

Domain of Fun in Information Systems*

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〈Contents〉

I. Introduction	III. Research Model
II. Literatures with Similar Construct	3.1 What's the difference of Fun?
2.1 Perceived Enjoyment	3.2 Domain of Fun
2.2 Flow	IV. Scale Development
2.3 Cognitive Absorption	V. Data Analysis and Results
2.4 Perceived playfulness	VI. Discussion and Conclusion
2.5 Pleasure	Reference
2.6 Fun (Single dimension)	<Abstract>

I. Introduction

Every individual has their own personal goals or objectives that they want to achieve when using a particular Information Systems (IS). Therefore, researchers have been trying to figure out why people decided to use certain application over another option. At the beginning, these researchers only focused on utilitarian IS, however hedonic IS is no longer left out. Utilitarian IS mainly focused on productivity and hedonic IS on the other hand focused on pleasure. Van der Heijden (2004)

concluded that ease of use and enjoyment wins over perceived usefulness when describing user acceptance for hedonic information systems. Previous studies in IS often used the term intrinsic motivation to represent constructs such as perceived enjoyment, pleasure and others. Therefore, this study will be used to refer to those constructs mentioned in previous literatures to maintain consistency. However, this term was not correctly used as those constructs are not presenting motivation but feedback or reward gained from an act. In this study, rather than examining the extrinsic rewards that motivate individuals to use certain

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application, this study is interested to examine the intrinsic reward, in particular fun.

In everyday usage, fun is often used casually to describe many things in life. Fun can be used to describe a fun person like friend, teacher or housemate; a fun place like house, classroom or university; a fun activity like attending a party, being a part of discussion session, or going for a meeting and many other things. Anything that invokes excitement, enjoyment or pleasure can casually be described as fun. However what are the factors that make an activity, a person, a place or an object fun is not easy to be explained. Furthermore, everyone's expectation and view of fun is different and one's opinion of a fun activity could contradict with other people's opinion of a fun activity. As mentioned by McManus and Furnham (2010), fun is not a single concept but a complex phenomenon. They also mentioned that fun can be an activity, a state or a trait. Based on their collection of related researches, it can be concluded that there is no conclusive work in psychology that offers a definition of fun that clearly distinguishes it from other positive emotional elicitors, triggers or states. In fact, even their study was conducted just to understand how lay people understand the term fun. Furthermore, fun can also be seen as an attribute of a person. People used descriptions such as "they are jolly good fun" or "he is a fun person to spend time with" to describe attributes of an individual. On the other hand, fun can also be the property of an

activity; such as "swimming is good fun" or "attending his birthday party is always fun". In order to understand fun better, a collection of literatures with similar constructs as fun was gathered and analyzed.

II . Literatures with Similar Construct

2.1 Perceived Enjoyment

The most common definition of perceived enjoyment adopted by previous researches is "The extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated." Perceived enjoyment always represents a form of intrinsic motivation rather than extrinsic motivation. Therefore, it is a construct that usually used to evaluate hedonic systems rather than utilitarian systems. Warner (1980) defined enjoyment using three dimensions; engagement, positive effect and fulfillment. Lin, Gregor and Ewing (2008) in developing measurement for perceived enjoyment adopted this definition as the benchmark. Perceived enjoyment (Davis, Bagozzi, and Warshaw, 1992) has influence even towards utilitarian systems as an intrinsic motivator. It is expected that a system that is perceived to be low in perceived enjoyment, users are less likely to develop positive attitudes

towards their usage.

2.2 Flow

Flow is a concept introduced by Mihaly Csikszentmihalyi. The concept of flow was discovered while Csikszentmihalyi was studying people who seemed to enjoy doing things that do not have any external rewards such as money or fame. Those people described the optimal experience as “the feeling when things were going well as an almost automatic, effortless, yet highly focused state of consciousness” (Csikszentmihalyi, 1991). According to Chen, Wig and Nilan (2000), flow is an optimal, extremely enjoyable experience when an individual engages in an activity with total involvement, concentration and enjoyment, and experiences an intrinsic interest and the sense of time distortion during his/her engagement. It is assumed that an individual engages in an activity because it is intrinsically rewarding. In other words, the motivation to engage in an activity is simply because it is fun and enjoyable. An individual might begin an activity with an extrinsic motivation as a goal but is replaced by an intrinsic motivation. For example, I need to read this book to write my book report but the activity of reading is fun and enjoyable which leads to enjoyment and engagement in flow. My extrinsic motivation is replaced by intrinsic motivation unconsciously. Meanwhile, Hoffman and Novak (1996) defined

flow on the web as “the state occurring during network navigation. On the other hand, Novak et. al. (2000) suggested “flow on the web is a cognitive state that can be determined by 1) high levels of skill and control, 2) high levels of challenge and arousal, 3) focused attention and 4) is enhanced by interactivity and telepresence.” However, a lot of these studies included interest or enjoyment as one of its dimensions.

2.3 Cognitive Absorption

In 2000, Agarwal and Karahanna (2000) introduced the concept of cognitive absorption in technology usage. This construct was introduced in the theoretical model as an antecedent for perceived usefulness and perceived ease of use. Cognitive absorption is defined as “a state of deep involvement with software”. The development of cognitive absorption was based on three theoretical backgrounds. The three theoretical backgrounds are absorption (Tellegen and Atkinson, 1974), theory of flow (Csikszentmihalyi, 1990) and cognitive engagement (Webster and Ho, 1997). Tellegen and Atkinson (1974) defined absorption as individual traits or dispositions that led to events of total intention, where the object of attention fully consumes the resources of the individual. Meanwhile, flow is as discussed in the previous section and lastly, engagement is defined by Webster and Ho

(1997) as individual subjective experience of human-computer interaction. This state is posited as an intrinsic motivation related and very critical in understanding users' behaviors with Information Systems. The dimension named heightened enjoyment aims to demonstrate the state of pleasure whenever an individual performed certain activity using Information Systems. In this dimension, there is absorption and capture of pleasure and fun that users experience while interacting with a system.

2.4 Perceived playfulness

The earlier study on playfulness was done by Webster and Martocchio (1995) focusing on microcomputer playfulness. They defined microcomputer playfulness as “the degree of cognitive spontaneity in microcomputer interactions”. A study done by Chu and Lu (2007) defined perceived playfulness as the degree to which the consumer believes that enjoyment could be derived when listening to online music. Since the study was done on online music purchase intention, the definition of perceived playfulness only focused on online music. The study suggested that perceived playfulness is a significant predictor of perceived value of online music for both purchasers and potential purchasers. Meanwhile, Hsu and Chiu (2004) in their study defined perceived playfulness exactly the same as

perceived enjoyment defined by Davis, Bagozzi and Warshaw (1992). Igbaria, Schiffman, and Wieckowski (1994) also defined playfulness quite similar to perceived enjoyment definition. They defined playfulness as “The extent to which the activity of using a computer system is perceived to be personally enjoyable in its own right aside from the instrumental value of the technology”. Furthermore, Moon and Kim (2001) suggested that perceived playfulness consists of three dimensions, specifically in Internet usage. Those three dimensions are concentration, curiosity and enjoyment.

2.5 Pleasure

The term pleasure in this study refers to various terms that were used to refer to positive feelings towards IS usage. Mathwick and Rigdon (2004) in their study included perceived play as one of construct measured. And one of the dimensions of perceived play is intrinsic enjoyment that referred to well-documented, self-oriented reward that can transform information search into a leisure experience in its own right. Meanwhile, Sen, Subramaniam and Nelson (2008) adopted intrinsic motivation as one of the construct in their study. One of the dimension of intrinsic motivation is creative pleasure that was defined as “...makes the activity interesting and the activity is performed for its own sake as a mean to an end”.

2.6 Fun (Single dimension)

Igbaria, Schiffman and Wieckowski (1994) described fun as an example of intrinsic motivation. Specifically, fun refers to “The performance of an activity for no apparent reinforcement other than the process of performing the activity per se”. All previous studies that adopted fun as one of its construct defined fun as a single dimension. There is a few other research fields other than IS that considered fun as one of the concepts worth to be further investigated. However most of these studies are not empirical study, so there are almost no development of measurement scales and operational definition of fun. One of the research fields is Human Computer Interaction (HCI). In this field, fun is considered important to design software, and the focus was on the relationship of learning and fun. According to Draper (1999), fun which is a user response or experience, is important in software design. Meanwhile, a study done to measure fun, usability and learning in software was conducted by Sim, MacFarlane and Read (2006) involving children. Their work suggested ‘Fun Sorter’ to evaluate fun in a product when the users are children. Their study is important since a lot of educational products are available for children nowadays and it is important to have fun software but still being able to deliver the educational knowledge. A book written by Prensky (2001) discussed in detail about fun in

the fifth chapter entitled ‘Fun, Play and Games: What Makes Games Engaging’. His view on why computer and video games is engaging presented twelve elements and one of them is fun. Second field of study that emphasized on fun is those related to computer games (Skalski, Tamborini, Shelton, Buncher and Lindmark, 2011; Johansson, 2009; Choi, Kim and Kim, 1999). A study done on video games by Skalski, Tamborini, Shelton, Buncher and Lindmark (2011) examines how video games interactivity can affect presence and game enjoyment. The results showed that higher levels of perceived naturalness enhance player’s enjoyment. Johansson (2009) in his study examine what is the fun part of a game. His study was done by adopting two theories for evaluating the enjoyment of games. Those two theories are Malone’s principle of intrinsic qualitative factors for engaging game play and; Sweetster and Wyeth’s theory of GameFlow. Malone’s principle consists of three characteristics of a good computer games which are challenge, fantasy and curiosity. Meanwhile, Sweetster and Wyeth’s GameFlow was built based on Csikszentmihalyi’s Flow model. GameFlow suggested that player enjoyment is based on eight elements which are concentration, challenge, skills, control, clear goals, feedback, immersion and social interaction. On the other hand, another group of HCI researchers defined fun game and divided it into two types which are perceptive fun and

cognitive fun (Choi, Kim and Kim, 1999). They presumed that gamers play games by experiencing both the games interface as well as the game mechanics. Perceptive fun refers to the game interface by watching characters or background images; and also listening to sound. Meanwhile cognitive fun refers to the game mechanics by how gamers solve problems and interact with the game.

Another field of study that focused a lot on fun concept is work and fun related researches. Rapuano (2009) work on this used the term 'leisurework' which was defined as "disguising work as leisure obscures the private appropriation of profit". Her work actually wanted to explore how those musicians and others misrecognize a work activity as leisure or in simpler word, how people can become workers without being aware of it. Meanwhile, Fleming (2005) in his work discussed in detail the trend called "culture of fun" that was prescribed as enhancing work productivity. However, the results showed that employees are cynical about the blurring of work and nonwork for various reasons.

An interesting study done by Tews, Michel and Bartlett (2012) discussed how the job seekers are influenced by workplace fun when searching for jobs. The results of their study suggested that by comparison to compensation and opportunities for advancement, workplace fun is a stronger predictor for applicants. Furthermore, the results showed that in the later

stages of the recruiting process, fun coworker interactions and fun job responsibilities have a stronger impact on applicants than formal fun activities. In this study, Tews, Michel and Bartlett (2012) included as part of their literature dissertations done by Fluegge (2008) and McDowell (2004) who conceptualized fun in workplace into several dimensions. The dimensions were then aggregated into an overall construct. The dimensions are socializing, celebrating, personal freedoms and global fun. Both of them defined fun at work as "engaging in activities not specifically related to the job that are enjoyable, amusing, or playful, and that enhance organizational performance".

III. Research Model

3.1 What's the difference of Fun (multiple dimensions)?

Out of the six similar constructs collected, the one which is the most similar to fun is perceived enjoyment. Meanwhile, perceived playfulness and pleasure most of the time were defined very similarly to perceived enjoyment as shown by the collection of literatures even though the term to define them is different. Therefore, this study grouped perceived playfulness and pleasure in the same group as perceived enjoyment. Perceived enjoyment was almost always defined as a single dimension

construct. Furthermore, applications which are used to study this construct are usually intrinsic motivation related applications (hedonic information systems). On the other hand, the new fun construct will consist of a few dimensions. On the other hand, flow and cognitive absorption are a more restricted concept compared to perceived enjoyment. Flow is very well defined as a state of consciousness in which individual loses sense of time and external surrounding as he/she got really into the activity. And this state of mind is not just achieved simply by enjoying themselves but also involve curiosity, interest, control, concentration and so on. It is also a similar scenario for cognitive absorption. On the other hand, the new fun construct is a simple construct that investigate individuals experiencing fun as they are using certain information systems. Fun is assumed to be experienced even without putting any emphasize on the level of concentration, control, interest and so on.

One of the most common terms that being used to described all these constructs is intrinsic motivation. However, it is a conflicting term as motivation is a state before certain act or behavior takes place. For example, before sending a message to a friend, an individual certainly will have a motivation behind that action which mostly referred to in IS as extrinsic and intrinsic motivation. However, the enjoyment and pleasure that were experienced

from that action are not intrinsic motivation. Instead it refers to a feedback or negative/positive reward received from an action. In this study, that feedback will be referred to as an intrinsic reward. Therefore in this study, fun refers to intrinsic reward that users experienced after certain behavior. This behavior could be motivated by an extrinsic motivation only, intrinsic motivation only or both extrinsic and intrinsic motivation.

3.2 Domain of Fun

3.2.1 Sociability

Sociability is defined by Gifford (1981) as verbal participation. It is assumed that sociability is influenced by a wide range of variables, namely traits, settings and interactions. For traits, it is expected that an individual who is affiliate and exhibitionistic but not defensive will has greater sociability. Meanwhile for settings, it was measured by seating arrangement and emotional qualities of the environment (elicited pleasure, arousal and dominance). The interactions between these two variables (traits and settings) were then designed to study different kind of interactions among traits and among measures. Three variables were measured: function of traits, social context and physical setting. The results from this study found that participants rate was significantly related to affiliation, level of friendship. On the other hand, Cheek and Buss

(1981) defined sociability as a tendency to affiliate with others and rather than being alone, prefer being with others. Their study was based on previous studies that proposed low sociability is essentially the same as shyness. However, their findings suggested that shyness is different from low sociability. Hence, there are individuals who are shy-sociable.

In this study, sociability is a type of fun invokes by interaction with another person or even with the systems itself. This includes joking, laughing, talking, being intimate and feeling the romance. In real life situation, type of activities that usually associated with sociability are socializing with friends, hanging out with friends, being with friends, out with friends, and when out with the girls. Sociability is a dimension of fun that is experience when individuals are enjoying themselves by interacting with another person. In the point of view of IS usage, this person could be presented by the system itself. This dimension is critical for IS application because most of current applications offer communication enabled functionalities regardless of its main functionality. For example, when an individual is playing a game on a free online games website, there are interaction functions that encourage the player to interact with other players of the same game to ask for help to win each stage. Furthermore, every time the player wins or loses a game, the status is also available for other players to view. This kind of

unconscious interaction is built into applications that are mainly not designed for communication. Therefore, in order to understand fun experienced by users of IS, sociability is expected to play a significant role.

3.2.2 Contentment

When studying the commitment in a relationship, contented partners were found to be less likely to pay attention to the quality of other alternatives (Miller, 1997). Instead, contented partners helped in protecting the relationship from desirable alternatives and remained committed. Warr (1990) developed a new instrument to measure job-related and non-job mental health. The findings showed that anxious-contented and depressed-enthusiastic dimensions were affected by different factors such as occupational level, skill, task variety and workload. Contentment can be seen as something that individuals experience in stable state. This could happen when an individual is happy, he/she will not search for another option even if other available options are more desirable. This not only applied to romantic relationship, but also friendship, job security, brand loyalty and others.

The second type of fun is contentment that is invoked by feeling contented. This includes being peaceful, warmth, relaxed, being content and blissful. In real life situation, types of activities that usually associated with contentment are gardening, being at home, went

to the beach, being with people I like, swimming, being with friends, spending time in favorite café, studying and listening to music. Contentment is a dimension of fun that is experienced when individual feels contented and relaxed. Most of the activities related to contentment are relax activities that do not involved a lot of hard, hectic movement and require minimum interaction with not so close people or even strangers. This dimension is critical for IS because it can differentiate between new and established applications. Furthermore, age, personal characteristics and experience of users might also be important factors that determine this dimension of fun. For example, an early adopter might be low in contentment dimension of fun because he/she always looks forward to new innovations and enjoys being challenge. On the other hand, a late adopter enjoys using known technology without searching for new innovations. This group of people most likely will find contentment to be important for them to experience fun and hate to be challenged to try new things.

3.2.3 Achievement

The need for achievement refers to the strong desire to complete a task or a goal accompanied with an obsession with a job or a task to be done (Riipinen, 1994). There are two groups of individuals, those with high achievement motivation and those with low achievement

motivation. Cury, Elliot, Da Fonseca and Moller (2006) in their work adopted social-cognitive model to design achievement motivation and achievement framework.

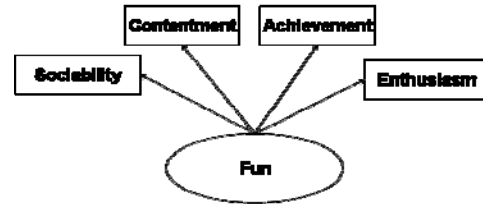
The third type of fun is achievement which is invoked by feeling accomplished. This includes being focused, challenged, accomplished, absorbed, engrossed and inspired. In real life situation, example of activities are acting in a play, playing soccer with friends, winning in a game, horse riding, playing computer games with friends, jamming with friends, when creating something interesting and achieving a goal. In general, these activities are challenging activities with a set of goals in the mind of the doer. For example, when playing a computer game against a friend, the goal is to win against this friend. So, the game playing is fun because of the challenge to try to beat someone. In another circumstances, individuals have fun when they push themselves out of their boundaries or out of their comfort zone. However, not everyone enjoys these circumstances and chooses to remains comfortable without pushing themselves. Therefore, this dimension of fun expected to be dependable of users' personality, motivation and many other external factors such as peer pressure, external competition and so on. Hence, achievement dimension is a dimension that deems to be part of fun but with a lot of attachment to it. However, removing this dimension will reduce the scope of fun and not acceptable for a

formative constrrrruct such as fun.

3.3.4 Enthusiasm

Study done by Cifre and Salanova (2002) represented positive aspects of work (contentment and enthusiasm) against negative aspects of work (anxiety and depression). The terms that were used to describe these four dimensions are tense, uneasy, worried, calm, contented, relaxed, depressed, gloomy, miserable, cheerful, enthusiastic and optimistic.

Lastly, the dimension enthusiasm refers to a feeling of excitement which overflows with eager enjoyment and lively interest. This includes feeling excited, interested, and even sensual. This dimension relates to individual's focus of interest and even to the extent of idolization of a subject or a cause. In real life situation, activities that can be related to this dimension are having good food with great company, watching films, spending time with my boyfriend/girlfriend, watching a concert and going to the theme park. In general, these activities are sources of excitement when an individual has interest in a subject or a cause. For example, when someone is enthusiastic about helping poor people, even though it is hard and requires a lot of energy, time as well as money, the hardship is not going to stop him/her. Instead he/she is willing to do anything.



<Figure 1> Types of Fun

IV. Scale Development

The scale for fun construct was developed by adapting Mackenzie, Podsakoff and Podsakoff (2011) recommended techniques.

Their work contains techniques that MIS researchers as well as behavioral researchers can adapt to develop valid measures. Below is the overview of the scale development procedure.

The first step is to define the conceptual domain of the construct, which is fun construct for this study. This step is important in order to represent as well as to differentiate fun construct from other related constructs. There are four factors to consider in construct conceptualization that was suggested by Mackenzie, Podsakoff and Podsakoff (2011) which are examine the previous literature reviews, specify the nature of the construct's conceptual domain, specify the conceptual theme of the construct and define the construct in unambiguous terms. The collective of related literature reviews already been discussed in previous section of this dissertation. In order to

specify the nature of the construct, there are two things to consider, the property that the construct represents and the entity to which it applies. For fun construct, its entity is person and its general property is positive feelings. As discussed previously, fun construct is a multidimensional and may change over time, across situations and across cases. This attributes of fun construct make it hard for researchers to fully understand it.

Fun is developed as a multidimensional construct. A multidimensional construct is a construct with more than one dimension. The measurement for each dimension can be either using reflective or formative items (Petter, Straub and Rai, 2007). Petter, Straub and Rai (2007) clarify that "... we would like to argue very explicitly that not all multidimensional constructs are formative". Hence, when developing a measurement scale for a new construct even for a multidimensional construct, one of the most important steps is in deciding whether reflective or formative perspective should be adopted. Diamantopoulos and Sigauw (2006) in their study suggested that the choice of measurement perspective has impacts on the content, parsimony and criterion validity of the derived coordination measures. Hence, this step is very crucial to ensure the validity of the evaluated research model. Therefore, to develop fun as a multidimensional scale, the step in deciding whether reflective or formative perspective should be adopted was considered

very seriously. Thus, this section will discuss three important parts: 1) what is reflective construct? 2) What is formative construct?, and lastly 3) What structural model is considered to be a reflective or a formative model?

So, what is reflective construct? A reflective construct can be identified by a set of considerations (Jarvis, Mackenzie and Podsakoff, 2003). Firstly, the direction of causality is from construct to measure. Secondly, the measures expected to be correlated. It is expected that the measures should possess internal consistency reliability. Thirdly, dropping an indicator from the measurement model does not alter the meaning of the construct. And lastly, takes measurement error into account at the item level.

On the other hand, what is formative construct? In order to identify formative construct, there are also a set of considerations (Jarvis, Mackenzie and Podsakoff, 2003). Firstly, direction of causality is from measure to construct. Secondly, there is no reason to expect the measures are correlated, therefore internal consistency is not implied. Thirdly, dropping an indicator from the measurement model may alter the meaning of the construct. And lastly, takes measurement error into account at the construct level.

And lastly, what structural model is considered a reflective model or a formative model? Petter, Straub and Rai (2007) mentioned that a structural model that consists of only

reflective constructs is a reflective model, whereas a structural model that consists of even at least one formative construct is considered to be a formative model. Based on Jarvis, Mackenzie and Podsakoff (2003), there are four decision rules to determine whether a construct is a reflective or a formative construct. Additionally, Coltman, Devinnet, Midgley and Venaik (2008) suggested a framework for assessing reflective and formative models. Firstly, for reflective construct, the construct exists independent of the measures used while for formative construct, the construct is determined as a combination of its indicators. Secondly, for reflective construct, the causality is from construct to items and for formative construct, the causality is from items to construct. And thirdly, for reflective construct, items are manifested by the construct while for formative construct, items define the construct.

In this stage, it is critical to conduct brainstorming sessions that encourage discussion and arguments about the nature of the construct. Based on these sessions, points of views were collected and a collective decision was made. Based on the collection of literatures as well as the sessions with expert panel, multidimensional fun is designed and developed as a formative construct. There are few reasons why fun is considered to be a formative construct. Firstly, the proposed four dimensions are consisting of types of fun which are sociability, contentment, achievement and

enthusiasm. The four dimensions of fun are necessary to form the construct and ignoring one of them will undermine the construct itself. This construct was formed with the expectation that each dimension will have different effect according to the type of IS that users are using. It is predicted that users will experienced different type of fun based on the application that they use. Secondly, the items for fun construct should not be removed without a lot of consideration. Removing one or more items from the construct will alter the conceptual domain of the fun construct.

The second step is to generate items to represent the construct. Based on the collection of literatures, the four dimensions of fun were further represented by the following measurement items which were altered to suit MIS. Firstly based on McManus and Furnham (2010) study, an initial measurement items were developed. Secondly, the developed items were further compared with the conceptualization for each dimension. Table 1 contains the initial measurement items for each dimension of fun.

The third step concentrates on assessing the content validity of the items. Straub, Boudreau and Gefen (2004) define content validity as “the degree to which items in an instrument reflect the content universe to which the instrument will be generalized”. According to Mackenzie, Podsakoff and Podsakoff (2011), there are two

<Table 1> Dimensions and Measurement Items for Fun

Dimensions	ID	Items
Sociability	SOC1	I enjoy joking around when using this application.
	SOC2	I always end up laughing when using this application.
	SOC3	I spend time talking to people when using this application.
	SOC4	I feel entertained when using this application.
	SOC5	I can feel the intimacy when using this application.
	SOC6	I can feel the romance when using this application.
	SOC7	I feel vulnerable when using this application.
Contentment	CONT1	I feel peaceful when using this application.
	CONT2	I can feel the warmth when using this application.
	CONT3	I feel relaxed when using this application.
	CONT4	I feel loved when using this application.
	CONT5	I can feel the care when using this application.
	CONT6	I feel contented when using this application.
	CONT7	I feel blissful when using this application.
	CONT8	I can be spontaneous when using this application.
	CONT9	I tend to be playful when using this application.
Achievement	ACH1	I am focused when using this application.
	ACH2	I feel challenge when using this application.
	ACH3	I feel that I accomplish something when using this application.
	ACH4	I am totally absorbed when using this application.
	ACH5	I am totally engrossed when using this application.
	ACH6	I am inspired when using this application.
	ACH7	I feel that I am witty when using this application.
Enthusiasm	ENT1	I feel sensual when using this application.
	ENT2	I feel lustful when using this application.
	ENT3	I feel ecstatic when using this application.
	ENT4	I feel like being crazy when using this application.
	ENT5	I feel excited when using this application.
	ENT6	I feel energetic when using this application.

important factors that should be analyzed when assessing content validity. Firstly, "Is the individual item representative of an aspect of the content domain of the construct?" and secondly, "Are the items as a set collectively representative of the entire content domain of the construct?" Based on suggestion by Mackenzie, Podsakoff and Podsakoff (2011), this step was conducted according to procedure

suggested by Hinkin and Tracey (1999) which was illustrated by Yao, Wu and Yang (2008). Hinkin and Tracey (1999) recommended usage of rating task to examine content validation. This technique was used to assess the strength of relations between an item and its construct. The results from this task will show whether an item has the strongest relation between the item and its posited construct.

V. Data Analysis and Results

Altogether there are two steps that need to be completed for content validation of the measurement items for each dimension in fun construct. The first step was done by asking participants to rate the appropriateness of each item for different construct using Likert-scale. The second and last step was done by conducting one-way ANOVA. One way ANOVA was used to assess whether an item's rating on one aspect of the construct's domain differs from its ratings on other aspects of the construct's domain. These items were tested using 244 participants. They are university students who enrolled for subjects offered by Department of Business Administration in University (Table 2).

In table 3, the appropriateness ratings of each item (29 items) on the four domains (Sociability,

Contentment, Achievement, Enthusiasm) are shown. On top of that, the results of F-test are also presented. The appropriateness value of the posited domains for each item is highlighted. It was expected that domain with the highest appropriate value for each item is the posited domain for each item. However, the results showed that there are some items that have the highest appropriate value not in the posited domain such as Item 2, 4, 11, 12, 20, 21, 22, 24, 26, 28 and 29. Among these items, two items are originally from sociability domain (Item 2 and 4), two items are from contentment domain (Item 11 and 12), three items are from achievement domain (Item 20, 21 and 22) and four items are from enthusiasm domain (Item 24, 26, 28, 29).

Out of the original 29 items, 11 items are not in the posited domain. Therefore, another step was taken after content validation was conducted.

<Table 2> Demographic Characteristics of the Sample

Variables	Sample Composition	No.	Percentage
Age Group	20 - 23 years old	91	38.89
	24 - 26 years old	102	43.59
	27 - 29 years old	41	17.52
Gender	Female	81	34.62
	Male	153	65.38
Daily usage of mobile device	1 - 3 hours	108	46.15
	4 - 6 hours	62	26.50
	7 - 9 hours	21	8.97
	More than 10 hours	43	18.38
Number of years of using mobile device	1 - 6 years	164	70.09
	7 - 12 years	65	27.78
	More than 13 years	5	2.14
Mobile usage	Smart phone	228	97.44
	Normal phone	6	2.56

<Table 3> Results of appropriateness rating of each item on four domains

No.	Original domain and item	Valid N	Mean value				$F(df_1, df_2)$	Highest domain
			SOC	CONT	ACH	ENT		
1	I enjoy joking around when using this application.	244	4.557	3.557	2.684	2.176	F(4, 1215)=252.19	SOC
2	I always end up laughing when using this application.	244	3.311	3.828	3.020	2.316	F(4, 1215)=79.42	CONT, SOC
3	I spend time talking to people when using this application.	244	4.418	3.582	2.627	2.156	F(4, 1215)=227.17	SOC
4	I feel entertained when using this application.	244	3.258	3.906	2.824	2.453	F(4, 1215)=78.38	CONT, SOC
5	I can feel the intimacy when using this application.	244	3.980	3.475	2.697	2.148	F(4, 1215)=120.45	SOC
6	I can feel the romance when using this application.	244	3.160	3.102	2.475	2.482	F(4, 1215)=16.26	SOC
7	I feel vulnerable when using this application.	244	3.758	2.828	2.602	2.293	F(4, 1215)=53.97	SOC
8	I feel peaceful when using this application.	244	3.053	3.816	2.939	2.211	F(4, 1215)=75.39	CONT
9	I can feel the warmth when using this application.	244	3.439	3.463	2.713	2.156	F(4, 1215)=63.75	CONT
10	I feel relaxed when using this application	244	3.303	3.746	2.865	2.129	F(4, 1215)=83.52	CONT
11	I feel loved when using this application.	244	3.221	3.197	2.586	2.328	F(4, 1215)=26.26	SOC, CONT
12	I can feel the care when using this application.	244	3.598	3.361	2.545	2.174	F(4, 1215)=67.07	SOC, CONT
13	I feel contented when using this application.	244	3.295	4.082	3.357	2.182	F(4, 1215)=127.20	CONT
14	I feel blissful when using this application.	244	3.107	3.742	2.996	2.197	F(4, 1215)=70.46	CONT
15	I can be spontaneous when using this application.	244	2.955	3.561	2.840	2.570	F(4, 1215)=36.07	CONT
16	I tend to be playful when using this application	244	3.016	3.307	2.393	2.680	F(4, 1215)=17.79	CONT
17	I am focused when using this application.	244	2.742	3.307	3.537	2.471	F(4, 1215)=65.69	ACH
18	I feel challenge when using this application.	244	2.520	3.193	3.811	2.275	F(4, 1215)=111.11	ACH
19	I feel that I accomplish something when using this	244	2.410	3.447	4.045	2.123	F(4, 1215)=163.80	ACH
20	I am totally absorbed when using this application.	244	2.840	3.668	3.139	2.385	F(4, 1215)=62.17	CONT, ACH
21	I am totally engrossed when using this application.	244	2.447	3.504	3.012	2.516	F(4, 1215)=19.30	CONT, ACH
22	I am inspired when using this application.	244	2.844	3.447	3.176	2.227	F(4, 1215)=52.75	CONT, ACH
23	I feel that I am witty when using this application.	244	2.820	3.643	3.742	2.141	F(4, 1215)=123.14	ACH
24	I feel sensual when using this application.	244	2.652	3.184	3.025	2.578	F(4, 1215)=11.49	CONT, ACH
25	I feel lustful when using this application.	244	2.176	2.705	2.266	3.123	F(4, 1215)=31.53	ENT
26	I feel ecstatic when using this application.	244	3.213	3.414	3.377	2.279	F(4, 1215)=73.84	CONT, ACH
27	I feel like being crazy when using this application.	244	2.672	2.980	2.713	2.999	F(4, 1215)=24.30	ENT
28	I feel excited when using this application.	244	3.135	3.561	2.926	2.361	F(4, 1215)=51.73	CONT, SOC
29	I feel energetic when using this application.	244	2.922	3.172	2.840	2.455	F(4, 1215)=21.08	CONT, SOC

This step was done by conducting an exploratory factor analysis. This step was done by maintaining all 29 items in the pilot study done for the proposed research model. The pilot study was conducted among Daegu University students. A valid sample of 234 responses managed to be collected. Most of the participants are in between 24 to 26 years old and male students are almost two times more than female students. The daily usage of mobile

devices is in the range from 1-3 hours daily up to more than 4-6 hours daily. And as expected, almost all students are using smart phone currently with the exception of six students. The data collected from this pilot study was used to conduct the factor analysis.

The factor analysis results showed that among the 29 items, 10 items are not in the posited domain. However, not all of these items

<Table 4> Item Loading from the Factor Analysis of the Fun Items collected during Pilot Study

Items	SOC	CONT	ACH	ENT
SOC1	0.782	-0.019	0.071	0.031
SOC2	0.670	0.360	0.128	0.030
SOC3	0.738	-0.001	0.020	0.100
SOC4	0.642	0.299	0.333	0.000
SOC5	0.412	0.191	0.236	0.570
SOC6	0.149	0.342	0.073	0.759
SOC7	-0.111	0.013	0.145	0.765
CONT1	0.223	0.675	0.122	0.294
CONT2	0.096	0.741	0.043	0.366
CONT3	0.379	0.544	0.063	0.397
CONT4	0.138	0.739	0.061	0.396
CONT5	0.137	0.678	0.090	0.462
CONT6	0.580	0.244	0.272	-0.001
CONT7	0.343	0.572	0.351	0.174
CONT8	0.236	0.380	0.382	0.079
CONT9	0.024	0.269	0.149	0.286
ACH1	0.156	0.152	0.675	0.082
ACH2	0.014	0.503	0.585	0.101
ACH3	-0.049	0.550	0.541	0.260
ACH4	0.244	0.132	0.605	0.214
ACH5	-0.035	0.183	0.567	0.434
ACH6	0.003	0.470	0.445	0.380
ACH7	0.106	0.541	0.292	0.050
ENT1	0.122	0.299	0.160	0.661
ENT2	-0.070	0.239	0.099	0.690
ENT3	0.343	-0.097	0.657	0.250
ENT4	0.067	0.247	0.276	0.654
ENT5	0.321	0.142	0.572	0.465
ENT6	0.175	0.288	0.265	0.684

are the same as the 11 items resulted from the rating task. Therefore in Table 5, the results gathered from rating task and factor analysis are being compared. Combination of both techniques showed that the sociability domain confirms three items (Item 1, 3 and 6), contentment domain confirms four items (Item 8, 9, 10 and 14), achievement domain confirms

only two items (Item 17 and 18) and enthusiasm domain confirms only two items (Item 25 and 27). These results presented a problem because this study is striving to generate at least a 12-items measure, with at least 3 items per dimension. A total of 11 items are presented to be classified correctly by both rating task and factor analysis, however two of the domains

<Table 5> Comparison between results gathered from rating study and factor analysis

No.	Items	SOC	CONT	ACH	ENT	Decision
1	SOC1	Both				Accepted
2	SOC2	F				
3	SOC3	Both				Accepted
4	SOC4	F				
5	SOC5	R				Added
6	SOC6	Both				Accepted
7	SOC7	R				
8	CONT1		Both			Accepted
9	CONT2		Both			Accepted
10	CONT3		Both			Accepted
11	CONT4		F			
12	CONT5		F			
13	CONT6		R			Added
14	CONT7		Both			Accepted
15	CONT8		R			
16	CONT9		R			
17	ACH1			Both		Accepted
18	ACH2			Both		Accepted
19	ACH3			R		Added
20	ACH4			F		
21	ACH5			F		
22	ACH6			F		
23	ACH7			R		
24	ENT1				F	Added
25	ENT2				Both	Accepted
26	ENT3				-	
27	ENT4				Both	Accepted
28	ENT5				-	
29	ENT6				F	

SOC: Sociability; CONT: Contentment; ACH: Achievement; ENT: Enthusiasm

Both: Both rating analysis and factor analysis accepted the item

R: Only rating study accepted the item.

F: Only factor analysis accepted the item.

-: None accepted the item.

<Table 6> Dimensions and Measurement Items for Fun

Dimensions	ID	Items
Sociability	SOC1	I enjoy joking around when using this application.
	SOC3	I spend time talking to people when using this application.
	SOC5	I can feel the intimacy when using this application.
	SOC6	I can feel the romance when using this application.
Contentment	CONT1	I feel peaceful when using this application.
	CONT2	I can feel the warmth when using this application.
	CONT3	I feel relaxed when using this application.
	CONT6	I feel contented when using this application.
	CONT7	I feel blissful when using this application.
Achievement	ACH1	I am focused when using this application.
	ACH2	I feel challenge when using this application.
	ACH3	I feel that I accomplish something when using this application.
Enthusiasm	ENT1	I feel sensual when using this application.
	ENT2	I feel lustful when using this application.
	ENT4	I feel like being crazy when using this application.

(achievement and enthusiasm) only have two items each. Faced with this problem, a decision was made to maintain an extra item for all domains in order to fulfill the 3 items per dimension. Items that are kept as part of the scale are those classified correctly by the rating task with the highest appropriateness value. For sociability domain, item 5 is included; for contentment domain, item 13 is included; for achievement domain, item 19 is included and lastly for enthusiasm domain, item 24 is included. Item 24 is accepted even though not accepted by rating task but only accepted by factor analysis because all the remaining four items are not accepted by rating task. Based on the results from both rating study and factor analysis, the items that are accepted and proposed to be used for further study are as shown in Table 4-6 below.

VI. Discussion and Conclusion

The results gathered from the content validity study showed that out of the 29 items, 11 items are not in the posited domain. However, 7 out of the 11 items have the second highest appropriateness values on their posited domain. In other words, the second highest appropriate values for Item 2, 4, 11, 12, 20, 21 and 22 are on their proposed domain. This result is not surprising as results shown in the study done by Yao, Wu and Yang (2008) presented that among the original 24 items that was tested for content validity, 12 items did not have adequate content validity. The results gathered by study 1 done by Hinkin and Tracey (1999) showed that out of 39 items suggested in their validation of transformational leadership, only 23 items

were classified correctly. The second technique that was conducted which is factor analysis suggested that 10 items out of the 29 items are not in the posited domain. However, not all the 10 items are exactly the same 11 items found during the content validity. By combining both content validity and factor analysis results, only 11 items out of 29 items are accepted. These results are not enough to study fun with four dimensions. Taking this into consideration, another step was taken to add in one extra item to each domain according to some considerations viewed appropriate according to each domain. This finding implied that the 14 items are not good at representing their posited domains and may result in inadequate discriminant validity of the four domains. Based on the discussion by Yao, Wu and Yang (2008), they suggested that it is possible that the high correlations among domains were due to items confounded with different domains. It is possible that the domains are dependent in nature. For example, having a sense of achievement could be influenced by experiencing contentment in certain activity or interaction. Therefore, Yao, Wu and Yang (2008) suggested that content validity is necessary so that researches will be able to interpret results of high correlations among domains in a multi dimensional construct. There are several limitations of this study. Firstly, this study was conducted among university students who are mostly in their early

20's. By considering their age and the era that they were born, their interpretation of fun in using IS might be slightly different compared to people in their teens, 30's, 40's and older. However, this can only be confirmed by extending this study beyond university students. Second limitation is the inclusion of only South Koreans as the sample. South Korea is known to have the most developed technology and the fastest Internet connectivity in the world. This advancement may alter the way they view IS usage in their daily life. The ease, comfort and routine usage of IS that freely available for them may influence them in experiencing fun while using IS. Instead people who are living in developing countries or poor countries or even rural areas of developed countries might have lower expectations and might have more fun in using IS. And lastly, the locations that the survey took place were inside the lecture rooms. This means that most of the participants are away from their technology devices or even prohibited from using their devices. Therefore, they were using their recent or past experience in answering the survey questions. This could be a factor that might alter the gathered results. By considering this limitation, future study should be conducted maybe in a computer lab or even just outside in public where individuals are freely using their technology devices.

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현재 대구대학교 경영학과 교수로 재직 중이다. 성균관대학교 경영학부를 졸업하고 성균관대학교에서 경영정보시스템 전공으로 석사 및 박사를 취득하였다. *Journal of MIS, Information and Management, Decision Support Systems, Journal of Computer Information Systems, Behavior and Information Technology, Cyber Psychology and Behavior, Electronic Commerce and Research Application, Expert Systems with Applications* 등에 논문을 게재하였으며, 국내에도 40여편의 연구가 있다. 주요 관심분야는 의사결정기법, 인터넷 및 모바일에서 소비자행동, 온라인 커뮤니티에서의 창의성 등이다.

<국문요약>

정보시스템에서 재미의 하위유형 개발

권 순 재

본 연구의 목적은 기존의 정보시스템 및 심리학에서 사용한 재미의 개념을 분석하여, 정보시스템 사용자들이 느끼는 재미모형의 유형에는 어떠한 것들이 있는지를 살펴보는 것이다. 이를 위하여 기존문헌연구를 통하여 재미를 구성하는 29개의 항목을 개발하고 이를 검증하여 이 중 15개 항목을 선정하였다. 이후 다시 실증분석 후 재미를 구성하는 하위요인을 사회성, 만족감, 성취감, 열광적 4개의 1차 하위차원으로 정의하였다.

Keyword: 재미(Fun), 몰입(Flow), 사회성(sociability), 만족감(contentment), 성취감(achievement), 열광적(enthusiasm)

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