Communications of the Association for Information Systems

Volume 30 Article 17

5-2012

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Abstract:

Although user acceptance of entertainment-oriented information systems (IS), which are called Hedonic IS (HIS), has drawn considerable attention in literature, our understanding of user acceptance of HIS is still limited. This article focuses on exploring the intrinsic motivations of HIS acceptance from a unique perspective. It proposes a hybrid HIS acceptance model that considers the unique characteristics of HIS and the multiple conceptual identities of an HIS user. The model integrates intrinsic motivation factors from Hedonic theory, Flow theory, and the PAD (Pleasure, Arousal, and Dominance) emotion model with the Technology Acceptance Model. The proposed hybrid HIS acceptance model has been empirically tested by a quantitative field survey. The results indicate that emotional responses, imaginal responses, and flow experience are three main predictors of HIS acceptance.

Keywords: Hedonic information systems, intrinsic motivation, IT acceptance, TAM, entertainment-oriented information systems, Hedonic theory, Flow theory, PAD emotion model

Volume 30, Article 17, pp. 255-274, May 2012

The manuscript was received 1/13/2010 and was with the authors 17 months for 3 revisions.

I. INTRODUCTION

Over the last two decades, the landscape of information systems (IS) has undergone rapid evolution. Many recently developed IS, such as online games, blogs, and social network sites, are not completely productivity-oriented but have a substantial entertainment dimension [Clyde and Jiming, 2007]. These entertainment-oriented IS are termed Hedonic IS (HIS) by Van der Heijden [2004].

Compared with traditional Utilitarian-oriented IS (UIS), HIS have several unique characteristics [Van der Heijden, 2004]. First, HIS aim to provide self-fulfilling value rather than instrumental value to an end user. A person interacting with an HIS in its purest form, does so for his or her own sake without any external objectives. Second, HIS are mainly used at home and during leisure time for fun and entertainment, rather than at the workplace for productivity improvement. Third, HIS are designed to encourage prolonged use, rather than productive use [Van der Heijden, 2004].

Traditional IT adoption models (e.g., the Technology Acceptance Model—TAM) [Davis, 1989; Davis et al., 1989] and the Unified Theory of Acceptance and Use of Technology [UTAUT] [Venkatesh et al., 2003]) are ineffective in modeling the underlying reasons why people intend to interact with HIS because they are primarily focused on extrinsic motivation in explaining and predicting IT usage intention in the workplace. Some have argued that the main constructs of TAM and UTAUT fail to accommodate the specific technological and contextual influential factors [Benbasat and Barki, 2007; Scheepers et al., 2006; Taylor and Todd, 1995]. Other researchers have evaluated the role of intrinsic motivation [Deci, 1975], conceptualized as perceived enjoyment, in predicting traditional IS acceptance [Davis et al., 1992; Lee et al., 2005; Venkatesh, 1999, 2000]. However, our understanding of the influence of intrinsic motivation in predicting IT acceptance in an hedonic context is still limited [Lowry et al., 2007; Van der Heijden, 2004].

A user interacting with HIS is primarily intrinsically motivated, and the achievement of external goals is subordinated to the interaction with the system itself [Childers et al., 2001; Chung and Tan, 2004; Kim and Forsythe, 2007; Van der Heijden, 2004]. Research has conceptualized the underlying intrinsic motivation of HIS acceptance with positive feelings like fun [Okazaki et al., 2007], enjoyment [Davis et al., 1992; Ha et al., 2007; Koufaris, 2002; Lee et al., 2007; Van der Heijden, 2004], playfulness [Agarwal and Karahanna, 2000; Webster and Martocchio, 1992], and attractiveness [Ha et al., 2007]. Lowry et al. [2007] proposed an Interactivity–Stimulus–Attention Model (ISAM) to explain how intrinsic motivation influences user acceptance of purely hedonic gaming systems.

However, given the rich emotional responses of interacting with HIS, like online games, a single positive emotion is insufficient to represent the underlying intrinsic motivation. Studies from psychology research indicate that negative emotions, such as sadness, also contribute to hedonic consumption. For instance, it is reported that some TV users prefer sad movies to those that promise to cheer them up [Oliver, 1993a; Oliver et al., 2000]. Malhotra et al. [2008] suggested that conceptualizing intrinsic motivation as a single emotion like perceived enjoyment may limit our understanding of user motivation. As a result, the overall intrinsic motivation driving user acceptance of HIS needs to be expanded.

The purpose of this study, therefore, is to explore the underlying intrinsic motivation of users' behavior intention to interact with an HIS by proposing an HIS acceptance model which considers the unique characteristics of HIS and the multiple conceptual identities of an HIS user. This article argues that an hedonic user has multiple conceptual identities, and each of these identities will influence the intrinsic motivation of an HIS user. This article attempts to integrate various theories from psychology, marketing, and consumer behavior research. The structure of this article is as follows. The next section addresses the theoretical background and hypotheses of this study. Then the data collection and analysis approach is introduced; this is followed by a discussion of the results. Finally, a conclusion is offered.

II. THEORETICAL BACKGROUND AND HYPOTHESES

The theoretical background of this research covers several well-established theories, including Hirschman and Holbrook's [1982] Hedonic theory, Mehrabian and Russell's [1974] PAD (Pleasure, Arousal, and Dominance) theory, Csikszentmihalyi's [1990] Flow theory, and Davis's [1989] TAM. Douglas and Craig [1992] suggested that strong theoretical and conceptual frameworks can be developed through an integration of constructs from different

research traditions and disciplines. Chen [2003] noted that the integration of theories "builds bridges" between different theories and should be developed for specific contexts. Therefore, our research model has drawn on the constructs provided by these theories and has been developed specifically for the hedonic context of HIS acceptance. The next section describes the reasoning behind the integration of the theories mentioned above with TAM and argues that, on a conceptual level, an HIS user has multiple identities, each of which contributes towards intrinsic motivation to adopt HIS. This section begins with an exploration of the multiple identities of an HIS user; then, it investigates the possible use of each theory in HIS acceptance, which finally leads to a hybrid HIS acceptance research model.

Multiple Conceptual Identities of an HIS User

According to Koufaris [2002], an IS user is not simply a computer user, he or she may simultaneously have other identities. For instance, a user of ebay.com is not only a computer user but also plays the role of a shopper. In the context of HIS, an HIS user is not only a computer user but also plays the role of a hedonic consumer. For example, Clyde and Jiming [2007] explain user acceptance of the Web-based virtual world from the perspective of hedonic consumption considering a virtual world user as a hedonic consumer. Similarly, Turel et al. [2010] also examine user acceptance of hedonic digital artifacts from a hedonic consumer's perspective. Indeed, according to Van der Heijden [2004], the initial name of HIS was derived from customer behavior research, which distinguishes utilitarian and hedonic products [Hirschman and Holbrook, 1982; Holbrook and Hirschman, 1982]. This indicates that an HIS is a particular product, while an HIS user is a hedonic consumer.

In addition to being a hedonic consumer, an HIS user may also be considered a player. The main reason lies in the similar experience of interacting with an HIS and play-related activities. According to Van der Heijden [2004, p. 696], "hedonic information systems aim to provide self-fulfilling value to end users," and "in their purest form, interacting with a hedonic information system is designed to be an end in itself." Similarly, play activities can produce experiences that players enjoyed for their own sake, without any external rewards [Day, 1981]. Such experiences of play are referred to as "autotelic" [Csikszentmihalyi, 1975], "inherently pleasurable" [Calder and Staw, 1975], and "nonutilitarian" [Hutt, 1981]. This common experience between HIS interaction, or usage experience, and play experience implies that play is a key element of HIS acceptance and usage. In other words, a user's interaction with an HIS could be regarded as play. Indeed, this viewpoint is supported by previous studies which suggest that playfulness is an important predictor of IT acceptance [Agarwal and Karahanna, 2000; Webster and Martocchio, 1992]. Therefore, an HIS user could probably act as a player.

Figure 1 depicts the three overlapped conceptual identities: a computer user, a hedonic consumer, and a player. In summary, each of the identities is defined. A computer user refers to an individual who uses an IT. A hedonic consumer refers to an individual who is a consumer of hedonic products. A player refers to an individual who interacts with or uses an object primarily for entertainment, fun, or enjoyment without any external reinforcement. Each of the identities has been studied individually by researchers. The theories associated with each of the HIS user identities are provided in Figure 1.

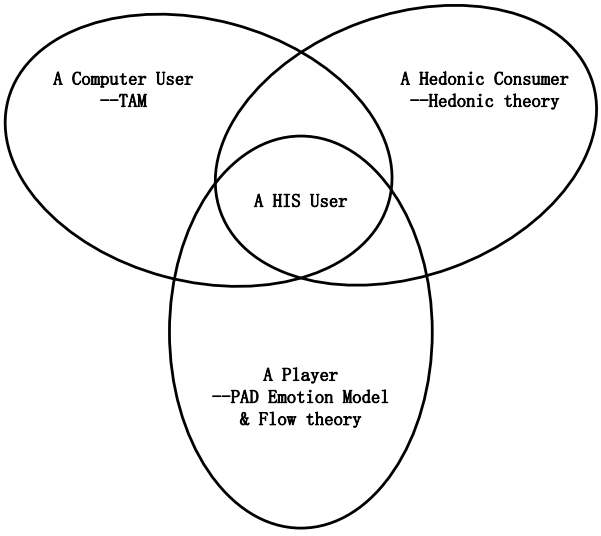

Figure 1. Three Overlapped Identities of an HIS User with Associated Theories

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Research Model

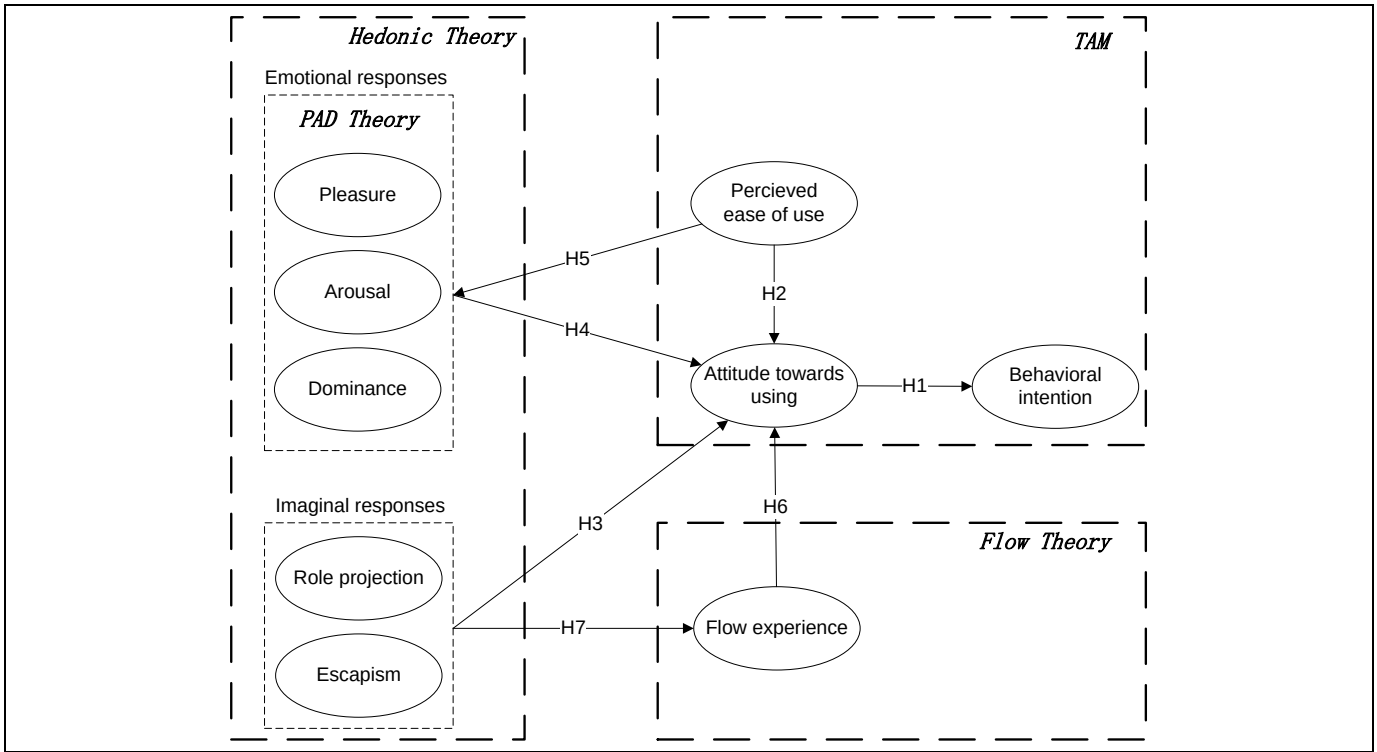

Figure 2. Research Model for HIS Acceptance

Figure 2 presents the research model that extends TAM with intrinsic motivators: emotional responses, imaginal responses, and flow experience—each associated with specific theories. Emotional responses refer to the various feelings one experiences when interacting with an HIS. Imaginal responses refer to a psychological state where an HIS user escapes or distracts himself or herself from unpleasant events or self-projects into a particular role or character. Flow experience is defined as "the holistic sensation that people feel when they act with total involvement" [Csikszentmihalyi, 1975, p. 36]. The model is developed based on TAM, reflecting that an HIS user is primarily a computer user because TAM is recognized as the dominant and most influential research model in explaining and predicting IT acceptance [Lee et al., 2003]. Imaginal responses and emotional responses are adopted from Hedonic theory in order to reflect that an HIS user also acts as a hedonic consumer. Modeling emotional responses with the PAD emotion model and integrating flow experience with TAM, indicate that an HIS user is also a player. The following sections explain the research model in detail.

Technology Acceptance Model and HIS Acceptance

Considering an HIS user is primarily a computer user, our research model would be incomplete if we did not account for the reasons why computer users accept IT. It is essential to integrate constructs from TAM which is recognized as the dominant and most influential research model in studying IT acceptance [Lee et al., 2003]. Since the original publication, TAM has been widely extended and verified for a variety of information technologies and contexts [Adams et al., 1992; Davis et al., 1992; Lenderer et al., 2000]. However, it is criticized because the main constructs of TAM fail to accommodate salient beliefs, which may significantly influence IS acceptance [Benbasat and Barki, 2007; Dillon and Morries, 1996; Scheepers et al., 2006; Taylor and Todd, 1995].

Attitude Toward Using and HIS Acceptance

Attitude toward using technology is defined as an individual's overall affective reaction to using a system. It reflects the extent to which a person likes/dislikes using a technology [Venkatesh, 1999; Venkatesh and Davis, 2000; Venkatesh et al., 2003]. Attitude mainly refers to the degree to which a person likes the object of thought [Davis, 1989; Davis et al., 1989]. The effect of attitude in IT acceptance is still unclear. The original TAM posits that attitude has a significant influence on behavioral intention. However, people may use IT to improve their work performance even if they have a negative attitude towards IT. As a result, both Davis and his colleagues in their later studies exclude attitude from TAM [Venkatesh, 1999; Venkatesh and Davis, 2000; Venkatesh et al., 2003].

However, a meta-analysis of attitudinal research related to the theory of reasoned action finds strong support for using attitude to predict intentions [Sheppard et al., 1988]. According to Kulviwat et al. [2007], attitude towards

adoption plays a key role in technology acceptance within the consumer context because emotions such as fun and enjoyment are involved. For example, Bruner and Kumar [2005] suggest that attitude mediates the effects of perceived usefulness, perceived ease of use, and an emotion (fun) of intention. Kulviwat et al. [2007] further argue that the non-significant influence of attitude on intention may be caused by the fact that most studies on IT acceptance predict attitude solely in terms of cognition, but do not include effect-related factors.

In the context of HIS acceptance, intrinsic motivations are the main drivers of the acceptance of an HIS [Van der Heijden, 2004]. People's feelings (e.g., enjoyment and fun) experienced during their interaction with HIS play an important role [Van der Heijden, 2004]. Thus, based on Kulviwat et al.'s [2007] argument, attitude should have a direct influence on the users' intention to use an HIS. Moreover, the effect of attitude on behavioral intention may not be the same for the acceptance of UIS and HIS. Van der Heijden [2004] suggests that the hedonic nature of HIS is a boundary condition of TAM and the findings or conclusions drawn from UIS acceptance may not be equally applicable for HIS. For UIS, people may accept an IT, even if they do not have a positive attitude towards using it, because it is useful to improve their work performance. However, people, use an HIS for its own sake, and there are no external rewards or pressures. It is quite reasonable to expect that if a person does not like an HIS, she or he will not intend to use it. Therefore, in the context of HIS acceptance, we retain the attitude construct in our research model and hypothesize:

H1: Attitude towards using an HIS has a positive influence on behavioral intention to use the HIS.

Perceived Ease of Use and HIS Acceptance

Perceived ease of use is an assessment of the mental effort involved in the use of IS. According to Davis [1989], perceived ease of use has a direct influence on users' attitude towards using an IT. Many studies on hedonic-oriented IT acceptance also found that perceived ease of use is a strong and direct predictor of Attitude [Childers et al., 2001; Hsu and Lu, 2004; Lee et al., 2005, 2007]. Indeed, Van der Heijden [2004] suggested that perceived ease of use should play a more central role in predicting user acceptance of HIS. TAM posits that Ease of use has a positive effect on attitude based on two mechanisms: self-efficacy and instrumentality [Davis et al., 1989]. Self-efficacy relates to the confidence a user has in the use of the system. The easier it is to use the system, the more control a person perceives that he or she has, and, therefore, he or she will feel more positive (attitude) towards the system. Thus, we hypothesize:

H2: Perceived ease of use has a positive influence on the users' attitude towards using an HIS.

Perceived Usefulness and HIS Acceptance

Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" [Davis, 1989]. It is widely accepted that perceived usefulness is a strong predictor of behavioral intention to use an IT [Benbasat and Barki, 2007].

However, perceived usefulness may be problematic for HIS [Hsu and Lu, 2004; Pagani, 2004; Van der Heijden, 2004] because it is fundamentally utilitarian-oriented and may not capture the hedonic or entertainment nature of an HIS. For instance, Lee et al. [2007] found that, compared with perceived usefulness, perceived ease of use and enjoyment has a stronger influence on customer attitude towards using Multimedia Messaging Service (MMS). Ha et al. [2007] found that perceived usefulness has little influence on attitude towards mobile gaming acceptance. Hsu and Lu [2004] and Lowry et al. [2007] also state that perceived usefulness does not have a significant influence on intention to play online games. Okazaki et al. [2007] even exclude perceived usefulness from their acceptance model for mobile gaming. Lowry et al. [2007] further suggest that intrinsic motivation often guides human behavior more powerfully than extrinsic motivation, and, in hedonic contexts, extrinsic motivations virtually do not exist.

These studies indicate that perceived usefulness is clearly not relevant or applicable for HIS. Therefore, we do not include perceived usefulness in our research model.

Hedonic Theory and HIS Acceptance

Hedonic theory is rooted in marketing and customer behavior research. It has been developed to explain customer consumption behavior, more specifically, to explain and describe the intrinsic motivations underlying the hedonic consumption of aesthetic products such as ballet, music, and movies [Hirschman and Holbrook, 1982]. It posits that a customer's consumption attitude towards a hedonic product is mainly determined by the unique intrinsic consumption experience of the product. This unique experience refers to the customer's imaginal and emotional responses to the product [Clyde and Jiming, 2007; Lacher and Mizerski, 1994].

Since an HIS user is not only a computer user but also acts as an hedonic consumer, theories which work well for hedonic consumption may be equally applicable for HIS acceptance. Given the fact that the hedonic theory was

developed to explain hedonic consumption behaviors, it should be possible to introduce hedonic theory to study HIS acceptance. The following sections investigate the possible use of the main components of hedonic theory, namely imaginal responses and emotional responses, in HIS acceptance.

Imaginal Responses and HIS Acceptance

Imaginal Responses mainly refer to role projection and escapism [Clyde and Jiming, 2007; Hirschman, 1983]. According to Hirschman [1983], role projection refers to individuals' perceptions that they are engaging in activities that permit them to self-project into a particular role or character. Role projection is widely seen in role-play online games such as World of Warcraft (WoW) and the popular three-dimensional virtual world named Second Life where players can choose to play particular roles and characters. Escapism refers to individuals' perceptions that they are engaging in activities to escape unpleasant realities and to distract themselves from unhappy events [Hirschman, 1983].

Based on the hedonic consumption theory, Imaginal responses are one of the main intrinsic motivations that drive consumers to purchase hedonic products. For instance, Lacher and Mizerski [1994] find that consumers' imaginal responses are one of the main determinant factors that motivate them to purchase music. In the context of HIS, HIS users are also hedonic consumers who are sensitive to imaginal responses. The findings of customer behavior research are probably applicable to HIS acceptance. This study, therefore, predicts that people's imaginal responses, namely, role projection and escapism, should have a positive influence on HIS acceptance.

Although Venkatesh [1999, 2000] argues that the influence of intrinsic motivation, such as emotional responses and imaginal responses on IT usage intention, should be mediated by perceived ease of use. However, many researchers also found that emotional responses (e.g., perceived enjoyment) directly affect attitude towards using an IT rather than mediation by perceived ease of use [Heijden, 2003; Lee et al., 2005; Malhotra et al., 2008]. Considering this situation, Venkatesh [1999, p. 255] noted that "It is also necessary to examine the generalizability of these findings to other technologies and environment."

A user interacting with an HIS enables the individual to image himself or herself in a virtual role which leads to feelings of excitement and pleasure or enables him or her to escape from the unhappiness or pressure of the real world. This imaginal process and experience can help an HIS user to form an overall favorable feeling (attitude) towards the system. We, therefore, hypothesize:

H3: Imaginal responses have a positive influence on attitude towards using an HIS.

H3a: Role projection has a positive influence on attitude towards using an HIS.

H3b: Escapism has a positive influence on attitude towards using an HIS.

Emotional Responses (PAD Emotion Model) and HIS Acceptance

Emotional responses refer to the various feelings one experiences when interacting with an HIS. Many studies have investigated emotional influence on IS acceptance [Childers et al., 2001; Chung and Tan, 2004; Kim and Forsythe, 2007; Van der Heijden, 2004]. However, most of them represent the emotional responses with a simple one-dimension emotion, such as enjoyment [Van der Heijden, 2004], playfulness [Chung and Tan, 2004], or fun [Okazaki et al., 2007]. They have rarely investigated the full range of emotional influence on IS acceptance. Given the extremely rich emotional responses when interacting with HIS such as online games and mobile games, a single dimension emotion appears to be insufficient to model or represent all emotional responses. Moreover, existing studies on emotional responses mainly focus on the influence of positive emotional responses like enjoyment, fun, and playfulness. Nevertheless, studies from psychology research indicate that negative emotions, such as sadness, also contribute to hedonic consumption. As a result, the full scope of emotional responses from interaction with HIS has rarely been studied. Thus, this study turns to the PAD (Pleasure, Arousal, and Dominance) emotion model [Mehrabian and Russell, 1974] to model the emotional responses from users' interaction with HIS.

The PAD emotional model developed by Mehrabian and Russell [1974] posits that affective responses to environments can be described by three variables: pleasure, arousal, and dominance. Pleasure is verbally assessed as the extent to which respondents report feeling happy as opposed to unhappy, pleased as opposed to annoyed, satisfied as opposed to dissatisfied, contented as opposed to melancholic, hopeful as opposed to despairing, and relaxed as opposed to bored. Arousal is measured by verbal assessments of reaction to environments (e.g., stimulated as opposed to relaxed, excited as opposed to calm, frenzied as opposed to sluggish, jittery as opposed to dull, wide-awake as opposed to sleepy, and aroused as opposed to unaroused). Mehrabian and Russell [1974] suggest that the arousing quality of an environment increases with the novelty, complexity, intensity, unfamiliarity, improbability, change, mobility or uncertainty of the setting [Foxall and Greenley, 1998; Foxall and Yani-de-Soriano, 2005]. Finally, dominance is indicated by the users' reported feelings of being controlling as opposed to controlled,

influential as opposed to influenced, in control as opposed to cared for, important as opposed to awed, dominant as opposed to submissive, and autonomous as opposed to guided.

Mehrabian and Russell [1974] argue that any emotional state, whether positive or negative, may be regarded as a position on these three dimensions, that is, the various combinations of Pleasure, Arousal, and Dominance can adequately represent all of the human emotional reactions to environments. Russell and Mehrabian [1977, p. 273] also indicate that these three dimensions "are both necessary and sufficient to adequately define emotional states."

The PAD emotion model is widely used in customer behavior and marketing research. For instance, the research conducted by Donovan and Rossiter [1982] is one of the most remarkable applications of the PAD model, which uses the PAD model to measure the influence of store atmosphere on consumer approach–avoidance behaviors. The PAD model is also introduced to study emotions evoked by television advertisements [Holbrook and Batra, 1987], product-consumption experiences [Oliver, 1993b], services [Chebat et al., 1995; Hui and Bateson, 1991], online shopping enjoyment [Koufaris, 2002], and other marketing contexts (e.g., Havlena and Holbrook, 1986). A recent study conducted by Kulviwat et al. [2007] also used the PAD model to study IT acceptance. They integrate the PAD model with TAM to describe the influence of customers' emotional responses on IT acceptance.

The PAD model is also employed to describe the emotional responses of play-related activities. For example, the PAD model has been used to explain the complex and rich emotional responses of game playing [Holbrook et al., 1984] and gambling [Titz et al., 2001]. Indeed, Day [1981] explicitly advocates the use of the PAD model to investigate feelings toward various types of play activities. Considering that users' interaction with an HIS fundamentally has a play dimension, this study utilizes the PAD model to represent the emotional responses of HIS interaction. In this study, end-users' emotional responses are represented by pleasure, arousal, and dominance.

Based on the hedonic theory, a consumer's emotional responses contribute to her or his hedonic consumption attitude and behavior intentions. We expect that emotional responses, namely, PAD (Pleasure, Arousal, and Dominance) have a positive influence on user acceptance of HIS. Thus, we hypothesize:

H4: Emotional responses have a positive influence on attitude towards using an HIS.

The experience of pleasure while using technology will create positive emotional feelings (attitude) towards using the technology. The experience of arousal, which establishes itself as excitement, will create a positive feeling towards the system. A feeling that an individual will be able to control what happens with the technology will positively influence the attitude of the person. We, therefore, define the following sub-hypothesis:

H4a: Pleasure has a positive influence on attitude towards using an HIS.

H4b: Arousal has a positive influence on attitude towards using an HIS.

H4c: Dominance has a positive influence on attitude towards using an HIS.

In addition, based on the definition of perceived ease of use, if users feel an HIS is easy to use, they may need less mental effort to use an HIS, which in turn may improve users' emotional responses like increasing their mental enjoyment of interacting with an HIS. This influence, in fact, is shown by several studies on HIS acceptance. For instance, Van der Heijden [2004], Ha et al. [2007], and Lee et al. [2007] all found that perceived ease of use has a strong influence on enjoyment (emotional responses). As mentioned before, any emotions, positive or negative, could be represented by a combination of pleasure, arousal, and dominance [Mehrabian and Russell, 1974]. Therefore, we expect that perceived ease of use has a positive influence on emotional responses, namely, pleasure, arousal, and dominance. Using the terminology developed by the philosopher Heidegger [Dahlbohm and Mathiassen, 1993] when the system is easy to use the interaction with the system is ready-at-hand, unobtrusively an extension of the HIS, which will lead to enjoyment (emotional response). However, when the HIS is difficult to use the interaction with the system becomes the focus of the activity (i.e., present-at-hand) and, therefore, detracts from the enjoyment. We hypothesize:

H5: Perceived ease of use has a positive influence on emotional responses.

H5a: Perceived ease of use has a positive influence on pleasure.

H5b: Perceived ease of use has a positive influence on arousal.

H5c: Perceived ease of use has a positive influence on dominance.

Flow Experience and HIS Acceptance

The concept of flow was introduced by Csikszentmihalyi [1975, p. 36] and defined as "the holistic sensation that people feel when they act with total involvement." When people are in the flow state, they become totally absorbed in their activity and are unaware of changes in their surroundings. They lose their self-consciousness and concentrate only on their ongoing activities [Hsu and Lu, 2004]. Flow is particularly suitable for describing emotional involvement and the absorption experience of play activities. Csikszentmihalyi [1975] suggested that flow experience happens only when skills match the challenges represented by the activities.

To supplement the concept of flow, Ghani and Deshpande [1994] suggest two attributes as the principal components of optimal flow: concentration and enjoyment. Other research has suggested similar components, such as attention focus (e.g., Koufaris, 2002) and immersion (e.g., Agarwal and Karahanna, 2000). Ghani and Deshpande [1994] further note that enjoyment is a residual product of complete concentration, and the combination of these two attributes results in a diminished sense of time during the particular activity. As a result, time distortion [Huffman and Novak, 1996; Novak et al., 2000] or time transformation [Guo and Klein, 2009; Guo and Poole, 2009] is suggested as a third attribute of flow experience. Thus, we use enjoyment, concentration, and time distortion as the dimensions of flow. Enjoyment mainly reflects users' happiness and enjoyment when they interact with HIS. Concentration refers to the experience of total engagement in interaction where other essential attention demands are ignored. Time distortion refers to the inability to register the passage of time while engaged in interaction with HIS.

The concept of flow has been applied in a broad range of contexts such as sports, shopping, rock climbing, dancing, gaming, and others [Csikszentmihalyi and LeFevre, 1989]. Flow has also been studied in the context of information technologies to understand customer behavior towards IT [Hoffman and Novak, 1996; Novak et al., 2000]. For instance, Hoffman and Novak's [1996] study on online usage behavior suggests that a user will become engaged in a website if he or she experiences flow. It is also asserted that people who enjoy a flow experience during an activity may develop a tendency to repeat the activity [Csikszentmihalyi, 1990; Webster et al., 1993]. In the context of HIS, Hsu and Lu [2004] found that flow experience is an important factor in motivating end-users to play online games. Ha et al. [2007] also suggested that attitude towards mobile gaming is significantly influenced by flow experience. Based on these studies, We hypothesize:

H6: Flow experience has a positive influence on attitude towards using an HIS.

In addition, flow is highly related with imaginal responses (role projection and escapism). When people feel that an HIS enables them to escape from the real world or project them into a particular role, they are more likely to experience absorption or flow and lose themselves in the system [Clyde and Jiming, 2007]. Therefore, we also expect that imaginal responses have a positive influence on flow experience.

H7: Imaginal responses have a positive influence on flow.

H7a: Role projection has a positive influence on flow.

H7b: Escapism has a positive influence on flow.

III. METHODOLOGY

Data Collection

Empirical data was collected by an online survey, which was developed following several steps suggested by De Vaus [2002]. First, survey items which measure their related variables were adapted from previous research but rephrased to fit the context of online game acceptance. Then we developed the questionnaire as a whole, emphasizing on designing the flow and logical relationship among questions. The survey was then refined and finalized by conducting a pilot test.

The online survey was hosted on surveymonky.com. An advertisement which included a link to this online survey was developed and distributed through the advertising platform of Facebook.com, targeting people who are particularly interested in video games. The survey advertising was automatically displayed on potential participants' screens. If they were interested in the survey, they could click the advertisement and be directed to the online survey. Responses to both the pilot test and the actual survey are presented in Table 1. In total, we received 294 responses and 226 of them were completed.

Table 1: Advertising Report for Pilot Test and Actual Survey

Campaign Name	Clicks	Started Survey	Completed Survey	Completion Rate	Response Rate
Pilot test	132	65	47	72.3%	35.6%
Actual survey	554	294	226	76.9%	40.8%

Measures

All of the measures and their items are adapted from previous research and rephrased to fit the context of online gaming. This helps to improve the reliability of these measures and items as they were widely tested in previous studies.

The items include perceived ease of use, attitude, and behavioral intention were adapted from TAM [Davis, 1989]. Hedonic theory related measures, escapism and role projection, were taken from Clyde and Jiming [2007]. We measure flow experience as a reflective rather than a formative second-order factor, which includes three dimensions: enjoyment, concentration, and time distortion. This was done for two reasons. First, these three dimensions are driven by the same underlying construct of flow. They reflect, but do not form, the flow experience. Second, previous research has found significant correlations among these dimensions [Ghani and Deshpande, 1994; Koufaris, 2002]. This shows that they are interchangeable and will co-vary with one another. Thus, we deem flow experience to be a reflective second-order factor [Petter et al., 2007]. In addition, previous research has also modeled flow as a reflective second-order factor [CHOU and TING, 2003; Siekpe, 2005; Zhou et al., 2010]. The items of enjoyment (ENJ) and time distortion (TD) were adapted from Agarwal and Karahanna [2000], and concentration (Con) is from Ghani et al. [1991]. All items were measured on 7-point Likert scales. Construct definitions are attached in the Appendix.

Sample Characteristics

Table 2 shows that the majority of the participants are male (65.5 percent), about 85.4 percent of the respondents are younger than twenty-five, most of the participants are high school or college students; and most of them play online games at least once per week; about half of them (42.7 percent) play online games on a daily basis. It is obvious that most of the participants are experienced players of online games.

Table 2: Sample Characteristics

		Response Percent	Response Count
Frequency	0 times/week	2.70%	8
	1–3 times/week	20.80%	61
	4–6 times/week	33.80%	99
	>7 times/week	42.70%	125
Gender	Male	65.5%	148
	Female	34.5%	78
Age	<18	8.4%	19
	18–20	34.1%	77
	21–25	42.9%	97
	26–30	6.6%	15
	31–35	2.2%	5
	>35	5.8%	13
Education level	High school	36.3%	82
	College	36.3%	82
	Bachelor	23.0%	52
	Master	2.7%	6
	Other	1.8%	4

IV. DATA ANALYSIS AND RESULTS

Researchers are often urged to test for common method bias [Podsakoff et al., 2003]. We tested common method bias following Harmon's single-factor test and Liang's [2007] procedure for PLS. Both tests revealed that common method bias is not a problem in this study.

The overall data analysis strategy used in this study follows the two-step analysis procedures suggested by James et al. [1982] to ensure that our findings on structural relationship are drawn from a set of measurement instruments with desirable psychometric properties [Anderson and Gerbing, 1988]. The Partial Least Squares (PLS) procedure was used to perform data analysis [Gefen and Straub, 2005; Wold, 1985]. We first examine the measurement model through Confirmatory Factor Analysis (CFA), which is followed by a structural model analysis (path analysis) to empirically test the hypotheses.

The Measurement Model

Construct validity is a necessary condition for theory development and testing [Peter, 1981], which refers to whether a scale measures or correlates with the theorized psychological scientific construct that it purports to measure. In this study we test construct validity through convergent validity and discriminate validity.

Convergent Validity

Convergent validity refers to the extent to which the indicators of a construct that are theoretically related should highly correlate [Chin, 1998]. Composite reliability, Average Variance Extracted (AVE), and factor loading are the three most common indices used to access convergent validity. According to Fornell and Larcker [1981, 1987], a composite reliability of 0.7 and an average variance extracted of 0.50 are deemed acceptable. In addition, factor loadings must at least be greater than 0.6 in order to meet the standard acceptance criterion for convergent validity [Hatcher, 1994].

As shown in Table 3, the factor loadings for all items are greater than the acceptable level (0.6) and at a significant level of 0.001. Each construct satisfies the recommended levels of composite reliability and Average Variation Extracted. Therefore, convergent validity is shown.

Discriminant Validity

To assess the discriminant validity [Chin, 1998], the sample needs to meet two criteria. First, the indicators should load more strongly on their corresponding construct than on other constructs in the model. Second, the square root of the AVE should be larger than the inter-construct correlations [Fornell and Larcker, 1987].

As shown in Table 4, all indicators load more strongly on their corresponding constructs than on other constructs.

Table 3: Convergent Validity

Constructs	Items	Composite Reliability	AVE	Item-Loadings*
Perceived ease of use	EOU1	0.90	0.70	0.86
	EOU2			0.85
	EOU3			0.83
	EOU4			0.81
Escapism	ESC1	0.96	0.88	0.94
	ESC2			0.96
	ESC3			0.92
Role projection	RP1	0.94	0.83	0.94
	RP2			0.91
	RP3			0.89
Pleasure	PLE1	0.89	0.63	0.81
	PLE2			0.77
	PLE3			0.85
	PLE4			0.75
	PLE5			0.78
Arousal	ARO1	0.87	0.78	0.86
	ARO2			0.90
Dominance	DOM1	0.87	0.69	0.78
	DOM2			0.90
	DOM3			0.80
Enjoyment	ENJ1	0.94	0.83	0.89
	ENJ2			0.91
	ENJ3			0.92
Concentration	CON1	0.92	0.80	0.92
	CON2			0.75
	CON3			0.96
Time distortion	TD1	0.91	0.80	0.92
	TD2			0.86
	TD3			0.90
Attitude	ATT1	0.87	0.70	0.76
	ATT2			0.85
	ATT3			0.88
Behavioral intention	BI1	0.95	0.82	0.85
	BI2			0.94
	BI3			0.93
	BI4			0.90

Composite reliability = $(\sum\lambda_i)^2 / [(\sum\lambda_i)^2 + \sum var(\varepsilon_i)]$, where λ_i is the component loading to an indicator and $var(\varepsilon_i) = 1 - \lambda_i^2$; AVE=Average Variance Extracted

*All item loadings were significant at $p < 0.001$.

Table 4: Result of Factor Analysis

	EOU	ESC	RP	PLE	ARO	DOM	ENJ	CON	TD	ATT	BI
EOU1	***0.86***	-0.03	0.06	0.26	0.01	0.28	0.30	0.13	0.07	0.26	0.19
EOU2	***0.85***	0.03	0.06	0.28	0.04	0.23	0.36	0.14	0.08	0.28	0.16
EOU3	***0.83***	0.07	0.09	0.26	0.06	0.23	0.36	0.13	0.12	0.30	0.15
EOU4	***0.81***	-0.01	0.15	0.30	0.12	0.30	0.32	0.27	0.09	0.32	0.20
ESC1	0.03	***0.94***	0.30	0.09	0.08	0.02	0.15	0.26	0.25	0.08	-0.05
ESC2	-0.01	***0.96***	0.29	0.13	0.05	0.06	0.15	0.30	0.28	0.10	-0.03
ESC3	0.03	***0.92***	0.24	0.08	-0.02	0.04	0.14	0.27	0.25	0.10	-0.04
RP1	0.12	0.28	***0.94***	0.13	0.21	0.20	0.23	0.43	0.16	0.19	0.17
RP2	0.09	0.27	***0.91***	0.13	0.19	0.17	0.20	0.38	0.15	0.17	0.13
RP3	0.09	0.24	***0.89***	0.15	0.15	0.23	0.17	0.37	0.20	0.19	0.16
PLE1	0.31	0.18	0.26	***0.81***	0.20	0.33	0.46	0.34	0.13	0.45	0.29
PLE2	0.23	0.10	0.10	***0.77***	0.15	0.31	0.38	0.19	0.12	0.41	0.22
PLE3	0.27	0.08	0.14	***0.85***	0.17	0.39	0.43	0.27	0.04	0.52	0.39
PLE4	0.18	0.00	0.00	***0.75***	0.05	0.30	0.23	0.18	-0.01	0.28	0.24
PLE5	0.30	0.02	0.02	***0.78***	0.07	0.30	0.38	0.22	0.00	0.39	0.32
ARO1	0.12	0.07	0.15	0.22	***0.86***	0.17	0.12	0.34	0.06	0.11	0.02
ARO2	0.02	0.00	0.20	0.09	***0.90***	0.13	0.01	0.32	0.12	0.12	0.05
DOM1	0.25	-0.04	0.14	0.35	0.15	***0.79***	0.21	0.17	0.05	0.21	0.18
DOM2	0.29	0.07	0.21	0.39	0.13	***0.91***	0.25	0.27	0.02	0.30	0.16
DOM3	0.26	0.08	0.21	0.29	0.16	***0.81***	0.22	0.25	0.05	0.18	0.20
ENJ1	0.31	0.14	0.18	0.42	0.03	0.25	***0.89***	0.26	0.23	0.49	0.29
ENJ2	0.38	0.19	0.23	0.46	0.11	0.25	***0.92***	0.35	0.18	0.53	0.39
ENJ3	0.40	0.10	0.19	0.45	0.06	0.25	***0.92***	0.27	0.16	0.64	0.39
CON1	0.23	0.29	0.38	0.29	0.31	0.25	0.31	***0.93***	0.23	0.29	0.10
CON2	0.19	0.27	0.38	0.24	0.33	0.28	0.29	***0.86***	0.27	0.23	0.11
CON3	0.13	0.24	0.39	0.29	0.36	0.23	0.26	***0.90***	0.21	0.26	0.10
TD1	0.10	0.23	0.16	0.06	0.03	0.03	0.19	0.20	***0.92***	0.13	0.10
TD2	0.01	0.31	0.22	0.00	0.13	0.02	0.07	0.21	***0.75***	0.04	0.05
TD3	0.13	0.26	0.17	0.10	0.15	0.05	0.22	0.28	***0.96***	0.14	0.09
ATT1	0.31	0.03	0.21	0.49	0.12	0.24	0.59	0.27	0.12	***0.77***	0.41
ATT2	0.30	0.06	0.16	0.46	0.10	0.23	0.48	0.25	0.09	***0.85***	0.44
ATT3	0.27	0.16	0.14	0.41	0.12	0.25	0.47	0.22	0.13	***0.88***	0.56
BI1	0.23	-0.05	0.16	0.41	0.09	0.23	0.40	0.15	0.09	0.47	***0.90***
BI2	0.18	-0.02	0.15	0.31	0.02	0.15	0.35	0.10	0.12	0.56	***0.94***
BI3	0.22	-0.07	0.11	0.39	0.01	0.20	0.36	0.07	0.01	0.50	***0.94***
BI4	0.17	-0.03	0.21	0.32	0.05	0.18	0.38	0.14	0.14	0.56	***0.90***

EOU= Perceived ease of use; ESC = Escapism; RP= Role Projection; PLE = pleasure;
ARO = arousal; DOM= dominance; ENJ= Enjoyment; CON = Concentration;
TD = Time distortion; ATT= Attitude toward using; BI = Behavioral intention.

As indicated in Table 5, the bold numbers on the leading diagonal are the square root of the variance shared between the constructs and their measures. Off-diagonal elements are the correlations among constructs. As all of the bold numbers are greater than the off-diagonal numbers, all constructs share more variance with their own indicators than with other constructs. Thus, discriminant validity is shown.

Overall, the result of both convergent and discriminant validity provide strong empirical support for the reliability and validity of the scales of the measurement model, which indicates that the findings of the following structural model analysis are based on measures with desirable psychometric properties.

Structural Model Analysis

The structural model is analyzed by SmartPLS [Ringle et al., 2005]. All of the constructs are modeled as reflective, and most of the constructs in the model are measured by multiple indicators. Flow experience is modeled as a second-order factor of three first-order constructs: enjoyment, concentration, and time distortion and is measured by using the repeated indicators approach [Wetzels et al., 2009].

Table 5: Correlation Between Constructs											
	EOU	ESC	RP	PLE	ARO	DOM	ENJ	CON	TIME	ATT	BI
EOU	***0.84***										
ESC	0.02	***0.94***									
RP	0.11	0.29	***0.91***								
PLE	0.33	0.11	0.15	***0.79***							
ARO	0.07	0.03	0.20	0.17	***0.88***						
DOM	0.31	0.04	0.22	0.42	0.17	***0.83***					
ENJ	0.40	0.16	0.22	0.49	0.08	0.28	***0.91***				
CON	0.21	0.30	0.43	0.31	0.37	0.28	0.32	***0.89***			
TIME	0.11	0.28	0.19	0.08	0.11	0.04	0.20	0.26	***0.89***		
ATT	0.35	0.10	0.20	0.53	0.13	0.29	0.62	0.29	0.14	***0.83***	
BI	0.21	-0.04	0.17	0.38	0.04	0.20	0.40	0.12	0.10	0.55	***0.91***

The bold numbers on the leading diagonal are the square root of the variance shared between the constructs and their measures. Off diagonal elements are the correlations among constructs.

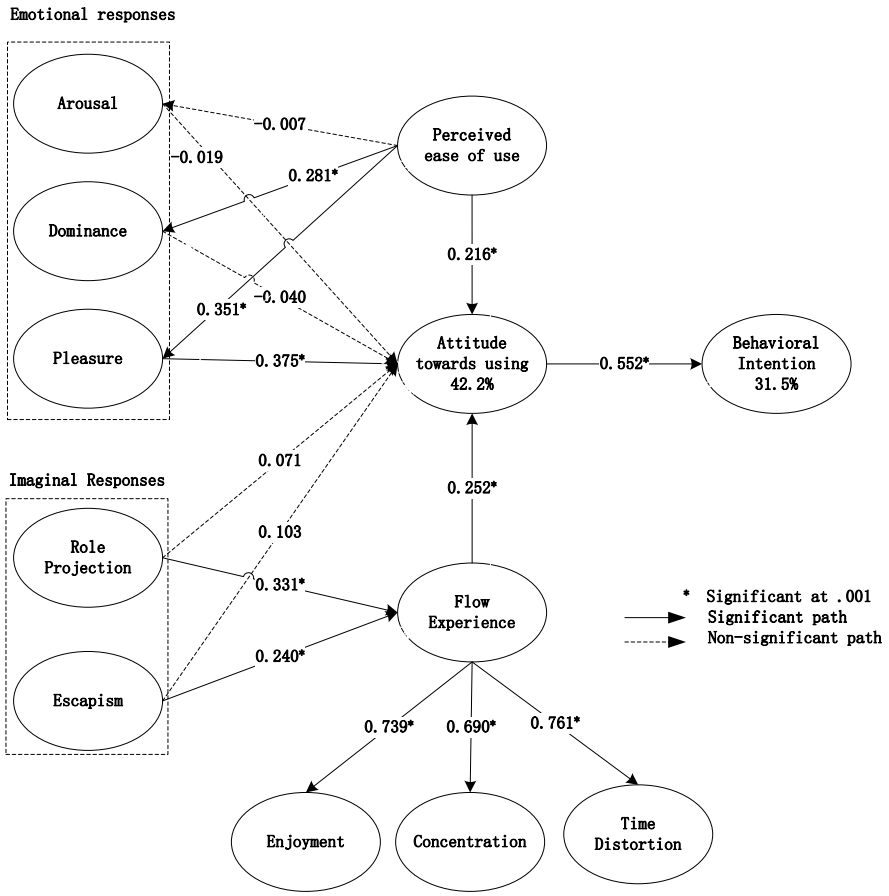

Figure 3. Results of Path Analysis

Figure 3 presents the results of our study including the variance explained, path coefficients and their significant level. The solid lines represent the significant paths while dotted lines are for non-significant paths. Figure 3 shows that H1 (attitude→behavioral intention), H2 (perceived ease of use→attitude) and H6 (flow experience→attitude) are supported. While H3 (emotional responses→attitude) and H5 (perceived ease of use→emotional responses) are partially supported, namely, H3a (pleasure→attitude), H5a (perceived ease of use→pleasure) and H5c (perceived ease of use→dominance) are supported. The results also indicate that imaginal responses, including escapism and role projection, do not have a direct influence on attitude (H3 is not supported), but are mediated by flow experience. The path between attitude and behavioral intention (H1) is the strongest and most significant relationship in this model. Generally, the combination of emotional responses and flow experience and perceived ease of use explained 42.2 percent of the variance of attitude toward using, while attitude toward using, in turn, explained 31.5 percent of the variance of behavioral intention. All of the supported paths are significant at the level of 0.001.

V. DISCUSSION

User acceptance of HIS has attracted much attention in literature. This study explores the role of intrinsic motivations in predicting HIS acceptance from a unique perspective. We consider HIS are different from traditional productivity-oriented IS in terms of usage purpose, usage context, and design principle. We also argue that an HIS user is not only a computer user but also has other conceptual identities, which could influence HIS acceptance. Based on these insights on the nature of HIS and an HIS user, this study proposes a hybrid HIS acceptance model that extends TAM with theories from multiple disciplines. The model was empirically tested through a quantitative field survey. Findings of this study are discussed in the following section.

Technology Acceptance Model

Perceived Ease of Use

Research has found that perceived ease of use does not have a signifianct influence on experienced users [Chan and Lu, 2004; Karahanna et al., 1999]. Considering that most participants are experienced online gamers (see Table 1), perceived ease of use should not have a significant influence on attitude towards using an IT. However, this study still found perceived ease of use is a significant predictor of attitude towards playing online games. One possible reason is that, in the context of HIS, extrinsic motivation loses its dominant role to intrinsic motivation, and, by interacting with the system itself, other factors such as perceived ease of use and perceived enjoyment may play a more central role in predicting user acceptance of HIS [Van der Heijden, 2004]. As the relationship between perceived ease of use and attitude towards using for experienced users in the context of HIS acceptance is rarely explored, future research to further test the result of this study is required.

Attitude

The influence of attitude on behavioral intention is still controversial [Benbasat and Barki, 2007]. The result indicates that for HIS such as online games, attitude towards using is strongly related to behavioral intention. This finding is not consistent with the Venkatesh [2000] study which examined the acceptance of UIS, but is consistent with the findings of Ha et al. [2007] that investigated the acceptance of an HIS. This may suggest that the influence of attitude on behavioral intention is mainly determined by the nature of the system under study. If the system is an HIS where emotions or people's feelings play a dominant role, the users' attitude towards using the system may play a significant role. This is supported by Kulviwat et al. [2007]. In contrast, if the system is utilitarian-oriented, the influence of attidude may be dominated by the effect of perceived usefulness. In other words, if a system is very useful for improving work productivity, people will probably accept the system, even though they have a negative attitude towards it. Indeed, the different influences of attitude on behavioral intention between UIS and HIS provide support for Van der Heijden's [2004] argument that HIS is a boundary condition for TAM.

Hedonic Theory

Emotional Responses

According to Mehrabian and Russell [1974], the meaning of pleasure is similar to enjoyment and is proven to have a direct or indirect influence on people's acceptance of some entertainment-oriented IS [Ha et al., 2007; Lee et al., 2007; Van der Heijden, 2004]. The relationship between pleasure and attitude found in this study confirms the findings of previous research.

The relationship between arousal and attitude is not supported in this study. This result is not in line with Kulviwat et al.'s [2007] study, which indicates that arousal has a significant influence on initial IT acceptance. According to Mehrabian and Russell [1974], arousal is closely related to the novelty and complexity of the online game. That is, the more novel and complex the online game is, the more the users are likely to feel aroused or excited. As shown in Table 2, most of the participants in this study are experienced online gamers who play online games weekly or daily. Thus, the online game itself is not novel and complex for them. It should be reasonable to expect that players are not so aroused or excited about the games. This may be the reason why arousal is not supported.

The path between dominance and attitude is not supported. This may be because an HIS user is also a player. According to Csikszentmihalyi [1975], players will continue to participate in play activities when their skills match the challenges presented by the activities. So if they feel dominant or totally in control, they may feel bored and have a negative attitude towards the activities. This may be the reason why dominance does not have a positive influence on attitude towards using an HIS.

For emotional responses, pleasure is the only dimension that has a significant influence on attitude towards using an HIS. A mediation analysis through the Sobel test [Sobel, 1982; Soper, 2012] also indicates that pleasure is a significant mediator, which mediates the effect of perceived ease of use on attitude. The finding on the relationship between arousal and attitude may reflect a limitation of the study because novice users are not involved in the

sample. The influence of dominance on attitude, in fact, provides evidence for the viewpoint that an HIS user is also a player.

Imaginal Responses

The influence of imaginal responses on atttitude towards using an HIS and flow experience, to our knowledge, has not been tested by other researchers before. This is the first attempt to understand the effect of role projection and escapism on flow and HIS acceptance. It is suprising that both role projection and escapism do not have a significant direct influence on attitude towards using an HIS. After conducting a Sobel test [Sobel, 1982; Soper, 2012], we found that the influence of imaginal responses on attitude are virtually mediated by flow experience. As a result, both emotional responses and imaginal responses indirectly influence the acceptance of HIS. Since emotional responses and imaginal responses are adapted from hedonic theory, the viewpoint of an HIS user as an hedonic consumer is well supported.

Flow Experience

Flow experience could be achieved when users' skills are well-matched with the challenges presented by the systems. The results of data analysis indicate that flow experience has a strong influence on attitude, which is consistent with the finding of a recent research on mobile game acceptance [Ha et al., 2007]. Mediation analysis through the Sobel test [Sobel, 1982; Soper, 2012] also revealed that flow is a significant mediator of imaginal responses. This result also supports the insight that an HIS user is not only an IT user but also a player who does not use the system but plays with the system.

VI. LIMITATIONS

As discussed, our study is not without limitations. When generalizing the findings of this study, some limitations need to be taken into consideration. One important limitation of this study is its sample. Most of the participants in this study have rich experience in playing online games, and people who have no or little online gaming experience have not been included. Thus a survey bias may have crept into the research design, as non-users are not included in the sampling frame. It is conceivable that an experienced user's motivation to play an online game follows a different pattern from that of an initial-user. The findings of this research are, therefore, more likely to reflect the acceptance of HIS by experienced users rather than initial-users. Caution is advised when the findings of this study are applied to initial acceptance of HIS. We urge other researchers to test the model for initial acceptance of HIS.

In addition to the sample limitation, this study also faces the limitation of generalization. In this study, we take online games as an example to represent all of the HIS to test our model. However, the fact is that HIS may differ significantly from one another and even online games are quite diverse. It is reasonable to expect that the behavior pattern and motivations for the acceptance of different HIS are slightly different. Therefore, it is still worthy to test the proposed model with different types of HIS to investigate the robustness and generalization of this model.

VII. IMPLICATIONS

The research in this study has implications for researchers, practitioners, and managers. One implication is that the unique perspective of this research probably offers a new avenue for researchers to study HIS acceptance. Based on the triple identities of an HIS user, researchers may be able to identify additional factors that drive end-users to accept an HIS. This is because many factors that influence the hedonic consumption of an hedonic consumer and a player to engage in play activities are not well explored in IT acceptance research. In addition, the theories integrated into this research model are well-founded and widely explored in their correspondent research domains and have yielded a large body of knowledge, which opens new avenues for researchers to utilize that knowledge for HIS acceptance research. Moreover, the proposed model could be used as a supplement to TAM to achieve a better understanding of IT acceptance. As many IS have both utilitarian and hedonic elements or functions, the proposed model could be a supplement of TAM to capture the influence of hedonic elements in IT acceptance that TAM is unable to accommodate. It should also be noted that our proposed model is not only supposed to explain the initial acceptance of HIS but is also aimed at explaining the substantial acceptance or usage of HIS. So it is able to help researchers to understand both the initial acceptance and sustained usage of HIS. The multiple identities of an HIS user also imply that HIS adoption is an extremely complex issue; this closely relates with various research domains. As a result, a multidisciplinary approach is essential for HIS acceptance research.

HIS Practitioners need to understand that an HIS is not just an IT product but also a hedonic product, while an HIS user is not just a computer user, but more importantly, is a hedonic consumer and a player. Since an HIS user is an IT user or a computer user, HIS developers and designers should make HIS easy to use and user-friendly. As an HIS user is also a hedonic consumer, he or she is more sensitive to imaginal and emotional responses of the system [Hirschman and Holbrook, 1982; Holbrook and Hirschman, 1982]. System developers need to make the systems

more attractive and appealing by selecting attractive screen colors, music, pictures, videos, and other system components to improve users' emotional responses and enable them to relax and be entertained. Furthermore, as an HIS user is also a player, HIS designers should carefully take the skills of an HIS user into account and try to keep the balance between the challenges and skills as long as possible to maintain a flow experience. According to Lowry et al. [2007], users are more likely to experience enjoyable feelings and perceptions when they are intrinsically, rather than extrinsically, motivated to interact with an IS. It would be a good strategy to add some hedonic features in productivity-oriented IS in order to facilitate their acceptance in workplaces.

HIS marketers and managers may need to reevaluate their view of an HIS. It is necessary to take the hedonic nature of HIS and the unique characteristics of an HIS user into consideration when developing HIS marketing strategies. For instance, it may be a good idea to display and sell video games with movies, since both HIS and movies are hedonic products. People, particularly young customers who are interested in movies, may be equally interested in buying a video game because both of them have the same function: to entertain or relax a consumer.

VIII. CONCLUSIONS

HIS acceptance is a relatively new and poorly explored area of research. This study makes a number of contributions. First, it identifies three identities of an HIS user: a computer user, a hedonic consumer, and a player. Second, based on the multiple identities, a hybrid HIS acceptance model which integrates Hedonic theory, flow, PAD model, and TAM from multiple disciplines is proposed. It suggests that each identity of an HIS user influences the acceptance of HIS by end-users and user acceptance of HIS is highly related to such intrinsic motivations as flow experience, emotional responses, and imaginal responses experienced during their interacting with HIS. Third, this study provides support for the viewpoint that a multidisciplinary approach is ideal in IT acceptance research [Koufaris, 2002], and the hedonic nature of HIS is a boundary condition of TAM [Van der Heijden, 2004]. Further research can use the findings of this study as a basis to further explore the underlying motivations of HIS acceptance.

ACKNOWLEDGMENTS

The authors are grateful to the editor and the two anonymous reviewers for their constructive comments during the review process. This work was supported in part by National Natural Science Foundation of China (No.71171129), Shanghai Science Commission Project (No.10190502500, 11510501900), Shanghai Education Commission Project (No.J50604, 11YZ137, 11CXY47) and Young Teachers' Training and Supporting Program of Shanghai Tertiary Schools.

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APPENDIX A. CONSTRUCT MEASUREMENT ITEMS

Table A–1: Construct Measurement Items

Latent variables	Observed variables (predictors)
Perceived ease of use (EOU)	EOU1: My interaction with the game is clear and understandable. EOU2: Learning to play an online game is easy for me. EOU3: It is easy to play an online game. EOU4: It is easy for me to become skilled at playing an online game.
Behavioral intention (BI)	BI1: I think I will continue to play the game. BI2: I plan to play online games in the future. BI3: I intend to continue playing the game. BI4: I predict I will play online games in the future.
Escapism (ESC)	ESC1: Playing online games helps me temporarily escape from the world of reality. ESC2: Playing online games helps me temporarily escape from problems and pressures. ESC3: Playing online games helps me temporarily escape from things unpleasant and worrisome.

Table A–1: Construct Measurement Items – Continued	
Attitude (ATT)	ATT1: I like playing the game. ATT2: I like the idea of playing online games. ATT3: I have a positive attitude toward playing online games.
Role Projection (RP)	RP1: Playing online games enables me to project myself into a particular role. RP2: Playing online games enables me to project myself into a particular character. RP3: Playing online games enables me to project myself into a particular task.
Enjoyment (ENJ)	ENJ1: I have fun when I am playing online games. ENJ2: Playing online games provides me with a lot of enjoyment. ENJ3: I enjoy playing online games.
Concentration (CON)	CON1: When playing the game, my attention is focused on the game. CON2: When playing the game, I am absorbed intensely in the game. CON3: When playing the game, I concentrate fully on the game
Time distortion (TD)	TD1: Time appears to go by very quickly when playing the game. TD2: Sometimes I lose track of time when playing the game. TD3: Time flies when playing the game.
Pleasure (PLE)	PLE1: To what extent do you feel happy or unhappy when playing the game? PLE2: To what extent do you feel pleased or annoyed when playing the game? PLE3: To what extent do you feel satisfied or unsatisfied when playing the game? PLE1: To what extent do you feel relaxed or bored when playing the game?
Arousal (ARO)	ARO1: To what extent do you feel stimulated or relaxed when playing the game? ARO2: To what extent do you feel excited or calm when playing the game?
Dominance (DOM)	DOM1: To what extent do you feel in control or cared for when playing the game? DOM2: To what extent do you feel controlling or controlled when playing the game? DOM3: To what extent do you feel dominant or submissive when playing the game?

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Communications of the Association for Information Systems

ISSN: 1529-3181