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Hedonic Information Systems Quality

Chanyoung Seo
School of Information Systems and Technology Management

Zixiu Guo
The University of New South Wales, z.guo@unsw.edu.au

Lin Xiao
Nanjing University of Aeronautics and Astronautics, xiaolin@nuaa.edu.cn

James J. Jiang
jjjiang@ntu.edu.tw

Gary Klein
University of Colorado, gklein@uccs.edu

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Completed Research Paper

Chanyoung Seo

School of Information Systems and Technology Management, UNSW Sydney
Sydney, 2052, NSW, Australia

Zixiu Guo

School of Information Systems and Technology Management, UNSW Sydney
Sydney, 2052, NSW, Australia
z.guo@unsw.edu.au

Lin Xiao

College of Economics and Management, Nanjing University of Aeronautics and Astronautics
Nanjing, 211106, China
xiaolin@nuaa.edu.cn

James J. Jiang

College of Management, National Taiwan University
Taipei City, 10617, Taiwan, ROC
jjjiang@ntu.edu.tw

Gary Klein

College of Business Administration, The University of Colorado
Colorado Springs, CO 80933-7150, United States
gklein@uccs.edu

Abstract

Hedonic Information Systems (HIS) are an entertainment-oriented IS used in non-office environments in which a user does not have specific goals to achieve. It is fundamentally different from the traditional IS designed for goal-oriented users in either individual or organisational work settings. Despite of the importance in improving HIS, there is a lack of academic exploration in context-specific HIS quality in a comprehensive manner. Drawing from a balanced thinking-feeling model and a theory of flow and telepresence theory, we explore the attributes of HIS quality. The Repertory Grid Interview technique (RGT) is used to interview 20 participants who have online gaming experience and 12 factors are identified. Our results show that HIS quality is a multifaceted concept that consists of not only utilitarian, but also hedonic and social features. This study is among the first to use a qualitative approach to comprehensively explore the attributes of HIS from user perspectives.

Keywords: Hedonic Information Systems, Theory of Telepresence, HIS quality, Theory of Flow, Balanced Thinking-Feeling Model, Repertory Grid Interview

We dedicate this work to the deceased Ms. Chanyoung Seo

Introduction

Hedonic information systems (HIS) are an entertainment-oriented information system used in home and leisure settings. It is significantly different from traditional information systems (IS) developed for a user in office environments in which he/she has a specific task to fulfil using the IS. As evident in its growing market sales, HIS have become a widespread entertainment means in our contemporary lives irrespective of age or gender. It is reported that approximately 700 million people worldwide play online games - a representative example of HIS - and 46% of the gamers are female (Spil Games 2013). HIS are an ongoing global technology phenomenon that also shakes Information Technology (IT) industries where previously enterprise systems dominated. For example, Microsoft's entertainment and devices division earned US $10,165 million in 2013, an increase of 370% from 2003 which is a double of Window division's growth rate in the same period of time (Microsoft 2014).

The remarkable success of HIS in a commercial market breaks new grounds for IS research. Heijden (2004) presented a synthesis of scattered knowledge about HIS in a comprehensive manner and argued that the dominant IS research paradigm built for the traditional IS is lacking in understanding an essence of HIS, in particular, the HIS quality. Quality has been a central research topic to IS researchers. It is an evaluative judgement made by users based on their expectations toward an object (Wixom et al. 2005). It is highlighted as a key parameter of user satisfaction with IS that can eventually draw more users and higher profit (Zeithaml 2000). Advertising, promotion, or lowering price can draw a number of new users in a short-term however it is highly likely to not last long. By contrast, a high quality IS generates delighted IS users, and their high satisfactions with the IS are identified to be a key motive to keep them continuing to use in a longer time (Storbacka et al. 1994). Hence, there is an academic consensus in which quality is a core construct in IS continuance and success (Venkatesh et al. 2008).

Even though quality is unarguably of importance, previous IS quality research narrowly concentrates on functional information systems for a user in organisational contexts, while dismissing HIS as well as somewhat subjective and fun-related notions (Norman 2004). The body of IS quality literature largely concerns with task-oriented systems (Lee et al. 2006). In parallel with the exclusion of HIS, there are insufficient academic efforts dedicated to exploring multifaceted aspects of HIS that constitute with much broader than instrumental, technical and functional features (Yin et al. 2014). With a central focus on these utilitarian aspects of systems (DeLone et al. 2003), IS quality is understood as a means of assessing how a target IS performs the pre-specified rules in a precise fashion. For instance, a great number of IS studies documented service quality in intra-organisational service settings focusing on outcome and process of IT help service rendered by IT personnel (DeLone et al. 2003). Therefore, recent IS studies acknowledge the needs for advancing our knowledge about quality in the hedonic contexts (Lowry et al. 2007).

In addition, IS literature has examined IS quality from diverse stakeholders perspectives, namely designer (or developer), management, maintenance, and end-user (Sedera et al. 2004). A user is of importance, especially in HIS use contexts because of fun and pleasurable experience, the core matter of HIS quality, can be best perceived and evaluated by the user. In other words, the evaluation of quality should be based on what users want rather than what a designer offers. The underlying problem of disregarding a user's view often resulted in a market failure (Norman 2004). To fulfil the gaps in the literature, this study sought to gain insights into the following research question: What is hedonic information systems quality from a user perspective?

The remainder of this paper first presents a synthesis of extant literature relevant to HIS quality. Second, the relevant theories that guide the current study are highlighted. Third, the research design is then articulated, followed by the results. Finally the paper concludes with a discussion of the importance and implications of the findings.

Literature Review

Hedonic Information Systems

The Cambridge dictionary (2014) defines the word 'hedonic' as: *"connected with feelings of pleasure."* In Holbrook et al's (1982) study concerning experiential perspective on hedonic consumption, the term 'hedonic' was denoted as *'fantasies, feelings and fun'*. Knowing that consumption experiences are holistic and dynamic, the authors argued that the analytic capacity of the traditional marketing perspective is insufficient to aptly account for the *multisensory, fantasy and emotive aspects* of

consumption therefore encouraged subsequent research to leverage the hedonic perspective as a complimentary paradigm to the prevailing traditional perspective. As a consequent, the term 'hedonic' was articulated as a contrast to the dominant perspective, namely 'utilitarian' by the proponents.

In line with the marketing tradition, the hedonic/utilitarian dichotomy applied into categorisation of an array of IS. The emerging entertainment IS such as online games or social networking sites (SNS) are named HIS whereas the traditional IS such as enterprise resource planning system are labelled utilitarian IS (UIS) (Wu et al. 2013). In IS literature, the term 'hedonic' associated with the words '*process-oriented, fun, pleasure, entertainment, excitement, leisure, experience, joy, play, internal, intrinsic, mood, affection, and self-fulfilling*' whereas the term 'utilitarian' is conjointly described IS with words '*outcome-oriented, goal, task, work, rational, cognitive, logical, instrumental, functional, external, extrinsic, and utility*' (Lowry et al. 2013). Building upon motivational theories, the extant IS literature recognised the distinction of two concepts in a comprehensive way that are elucidated with intrinsic motivation, referring to the performance of an activity for no apparent reinforcement other than the process of performing the activity per se, and extrinsic motivation, referring to the performance of an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself (Zhou et al. 2012). IS users holding intrinsic motivation are prone to seek out hedonic values from their IS experiences e.g., fun and playfulness while the extrinsically motivated users have the propensity to look for utilitarian values e.g., productivity. It is reported that HIS users could hold dual motivations however intrinsic rewards are found to be the main motives for them to devote time on HIS (Lowry et al. 2013).

HIS are designed from a 'joy' angle for a pleasant experience in homes and leisure settings (Lin et al. 2010) therefore it is built with more sensory-oriented stimuli such as animated images, sounds, music, aesthetically appealing visual layouts (Heijden 2004; Lowry et al. 2013). On the contrary, UIS are designed for an effective and efficient use in organisational settings. It is, in general, a mandatory IS in the firms thus the instrumental values of UIS are at play i.e., an effective IS tool for the improvement of user's performances.

Given that there is no such dictionary definition of HIS, the current study proposes a definition of HIS drawing upon the key distinctive features of HIS in comparison with its counterpart. That is, 'interactive information systems designed and used for a user's entertainment purpose.' In a same vein, the usage context of HIS is denoted as 'volitional, no-goals, personal, social, and leisure.' The users of HIS are expected to exhibit fun and pleasurable experiences in using HIS.

Information Systems Quality

Quality is broadly conceived as an object-based belief that has strong impacts on many key research constructs such as attitude, behavioural intentions, and actual behaviour (Fishbein et al. 1975). A belief is defined as the subjective probability that the object has a certain attribute (Ajzen et al. 1995), and it is postulated that a formation of beliefs involves with multiple yet distinctive types of information sources thus quality as a belief is in a multifaceted nature (Fishbein et al. 1975). It is further decomposed into object-based beliefs and behavioural beliefs (Wixom et al. 2005) where the former is regarded general beliefs toward physical objects, policies, or other general targets while the latter is formed toward performing specific behaviours with respect to an object or target (Ajzen et al. 2005). In this sense, quality can be seen as an object-based belief about performance of salient attributes of a target system, software or IT artefact, and further affect behavioural beliefs (Wixom et al. 2005).

In research practices, quality is specified in multiple ways depending on the school of thought. The school of operation management traditionally defined quality based on goods in the era of manufacturing-based economy. It was, therefore, objectively defined as conformance to specifications (or requirements) focusing on a technical quality to precision in manufacturing processes or final products (Crosby 1979). However, the traditional quality control and management techniques called into question their appropriateness in service settings (Zeithaml 1988). Marketing scholarships put forward efforts to deepen our understandings of quality concerning both goods and services through the lens of customer. On the basis of her means-end chain analysis, Zeithaml (1988) argued that quality is subjectively judged after a customer encounters a product or service thus quality only can be assessed outside of the manufacturing location. Accordingly, the widespread definition of a perceived quality in the extant marketing literature refers to 'customers' experiences meet/satisfy their expectations (Zeithaml 1988)'.

Anchoring the conceptual extension made in marketing literature to IS research, the current body of IS literature primarily treats quality as evaluative criteria comprised of instrumental attributes of IS. Traditionally, IS quality is framed in three ways in which IS supply information, IS provide service, and IS are a system per se (Negash et al. 2003). In this vein, quality of IS is in a multifaceted nature, namely an information facet, system facet, and service facet. IS users form their expectations toward an IS and quality of the target IS is an evaluation of the multifaceted expectations in order to see whether the associated attributes of the expectation are performed in the expected way. IS quality has been ubiquitously adapted in numerous studies (Petter et al. 2009) however the majority of research focused on the utilitarian facets of IS. It is due to that IS originated from computer science and rational scientific management (Stein et al. 2014) so that IS researchers are prone to pay a great attention to IS functionality.

However, there are new terms entering IS vocabulary such as emotion, pleasure, experience, aesthetics, and social in parallel with the emergence of HIS (Ahmed et al. 2009). Although it is still in a nascent stage, a growing number of scholars employ diverse angles and lens from multiple stakeholders in investigating quality. For instance, Wang et al. (1996) explored information quality from designer and user perspectives in enterprise systems context. Parasuranman et al. (1985) examined service quality from user perspectives in IS personnel service context. Mintauckis (2010) explored quality of service from network provider perspectives in multimedia service contexts. These studies are all utilitarian oriented. From hedonic perspective, Lemke et al. (2011) examined experience quality in tourism service context. Ou et al. (2011) examined social interaction quality in social networking sites context. These hedonic oriented studies all examined quality from user perspectives. Thus, this study aims at structuring a big picture of the cumulated knowledge about IS quality derived from diverse origins, disciplines, and stakeholders. Our review of the literature shows that in the current academia, there are various quality constructs concerning different aspects of IS, further lending support to the multifaceted nature of quality in essence. Quality is a complex concept that cannot be fully represented by a single attribute. Takatalo et al. (2007) argued that studying only one component of quality will leave many open questions because it does not tell us much about the holistic technology experience. To this end, it is unknown that one of existing quality constructs, or a combination of multiple quality constructs, can offer a good fit in HIS use contexts because there is no such HIS-focused research concerning multiple aspects of quality in an integrative fashion. Hence, this study thrives to fill this gap - a lack of academic extension and exploration in context-specific HIS quality in a comprehensive manner.

Theoretical Foundation

Throughout the literature review, this paper builds a line of argument in which HIS quality is a multifaceted concept that goes beyond the traditional utilitarian facet. To explore the concept, a balanced thinking-feeling model, and theory of flow and telepresence theory are adapted because of their ability to offer a focused direction and guidance for gaining understanding of technology phenomenon within a social system (Storgårds 2011).

A Balanced Thinking-Feeling Framework

A balanced thinking-feeling model is one of the first novel frameworks that proposes the overall consideration of both cognitive and affective aspects of technology experience (Romer 2000). The precursors adapted the thinking-feeling mechanism of decision making from the discipline of economics (Romer 2000), further elucidating how a user's IS continuance decision is derived from the dual-mechanism. In this theory, IS users are seen to serve a dual role - a IS user (logical thinking) and IS service consumer (pleasure feeling). The thinking and feeling mechanisms are fundamentally different. Thinking is a logical reasoning for deciding the best choice that offers the most value or utility (Romer 2000) whereas feeling is an emotional state associated with using the object that offers highest pleasurable experience (Riedl et al. 2013). Thinking needs more time to arrive in a rational decision whereas feeling is formed quickly – first impression is formed in just 50 millisecond (Lindgaard et al. 2006)– and does not require much brain capacity. Human beings exploit thinking and feeling mechanism in both simultaneous and sequential fashion (Schwarz 2011). In a simultaneous fashion, affect may override cognition in decision making, or vice versa. In a sequential fashion, when affect is not sufficient to make decision, cognition comes into play or vice versa. In sum, the thinking-feeling mechanism is a hybrid organism in which the two different systems interact with each other when making judgment. The thinking-feeling mechanism is relatively new in IS but not an alien concept in psychology which investigates into a complicated process of human decision making.

Human beings digest incoming information from various stimuli through cognitive system and affective system in the brain and exploit emotion evoked from the stimuli as primitive information throughout the judgment process (Schwarz 2011). In this sense, information processing systems in our brain generate both thoughts and feelings (Romer 2000), and feeling-as-information deems another valid antecedent of judgment (Schwarz 2011).

The exploratory power of the thinking-feeling mechanism is evident in recent studies that demonstrate how to apply the dual mechanism in various contexts and its significant influence in shaping the formation of belief, attitude, and intention in the form of diverse IS constructs (Goh et al. 2014). It is posited that utilitarian features of a target IS induce a user's cognition-driven reaction through the thinking mechanism; and hedonic features of the IS lead the user to the affect-driven reaction through the feeling mechanism. In this regard, this study will leverage the thinking-feeling mechanism as a theoretical lens for explicating attributes of HIS quality.

Theories of Flow and Telepresence

Theories of flow and the telepresence concept have been recognised as representative theoretical underpinnings for user experience with interactive technology in IS literature. The latest notion on user experience with interactive technology, in specific HIS, is denoted as holistic, aesthetics, and hedonic; and is confined with a consequence of a user's internal state, the characteristics of the designed system and the context within the interaction occurs (Hassenzahl et al. 2006). A theory of flow is closely related to the user's internal state and telepresence theory has a great deal of the characteristics of the system.

Flow theory is developed by Csikszentmihalyi (1975), who defined flow as 'holistic sensation that people feel when they act with total involvement'. It highlights experiences with an individual's total engagement and immersion, eventually exhibiting intrinsically enjoyable state (Finneran et al. 2003). IS researchers actively adapted the flow framework for analysing a user's holistic and affective experience with IS occurred in especially online games (Chang et al. 2014). The flow theory is harnessed as an explanation for why, when, and how the enjoyable and engaging experiences occur in computer-mediated environments (Finneran et al. 2003).

The body of literature examining flow occurrences in various IS contexts emphasises on mental phenomenon with a central focus on person (an individual experiencing a flow state) and activity (task given to the individual) however an artefact, to a great extent, is overlooked. Telepresence, in contrast, sheds much more light on the technical sophistication of an artefact. The concept is coined by Minsky (1980) who proposed a futuristic use of technology in hazardous jobs e.g., operating nuclear plant. At the present time, telepresence becomes a feasible concept that can be implemented in diverse virtual reality technologies. It is broadly defined as a sense of being there (Minsky 1980), or in specific the extent to which one feels present in the mediated environment (Steuer 1992). The core matter of the concept is medium transparency. To create an illusion of being in a remote location, the mediated environment is required to catch more attentions from the user over the competing physical environment (Kim et al. 1997). In this regards, interactivity and medium vividness are identified to be significant in conveying sensory stimuli to the users (Nah et al. 2011). In literature, telepresence is employed as a useful theoretical concept to understand immersive and interactive user experiences in the hyper-real environments.

The sensations of flow state or telepresence have a commonality in which it is felt when a user is absorbed in an activity or surroundings. The subjective and interactive experience is in general resulted in fun and pleasurable experiences with the IS. Hence, both theories have been widely accepted as theoretical guidance to comprehending user experience with IS from a holistic view. Flow theory and telepresence are expected to help gain insights in a user's holistic, aesthetic, and hedonic experience with HIS.

Research Methodology

Study Artefact

Online games are one of the purest forms of HIS that is dominantly used for a recreational purpose. It is an interactive system in which thousands of players can simultaneously play, communicate, group and trade virtual goods through their digital avatar in persistent environments, defined by fantasy storyline; and corresponding game communities are associated with the game software. In 2016, more than half of Americans claimed that they play online games and worldwide online gamer generated a

total of USD $99.6 billion in revenues in 2016 (Newzoo 2016). Collectively, online games are a hedonic IS that enjoyed by a large number of people in the world. Therefore, this study selects online games as a study artefact.

Repertory Grid Technique

The RepGrid technique is a methodological extension of a personal construct theory developed by Kelly (1955). It is a structured interview process, involving the generation of a list of concepts (elements) about things and/or events to be studied and the forming of attributes (constructs) based on the list of concepts (Zhang et al. 2001). The RepGrid is a useful technique in exploring how people perceive IS itself, or IS related phenomenon. In IS research, this technique has been used in developing expert Systems (Phythian et al. 1992), eliciting qualities of excellent system analysts (Hunter 1997), exploring the cognitive thinking of business and IS executives (Tan et al. 2006), examining the skills of successful IT project managers (Napier et al. 2009), and more recently, examining student technology use motivations (Guo et al. 2011; Guo et al. 2010). In RGT, the interviewers simply guide the interviewees through the interview process, letting the participants provide constructs to randomly selected triads of elements and to respond in their own words. Elements can be individuals, roles, activities, tasks, or types of information systems (Tan et al. 2006). In this case, titles of online games deem appropriate elements. This last aspect is important as it avoids the bias that other techniques (such as surveys or traditional interviews) could bring. Finally, the data obtained from RGT is sufficiently rich to enable a thorough examination of content elicited by each individual's construct system (Phythian et al. 1992).

Research Participants

We interviewed 20 participants in total. It is recommended that 15-25 participants would be adequate to generate sufficient constructs to reveal the extent of the characteristics of investigating event (Tan et al. 2002). We adopted a purposeful sampling strategy, in particular criterion sampling, which 'focuses on selecting information-rich cases whose study will illuminate the questions under study' (Patton 2002, p.230). Participants who are over 18 years old and have played at least five online games beforehand were selected for the interview.

Interview Procedure

The interviews ranged from 50 to 120 minutes and followed a conventional RGT interview process. The major steps involved in the interview are outline below.

Supplying elements is the first step and aims to identify subjects within the domain of the investigation. Each participant was encouraged to identify at least five Massively Multiplayer Online Role-Playing Game (MMORPG) titles he/she has played in most recent time. If the participant cannot provide 6 or more game titles, 'ideal game' was supplemented. The ideal game is a representation of his/her ideal online game which manifests best possible features he or she wants to experience during gameplay. The titles of each of 6 games were written on individual index cards.

Once the elements are determined the constructs can be elicited. Two interviewing methods, 'triading' and 'laddering' are employed to elicit constructs. In triad elicitation process, the participant was asked to randomly pick three index cards (triad) from the stack. For each triad, he or she was asked: 'how are two of these online games similar and yet different from the third in terms of quality?' In the laddering process, the researcher probed the participants with a series of 'how' and 'why' questions to clarify the meaning and uncover underlying assumptions. The laddering technique attempts to delineate individuals' belief structure in a simple and systematic way while establishing a person's superordinate personal constructs (Veludo-de-Oliveria et al. 2006). The participant then placed the cards back in the stack, shuffled them and selected another three cards. The exercise was repeated until no new constructs could be elicited from a triad or the participant tired (Tan et al. 2002).

Data Analysis Procedure

Content analysis was used to analyse the interview data. By design, the RGT process allows participants to freely voice their opinions and can achieve good construct elicitation. In this study, the 20 participants produced a total of 150 raw constructs. The initial coding was undertaken by the first author. A second researcher coded 3 of the transcripts for which an acceptable cross-coder reliability of 82.5% was reached (Krippendorff 1980), suggesting that the coding schema was valid. A data

reduction process was conducted to consolidate the constructs with the same or similar underlying idea, which resulted in 44 unique constructs.

After the data reduction, further content analysis was undertaken by two researchers to categorize the elicited constructs. For the categorization of constructs, an adjusted core-categorization procedure as outlined by Jankowicz (2004) was used. Using semantic similarities, the 44 unique constructs were collapsed into 12 broad categories.

Results and Discussion

Following the procedures of content analysis, 12 categories were identified from the interview data. The factors are summarised in Table 1 below, including category name, the unique constructs that constitute each category, meaning of each unique construct, and the number of respondents mentioned each category and unique constructs. We divided them into two different mechanisms to align with balanced thinking-feeling theory.

Table 1. Attributes of Hedonic Information System Quality		
Construct	**Definition**	**N^**
Thinking Mechanism		
Convenience		**13**
Easy access and connection	Easy to find the game and fast connection to the game	4
Independence of time and place	There is no time and place restrictions to play the game	8
Less busy with hands	The game is convenient to control so that hand gets less busy	4
Less time required	The game requires less time	3
Fairness		**8**
Investment recoverable	Investment can be recovered when stopping to play games	2
Practice make returns	Hard work pays off and more efforts lead to better results	5
Rewarding	Visible outcome from investment	2
Unfair	The level of your character in game depends on how much money you have spent in the game	2
Freedom and Control		**13**
Degree of freedom	The autonomy of the game player	6
Flexible playing method	Game supports flexible playing methods	3
No pressure	Feel no stress when playing the game	2
Player producing contents	Players can participate in producing contents	4
Restriction for leaving game in the playing process	Be restricted to leave the game casually	4
Information Quality		**7**
Comprehensiveness of information	Comments and reviews, introduction on homepage, well informed website	6
Detailed information	Refers to detailed and specific information	4
Service Quality		**9**
Compensation	Award to someone as a recompense for loss	5
Customer service	Customer service is provided by game company	5
System Quality		**16**
Hacking	Hacking problems in game	7
Security protection	Security measure to protect the safety of gamers' accounts	9
Server management	Game server management	9
Feeling Mechanism		

Flow		**12**
Concentrated	Be concentrated on the game	4
Forget the time pass	Ignore the passage of time	3
Immersed in	The experience of total engagement where other demands are, in essence, ignored	8
Freedom and Control		**13**
Degree of freedom	The autonomy of the game player	6
Flexible playing method	Game supports flexible playing methods	3
No pressure	Feel no stress when playing the game	2
Player producing contents	Players can participate in producing contents	4
Restriction for leaving game in the playing process	Be restricted to leave the game casually	4
Sense of Achievement		**10**
Catch up others	Pay extra to catch up others in game	5
Defeat other players	Fight with other gamers and win the game	4
Rank top in the game	Be the first one to reach the end of game	3
Entertaining		**20**
Amusing	Games provide interesting and enjoyable things for players	4
Boring	Feel weary and uninterested about the game	4
Curious	Satisfy curiosity	7
Fun	Feel pleasant	20
Kill time	Play game to killing time	5
Releasing stress	Play game to release stress	2
Self-expression		**10**
Earn respect from others	Earn respect from others	3
Feeling of superior	Feel superior	2
Increase status in game	Use guild's name or get items to increase status in game	4
Show off	Show off when achieve a goal in the game	6
Telepresence		**14**
Sense of reality	The characters, movement, and images make players feel that they are in a real environment rather than in the virtual environment	14
Social Interaction		**19**
Help others in the team game	Help others in the team game	2
Interact with friends	Oral communicate with players or meet friends in game	4
Learn from others	Learn from other's play	2
Play with others	Play with others	16
Share information	Share game information with others	11
Topic to talk	Take the game as a topic to discuss	10

Table 1. Attributes of Hedonic Information System Quality

Results presented in Table 1 confirm our argument about thinking and feeling mechanism when players play online. Specifically, we found that four utilitarian aspects of IS quality, including information quality, service quality, system quality, and convenience, which have been extensively examined in the literature (Zheng et al. 2013), apply to HIS context as well. Among the three quality aspects, we found that system quality is most important, mentioned by 16 out of 20 participants. System quality is defined as an individual's evaluation of the performance of system features (Zheng et

al. 2013). Results suggest that user care more about the hacking problem, security protection, and the server management. Companies aiming to provide high hedonic information system quality can focus on these aspects.

Our findings show that online game players show more affective-driven reaction, demonstrated by seven concerns about their affect. In particular, we found entertaining and social interaction aspects play the most significant roles in shaping HIS quality. Entertaining means the fun and relaxation through playing, emotional release or aesthetic enjoyment (Calder et al. 2009). Results show that all 20 participants mentioned this HIS quality aspect. Social interaction was mentioned by 19 out of 20 participants, only second to entertaining in terms of importance in measuring HIS quality. Having the opportunity to play, meet, challenge, and chat with others around the global is the main distinction between UIS and HIS. These opportunities have made the HIS, especially the online game highly attractive to individuals using the internet-based application for hedonic purpose (Lo et al. 2005). Our finding confirmed results in prior research demonstrating that the social interaction is the primary driver to game playing.

In addition, we found that flow is evident in HIS context by demonstrating flow to be an important aspect of HIS quality, mentioned by 12 participants. Three constructs relating to flow were identified by participants, including concentrated, forgetting the time pass, and immersed in. This result supports researchers (Hsu et al. 2004) who found that flow experience is a significant factor in explaining an individual behavior of playing online game. Many participants mentioned that the telepresence of online game make them easily immersed in the playing process. Telepresence refers to "the feeling of being a part of the phenomenal environment created by a medium"(Kim et al. 1997, p.8). Mentioned by 14 participants, telepresence is thus considered to be another important and unique aspect of HIS quality, especially in nowadays that many hedonic information systems are designed with highly graphic (e.g., 3D, details of characters available) and interactive tools imbedded in. This HIS quality aspect also makes HIS quite different from UIS used for task-purpose.

Finally, we found self-expression and sense of achievement to be two important aspects of HIS quality. Self-expression is defined as using the HIS to freely express oneself, being liberated from real world social/ethical and /or cultural restrictions (Hassouneh et al. 2014). This finding is in line with Han et al.'s (2007) study who confirmed self-expression to be significant determinant of participation intentions in virtual communications. Mentioned by 10 participants, sense of achievement measures players' desire to achieve success and build confidence (Fang et al. 2009). Merhi (2016) argues that if someone in the real life always lose, he/she can play the online game to achieve success so as to fulfill the needs of achievement. In addition, some individuals play online in order to show their ability to other players. Future studies measuring HIS quality may consider these aspects.

Implications and Conclusion

From theoretical perspective, the main implication of this study is the identification of a set of attributes of HIS quality. Although prior studies have provided insights that HIS quality should be different from IS quality in traditional studies, this study is among the first to use a qualitative approach to comprehensively explore the attributes of HIS quality from user perspectives. Through the use of RGT interview technique, we found that HIS quality is in a multifaceted nature. It not only consists of information facet, system facet, and service facet which have been verified in traditional IS context, but also consists of affect facets, which is largely ignored when measuring IS quality in the literature. In other words, HIS quality should be measured by dual-mechanism including both utilitarian and hedonic aspects. Hedonic aspect even outweighs the utilitarian dimension as more factors identified are related to hedonic or emotion feeling.

In addition, by utilising the qualitative research approach, we present a set of useful constructs which can be used in the future to assist the design of the survey instrument of HIS as the scale we provided has little researcher bias and it was generated by the users themselves. The results can be used as foundations for future research to test the HIS quality among users.

From practical perspective, the findings of this study empower the stakeholders of HIS in an economic sense. IS practitioners should be aware that only improving the utilitarian functions of HIS is not enough. Users employ HIS mainly for hedonic or social purposes. Thus, designers should focus on providing a highly interactive and enjoyable system that can facilitate entertainment and socializing functions. For instance, imbedding the interacting tools such as voice talk and instant messaging in the system design, which can help improve socializing among users. Encouraging users to play in a team is also an efficient play style preferred by users. Furthermore, HIS should be designed to

facilitate the flow experience for users. Thus, designers can pay attention to provide a high level graphic and give attention to details, which can make users feel a sense of reality and finally induce the flow experience for users.

This study is not free from limitations. The context-dependency and artefact-specificity have been emphasised. As an initial attempt to identifying HIS quality, it is largely unknown that, to what extent, various HIS share the common quality factors. Therefore, the interpretation and generalisation of the findings should be performed with the caution and acknowledgement of this limitation. Another limitation stems from that this study does not attempt to supplement the elements e.g. online game titles to the respondents. Although the use of respondent self-elicited elements are encouraged in literature (Fransella et al. 2004), it is unknown how the variation of the elements elicited by each respondent will affect the final set of salient HIS quality constructs. Future study may replicate this study with provided elements in eliciting constructs.

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