To test the mediation effects of cultural differences of game elements as independent variables on fun and flow in sequence, South Korea and Austria were sampled. Basically distinctive differences in culture of the two counties are delineated by their social context. According to Hall[21], Korea is categorized into 'high-context,' whereas Germany, similar to Austria, is categorized into 'low-context.' To take a deeper look at such contextual difference, Hofstede's six-dimension model was exploited.

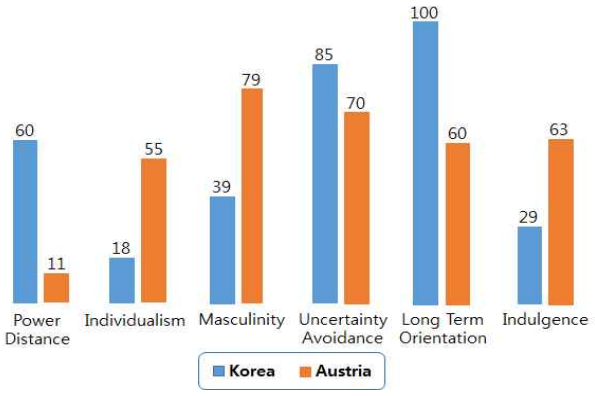

Fig. 3 Cultural differences by Dimension

As shown in Fig. 3, significant difference between Korea and Austria appears in five dimensions such as power distance(K(60)>A(11)), individualism(K(18)<A(55)), long-term orientation(K(100)>A(60)), masculinity(K(39)<A(79)), and indulgence(K(29)<A(63)).

In the background that Korea has way higher than Austria in collectivism, power distance, and long-term orientation perhaps lies confucianism which has long prevailed in Korea. Even today Koreans with a strong sense of organizational unity, prioritize the organizational value. Also, Koreana are more feminine, which can be explained by an extension of collectivism. the key feature of Confucian culture is to stress not material but spiritual value, interpersonal relationships and consideration toward others. Buddhism along with Confucian culture is also manifest in Korea. Thus, the long-term orientation is more dominant than in the West. Indulgence is weaker in Korea than in Austria because Koreans tend to suppress personal feelings and actions and also have less leisure time than Austrian.

On the other hand, Austria shows stronger individualism than Korea. This is a common tendency in the West toward distinguishing individuals from their surroundings. Power distance is quite low in Austria than in Korea because Austria's social structure is relatively equal and the individual independence is emphasized. Austria is shown as a masculine society in comparison to Korea. Austria has a strong tendency to achieve goals without avoiding conflicts. Similarly, Austria has a short-term orientation and thus shows more practical tendency to achieve the desire to enjoy life.

Presuming that these cultural differences will also affect in gamification, hypotheses are derived as follows.

H7: Cultural difference in game elements has mediate effects on emotional fun.

H8: Cultural difference in game elements has mediate effects on cognitive fun.

H9: Cultural difference in game elements has mediate effects on social fun.

4. Data Analysis and Results

4.1 Data Collection

The study was conducted in Korea and Austria over a period of November 10 to December 9, 2016. A total of 215 took part in the survey and 197 respondents (115 from Korean and 82, Austria) completed the questionnaire. In Korea 73(63.3%) were

men and 42(36.5%) were women while 36 (43.9%) were men and 46(56.1%) women in Austria.

By age, 86(74.8%) in Korea and 79(96.4%) in Austria were in their 20's to 30's, which accounted for the great majority of the samples. Undergraduate students took the majority, 64(55.7%) in Korea and 67(81.7%) in Austria.

4.2 Model Validity and Reliability

The analysis of data collected from the samples reveals that Cronbach;s α of every factor exceeds 0.6 as in Table 4, meaning that the model components are reliable. Composite reliability (CR) to measure the internal consistency in PLS also turned out to be reliable as CR for every factor is greater than 0.7. And discriminant validity of PLS is supported as the AVE (Average Variance Extracted) of each factor is greater than 0.5 and its square root is larger than the correlation coefficient between factors [22].

Table 4 Model Reliability and Validity

Factor	Korea Sample			Austria Sample		
	AVE	C.R.	Cron-bach α	AVE	C.R.	Cron-bach α
CF	0.6899	0.8693	0.7766	0.6300	0.8360	0.7065
EF	0.6432	0.8411	0.7139	0.7095	0.8794	0.7934
SF	0.6558	0.8511	0.7381	0.5615	0.7922	0.6044
competition	0.6371	0.8401	0.7185	0.6393	0.8410	0.7162
flow	0.7371	0.8937	0.8216	0.6379	0.8404	0.7139
goal	0.5838	0.8068	0.6466	0.5578	0.7868	0.6380
relationship	0.7338	0.8921	0.8189	0.6766	0.8619	0.7624
reward	0.6498	0.8468	0.7405	0.5796	0.8035	0.6488
status	0.5668	0.7959	0.6130	0.6309	0.8356	0.7178
story	0.7289	0.8893	0.8116	0.6544	0.8501	0.7456

4.3 Hypotheses Tests

In case of Korea, game elements such as goal, relationship, reward, status, and story affect fun. The path coefficient between goal and emotional fun is 0.2613 (t value = 2.0959> 1.96), which affects the emotional fun positively. The path coefficient between relationship and emotional fun is 0.2701(t value = 2.4863 > 1.96), which affects the emotional fun positively. In addition, the path coefficient for social fun is 0.5793(t value = 7.2318 > 2.58). It is a positive influence. The path coefficient between reward and emotional fun is -0.2379(t value = 2.2077> 1.96). It means that reward has negative effects on emotional fun. On the other hand, the path coefficient for social fun is 0.2046 (t v*alue = 2.6488> 2.58). Thus, reward affects the social fun positively. The path coefficient between status and emotional fun is -0.2584 (t value = 2.0032> 1.96), which affects the emotional fun negatively. Finally, the path coefficient between story and cognitive fun is 0.4263 (t value = 4.1838> 2.58), which affects the emotional fun positively. Social fun exerts effects on the relationship between fun and flow. The path coefficient between social fun and flow is 0.2988 (t value = 2.5509> 1.96), which affects the flow positively. The results of the above analysis are summarized in Table 5(a) and Fig. 4(a).

Table 5 Path Coefficient Analysis

	Korea Sample			Austria Sample		
	Coefficient	T value	Result	Coefficient	T value	Result
CF → Flow	0.1242	1.0399	Reject	0.3990	3.9424***	Support
EF → Flow	0.1012	0.9399	Reject	-0.0188	0.1400	Reject
SF → Flow	0.2988	2.5509**	Support	-0.0396	0.3867	Reject
Com → CF	0.0707	0.5890	Reject	-0.1094	1.1840	Reject
Com → EF	0.1092	0.7975	Reject	0.2202	1.7509	Reject
Com → SF	-0.0278	0.2853	Reject	0.2706	2.4650**	Support
Goal → CF	0.1153	0.9515	Reject	0.1449	1.5230	Reject
Goal → EF	0.2613	2.0959**	Support	-0.0439	0.3302	Reject
Goal → SF	0.0035	0.0343	Reject	-0.0243	0.2655	Reject
Relation → CF	0.1266	1.2369	Reject	-0.0313	0.2905	Reject
Relation → EF	0.2701	2.4863**	Support	0.2682	1.9734**	Support
Relation → SF	0.5793	7.2318***	Support	0.4860	4.6546***	Support
Reward → CF	0.1339	1.5071	Reject	0.3999	3.6380***	Support
Reward → EF	-0.2379	2.2077**	Support	0.0262	0.2417	Reject
Reward → SF	0.2046	2.6488***	Support	0.0481	0.4473	Reject
Status → CF	0.0060	0.0467	Reject	0.0546	0.4535	Reject
Status → EF	-0.2584	2.0032**	Support	-0.1348	1.0998	Reject
Status → SF	-0.0284	0.2598	Reject	-0.2162	1.7051	Reject
Story → CF	0.4263	4.1838***	Support	0.3003	3.5924***	Support
Story → EF	0.1029	0.9235	Reject	0.0789	0.6702	Reject
Story → SF	0.1018	1.1892	Reject	0.0099	0.1031	Reject

***p < 0.01, **p < 0.05

In Austria, game elements such as competition, relationship, reward, and story affect fun. The path coefficient between competition and social fun is 0.2706(t value = 2.4650> 1.96), which affects the social fun positively. The path coefficient between relationship and emotional fun is 0.2706 (t value = 2.4650> 1.96), which affects the emotional fun positively. The path coefficient for social fun is 0.4860(t value=4.6546 >2.58). It means that relationship affects both emotional fun and social fun. The path coefficient between reward and cognitive fun is 0.3999(t value=3.6380 >2.58), which affects the cognitive fun positively. Finally, the path coefficient between story and cognitive fun is 0.3003(t value=3.5924 >2.58), which affects the cognitive fun positively. Cognitive fun exerts effects on the relationship between fun and flow. The path coefficient between cognitive fun and flow is 0.3990(t value=3.9424 >2.58), which affects the flow positively. The results of the above analysis are summarized in Table 5(b) and Fig. 4(b).

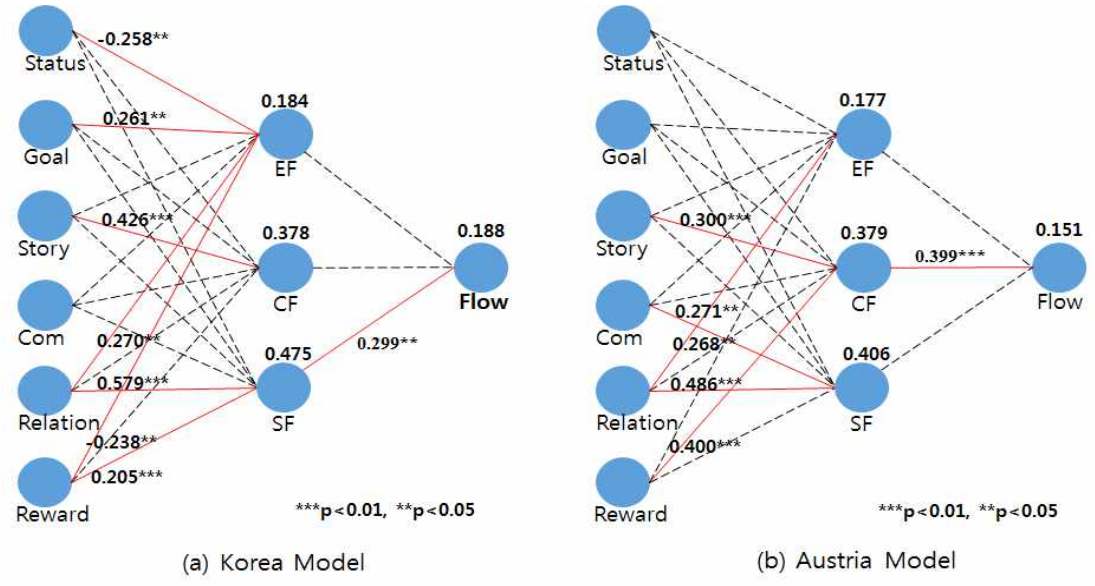

Fig. 4 The PLS results

5. Conclusion

This study intended to identify the game elements contributing to fun and the types of fun affecting the flow in Gamification so as to provide some implications to product or service designers and marketing managers. To this end, based on the literature review on Gamification, a model was developed and tested for its reliability and validity using PLS, followed by the analysis of the path of game elements to flow via fun. The contribution of this study is perhaps found in both theoretical and practical wise.

5.1 Theoretical Implications

Unlike preceding studies which mostly put focus only on the relationship between either game elements and fun or fun and flow, this study attempted to clarify which game element more effectively affects the types of fun and which type of fun more effectively affects flow by integrating game elements, fun and flow as a whole chain of experience. Futhermore, cultural factors are included as mediators in the model with a belief that cultural differences greatly affect fun and flow.

Perhaps the model proposed herein from the integrated view opens a new horizon in the research arena of gamification, in that cultural attributes of game elements work differently on fun and flow as proved in this study. Taking it in particular into account that gamification no longer remains within game arena and game industry is getting more globalized, it is sure meaningful to include cultural factors in the model.

5.2 Practical Implications

It is important to note that the effect of game elements on fun and fun on flow is different depending on the culture. The summary of the results is as in Fig. 5.

First, in Korea, social fun has the highest influence on flow, while the game elements

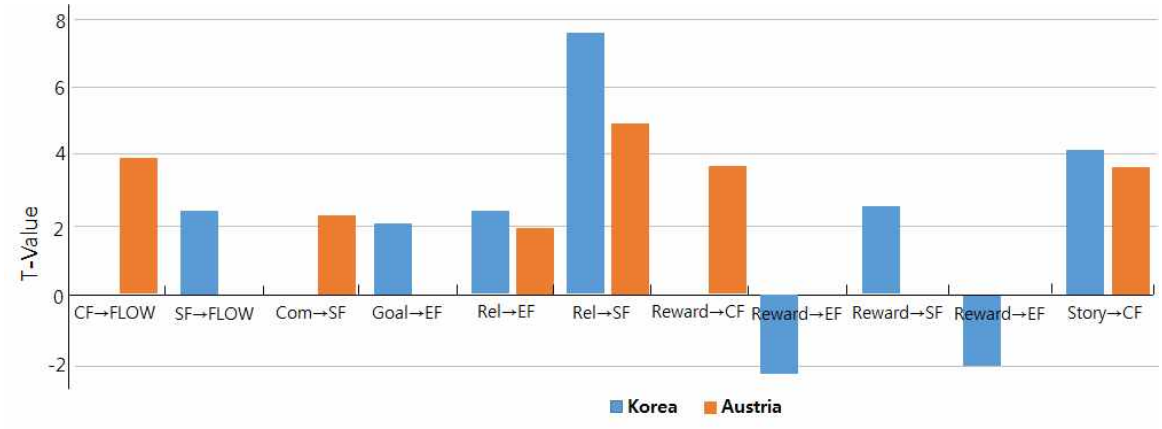

Fig. 5 The Meaningful Indicators

affecting the social fun are relationship and reward. This is perhaps because Korea is strongly influenced by collectivism where Koreans put more emphasis on cooperation and human relation as a important social norm. Reward also turns out to be a major game element, which means one's superior performance and higher ratings will lead to satisfaction and enjoyment. This result is supported by a study that Korea is much higher than Japan and Germany in terms of showing-off. This is perhaps attributed to the excessively competitive culture among individuals. Taken all together, in order to successfully implement gamification in the environment like Korea, it is essential to present the tasks or rewards that can be achieved through cooperation.

Second, in case of Korea cognitive fun and emotional fun did not affect flow, but some factors affecting each type of fun were identified. A goal has a positive impact on the emotional fun, meaning that players take fun out of specific and visible goals presented. This is perhaps attributed to the fact that Koreans have a high tendency to avoid uncertainty, which could be explained by the positive impact of goals on the emotional fun. Also, In power distance, Korea turns out to be much higher, which indicates Korean players feel comfortable with the system clearly defined rather than overly liberated. For this reason, sandbox games are rarely developed and their box office record is very low in Korea

The fact that 'status' has a negative impact on the emotional fun means quantifying player's skill reduces the motivation for playing games. As aforementioned, Koreans have a strong tendency to show off and therefore, if their scores or levels are high, they will have high satisfaction and fun, whereas they are easy to lose fun and interest in games unless they score high. For that matter, proxy work is often done in Korea to maintain high scores or levels regardless of actual skills. Taking this into account, developers are given the option to choose the public or private status,

Reward also has a negative impact on the emotional fun. Basically, reward affects fun but has a negative impact on the emotional fun, which means the fun that players feel through audiovisual components. That is,

the reward for players may do more harm than good. If the reward is on a public list, players may see it as a task, which might undermine motivation. Also, when feeling that compensation is not reasonable, they may lose interest in games. The developer, therefore, must design the reward system well so that rewards can bring surprises and fun to the players.

Third, in Austria, cognitive fun has the highest effect on flow. This is perhaps because Austrians tend to show a stronger individualistic tendency than Koreans with a significantly lower power distance. That is, Austrian culture puts more emphasis on individuals than groups. 'Story' can be seen as a means to enjoy the projection of individual experience, and has become a key game element in Austria because they focus more on self. Discovery or problem solving contributes to the cognitive fun, encouraging players to experience growth as a hero, evoking their curiosity. Therefore, Austrians feel inner satisfaction through the stories provided in games. For similar reasons, reward also has a positive impact on the cognitive fun. In Korea, reward is the main game element, bur it enables social fun. On the other hand, Austrians regard the reward as "my result". They value the reward itself, which is attributed to the individualist tendency and the low power distance. With all taken into account, for the successfully implement gamification in the environment like Austria, players should be provided with an appealing story and reward for their tasks.

Fourth, in Austria, the emotional fun and social fun did not affect flow, but some factors affecting fun were identified. As in Korea, relationship has a great influence on social fun, and competition has a positive effect on social fun, which is perhaps attributed to the fact that Austrian culture is more masculine than Korean culture. As masculinity has a strong tendency to confront conflicts, the competition factors may affect the social fun.

Fifth, it is found that 'story' has a big influence on cognitive fun in both countries. Previously, stories were neglected in game development. However, deep background settings and stories are perceived today as attractive elements to make people feel fun. In Korea, a variety of games are on the market, and the game backgrounds and settings are introduced even in very simple mobile games. This means that the stories are already recognized as a major factor in the market.

The findings and implications discussed above can be useful tips to not only game developers but product or service designers and marketing managers as well. It should be kept in mind game elements that induce immersion vary depending on the cultural attributes and a successful Gamification requires profound understanding of different cultures. This study confirmed that cultural differences in game elements are conducive to fun and the types of fun may exert strong influences on immersion.

5.3 Limitation

Although this study has contributed to some extent in academic and practical wise, it has the following limitations. First, it is necessary to substantiate the findings by carrying out experimental analysis with real world cases, through which the actual states of users with different cultural backgrounds need to be monitored and the game elements, fun and the flow factor

should be derived.

Second, the samples used in this study are mostly composed of college students in their 20s and 30s, which is far from representing the whole population of Korea and Austria. Future research, therefore, needs to cover a wider range of age groups and occupations.

Third, this study does not demonstrate any differences specific to certain fields such as industry, management, healthcare, education, etc. Future research will need to look at the differences in application areas.

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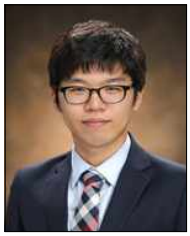

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