

# Brand Equity of Digital Games: The Influence of Product Brand and Consumer Experience as Sources of Unique Value

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Jan Henrik Storgårds



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**Jan Henrik Storgårds**

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By demonstrating something unique a product stands out from the mass. This is the starting point of brand awareness, which exerts influence over consumers' product evaluation processes. Particularly in the digital games industry, the creation of unique value is vital as games utilize intangible modes of distribution lacking physical form, which ultimately leads to difficulties in highlighting and facilitating evaluation of a game's defining characteristics. The objective of this thesis is to determine and conceptualize how a game functions as a source of unique value.

A game's varied defining characteristics function as the source of brand equity which results in incremental effects influencing consumers' product evaluation. The unique value characteristics of games are studied from three perspectives: 1) by examining the motivational aspects of digital games consumption; 2) by investigating the influence of brand image and prior experience on product evaluation regarding a game's salient qualities and 3) by demonstrating the organizational practices involved in the development of unique qualities by processing novel game ideas within digital game studios.

Three interrelated theories are adapted from various research contexts regarding the brand equity phenomenon - motivational theory, information processing theory of consumer choice and boundary objects-in-use in organizational practices. This thesis uses methodology triangulation to answer the research question, both quantitative (surveys and multivariate data analysis) and qualitative methods (interpretative case study) are applied to four data collection samples; three from consumers and one from game developers.

The main contribution of this study is that both the game brand and prior experience are central elements which result in incremental influences on consumers' product evaluation processes. First, the results indicate that both intrinsic and extrinsic motivational aspects of consumption are important determinants of perceived value. Enjoyment, particularly the fun in games, plays a more important role during the awareness creation process than usefulness. Second, the results suggest that the influence of brand image on product evaluation is covert and this modifies consumers' decision making structures. This leads to a reprioritization of attribute importance in which prior game playing experience maintains an additional significant role. Third, the processing of ideas in digital games studios is an imperative and complex practice. The overwhelming amount of knowledge conflicts during idea processing practices lead to the birth of unique value.

Following the results of this thesis, digital games should be viewed as experience information goods. The findings provide novel theoretical and practical perspectives regarding brand equity and demonstrate how a combination of unique value characteristics can be used to create a successful game which stands out from the mass.

**Keywords** digital games, brand equity, experience, knowledge, product evaluation, product brand

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**Tekijä**

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**Väitöskirjan nimi**

Digitaalipelien ainutlaatuiset arvotekijät: Tuotemerkin ja kuluttajan aikaisemman tuotekokemuksen merkitys ainutlaatuisina arvotekijöiden lähteinä.

**Julkaisija** Aalto-yliopiston kauppakorkeakoulu**Yksikkö** Tieto- ja palvelutalouden laitos**Sarja** Aalto University publication series DOCTORAL DISSERTATIONS 29/2011**Tutkimusala** Tietojärjestelmätiede**Tiivistelmä**

Tuote, joka pystyy osoittamaan jotain ainutlaatuista arvoa käyttäjälleen, erottuu joukosta. Tämä lähtökohta antaa tuotteelle kyvyn vaikuttaa kuluttajien tuotearviointiin ja parantaa mahdollisuutta lisätä tuotemerkin tietoisuutta kuluttajien keskuudessa. Erityisesti peliteollisuudessa ainutlaatuisen arvotekijöiden kehittäminen on tärkeää, koska pelien jakelutapa ja aineeton muoto hankaloittavat kuluttajien mahdollisuuksia arvioida niiden keskeisiä ominaisuuksia. Ne myös asettavat haasteen sille, mitä ominaisuuksia tulisi korostaa viestinnässä ja kuinka kuluttajaa voisi helpottaa pelin arvioinnissa. Tämän väitöskirjan tavoitteena on selvittää ja käsitteellistää kuinka peli toimii ainutlaatuisen arvon lähteinä.

Monet peleille tyypilliset ominaisuudet toimivat pelien ainutlaatuisen arvon lähteinä, joista tärkeimmillä on kyky vaikuttaa kuluttajan tuotearviointiin. Näitä tutkitaan kolmella eri tavalla: 1) tarkastelemalla pelien kuluttamiseen liittyviä motivaatiotekijöitä, 2) tutkimalla tuotemerkkiin liittyvän mielikuvan ja aikaisemman kulutuskokemuksen vaikutusta pelin keskeisten ominaisuuksien arviointiin, ja 3) havainnollistamalla pelistudioiden eri käytäntöjä tuottaa ainutlaatuisia ominaisuuksia uusia peli-ideoita prosessoimalla.

Työssä sovelletaan motivaatioteoriaa, kuluttajan tuotevalintaprosessin tiedonkäsitteilyteoriaa ja teoriaa rajaobjektien käytöstä organisaatioiden eri käytännöissä. Tutkimuksessa käytetään sekä määrällisiä (kyselyitä ja monimuuttujamenetelmiä) että laadullisia (tulkitseva tapaustutkimus) menetelmiä tutkimuskysymyksiin vastaamiseen. Niiden yhdistelmää sovelletaan neljän otoksen analysoimiseen, joista kolme on kerätty kuluttajilta ja yksi pelien kehittäjiltä.

Tutkimuksen keskeinen tulos on se, että sekä pelin tuotemerkki että aikaisempi pelikokemus ovat keskeisiä kuluttajan tuotearviointiin vaikuttavia ainutlaatuisia tekijöitä. Ensiksikin, sekä sisäiset että ulkoiset kuluttamiseen liittyvät motivaatiotekijät toimivat tärkeinä koetun arvon lähteinä. Nautinnolla, ja erityisesti pelien hauskuudella, on kuitenkin merkittävämpi rooli tietoisuuden kasvattamisessa kuin hyödyllisyydellä. Toiseksi, tuotemerkki vaikuttaa kuluttajien tuotearviointiin huomaamattomasti muuttaen tuotearviointiin käytettävän päätöksenteon rakennetta. Tämä johtaa ominaisuuksien tärkeysjärjestyksen uudelleen arviointiin, missä aikaisemmalla pelikokemuksella on merkittävä rooli. Kolmanneksi, pelien ainutlaatuinen arvo perustuu peli-ideoinnissa käsiteltävään suureen määrään tietotaitoon liittyviä konflikteja eri rooleja edustavien ihmisten välillä.

Tutkimuksen tuloksien valossa pelit tulisi käsittää kokemustietotuotteina. Tulokset antavat uusia teoreettisia ja käytännön näkökulmia kuluttajan tuotearviointiin vaikuttavista ainutlaatuisista arvotekijöistä ja osoittavat kuinka niiden yhdistelmää voidaan käyttää tuottamaan ainutlaatuinen ja menestyvä peli, joka erottuu joukosta.

**Avainsanat** digitaaliset pelit, ainutlaatuiset arvotekijät, kokemus, tietämys, tuotearviointi, tuotemerkki**ISBN (painettu)** 978-952-60-4087-5**ISBN (pdf)** 978-952-60-4088-2**ISSN-L** 1799-4934**ISSN (painettu)** 1799-4934**ISSN (pdf)** 1799-4942**Julkaisupaikka** Espoo**Painopaikka** Helsinki**Vuosi** 2011**Sivumäärä** 205

# Abstract

By demonstrating something unique a product stands out from the mass. This is the starting point of brand awareness, which exerts influence over consumers' product evaluation processes. Particularly in the digital games industry, the creation of unique value is vital as it is unique value characteristics that differentiate a game from other similar games. The objective of this thesis is to determine and conceptualize how a game functions as a source of unique value.

Games are increasingly delivered to consumers through digital channels. This intangible mode of distribution lacks physical form and ultimately leads to difficulties in highlighting and facilitating evaluation of a game's defining characteristics. Therefore, it is of vital importance for digital game studios and developers to recognize unique value characteristics present in their games and to focus on these during the brand awareness creation process. Despite the importance of digital games as consumer applications and the rise in software business, there is limited research addressing unique value characteristics in the field of information systems science.

A game's varied defining characteristics function as the source of brand equity which results in incremental effects influencing consumers' product evaluation. The unique value characteristics of digital games are studied from three perspectives: 1) by examining the motivational aspects of digital games consumption; 2) by investigating the influence of brand image and prior experience on product evaluation regarding a game's salient qualities and 3) by demonstrating the organizational practices involved in the development of unique qualities by processing novel game ideas within digital game studios. The results of this thesis demonstrate the various sources of unique value of a digital game which build brand equity.

Three interrelated theories are adapted from various research contexts regarding the brand equity phenomenon - motivational theory, information processing theory of consumer choice and boundary objects-in-use in organizational practices. The integration of these theories functions as an ideal theoretical lens necessary to study the brand equity of games. This thesis uses methodology triangulation to answer the research question, both quantitative (surveys and multivariate data analysis) and qualitative methods (interpretative case study) are applied to four data collection samples; three from consumers and one from game developers.

The main contribution of this study is that both the game brand and prior experience are central elements which result in incremental influences on consumers' product evaluation processes. Second, the results indicate that both intrinsic and extrinsic

motivational aspects of consumption are important determinants of perceived value. Enjoyment, particularly the fun in games, plays a more important role during the awareness creation process than usefulness. In addition, the results suggest that the influence of brand image on product evaluation is covert and this modifies consumers' decision making structures. This leads to a reprioritization of attribute importance in which prior game playing experience maintains an additional significant role. Finally, the processing of ideas in digital games studios is an imperative and complex practice. The overwhelming amount of knowledge conflicts and priorities that managers direct in digital game studios during idea processing practices lead to the birth of unique value. Interestingly, direct contributions made by consumers' play only a minor role during the processing of game ideas. Following the results of this thesis, it is argued that digital games should be viewed as experience information goods.

This thesis advances the understanding of digital games as experience information goods among other software applications and presents novel theoretical proposals regarding unique value creation. The findings of this thesis will provide managers of game studios with knowledge and an understanding of how value which can be added while developing digital games and thus positively influence consumers. Further, the results provide pragmatic perspectives of the sources of brand equity and demonstrate how a combination of unique value characteristics can be used to create games which stand out from the mass. Knowledge of the sources of brand equity is an asset vital to the development of unique, successful games that stand out from the mass.

Keywords: digital games, brand equity, experience, knowledge, product evaluation.

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I have learned so much; I certainly know more than I knew when I started this journey. Yet, I know relatively less because I see and understand how much I do not know.

## **GAME OVER.**

Helsinki, April 2011

*Jan Storgårds*

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## Part II: LIST OF THE ORIGINAL ESSAYS

Essay I. Storgårds, J., Tuunainen, V.K., and Öörni, A. (2009) "The Hedonic and Utilitarian Value of Digital Games at Product Category Level," in: *European Conference on Information Systems (ECIS)*, Verona, Italy.

Essay II. Storgårds, Jan H. (2010) "The influence of the hedonic and utilitarian value of digital games on product recommendation at product brand level." "Unpublished manuscript"

Essay III. Storgårds, J., Tuunainen, V.K., and Öörni, A. (2009) "Digital Game Brand Image Information Influence to the Inexperienced Consumer's Product Evaluation," CD- Proceedings of the 42th Annual Hawaii International Conference on System Sciences (HICSS), Big Island, Hawaii.

Essay IV. Storgårds, J.H. Tuunainen, V.K., and Öörni, A. (2010) "Influence of the Brand Image on Product Evaluation in the Context of Digital Games" "Unpublished manuscript"

Essay V. Nandhakumar, J., Panourgias, N., Storgårds J.H. (2010) "Any good ideas? Developers' insights into the development process of game ideas in digital game studios." "Unpublished manuscript"

# 1. Introduction

A product that demonstrates something unique stands out from the mass (Simmel 1905). A product's unique characteristics are the essential origins of brand awareness which ultimately exert influence over consumers' product evaluation processes (Aaker 1991; Keller 1993). Consumers that are aware of a product form perceptions about the product's salient qualities and, when positive, result in product consideration and subsequent product selection (Srinivasan et al. 2005). At the core of this interactive and dynamic product evaluation process is brand equity. Brand equity denotes the incremental influence that a product has, with all its unique characteristics (Park and Moon 2003), over consumers' evaluation and choice processes (Erdem et al. 1999).

The objective of this thesis is to investigate the product brand and consumer experience as sources of unique value that ultimately influence product evaluation in the context of digital games (hence, games). Unique value, which makes a game stand out from similar games, contributes to brand equity: the source of incremental effects on consumers' product evaluation and choice processes. The research objective is pursued by studying various mechanisms of consumer product evaluation in several empirical contexts. Diverse theories and methods are used in the research essays to provide a more complete and holistic view of the research questions addressed in this study.

Brand equity is stated as one of the most important elements necessary for the success of any product and service (Leone et al. 2006). Information systems, marketing and games literature, within the digital games context however, lack studies regarding concepts of brand equity and unique value (Bragge and Storgårds 2007b). In particular, the theoretical concept of brand equity is underdeveloped in the digital games context with insufficient evidence 1) on games as hedonic and utilitarian goods, 2) on the influence of brand image on game evaluation and 3) from a digital games development perspective and how game ideas develop when embedded with knowledge.

Despite the growing significance of games in software business and as entertainment applications (ESA 2011; Neogames 2009), it is surprising that only limited attention has been paid to defining unique characteristics of games in academic information systems (IS) literature. The importance of unique value creation is increasingly evident and pivotal in the game industry, as the delivery of games to consumers is mainly through

digital channels which lack physical form. Thus, research providing an understanding of user perception and consumption values of games is highly relevant (Sánchez-Fernández and Iniesta-Bonillo 2007; Sheng et al. 2007). In addition games function as prime examples of information technology artifacts which can be used to study the interaction between consumers and computers (Gregor 2006), which is becoming an increasingly important part of our everyday lives (Kallio et al. 2007).

For the purpose of meeting the objectives of this study, the following main research question is posed (RQ) “*How does a game function as a source of brand equity?*” This main research question is further subdivided into four sub-questions to be addressed in the five research essays included in this thesis:

- RQ1: How do motivational aspects of consumption influence game word-of-mouth (WOM) recommendation? (Essays I and II)
- RQ2: How does brand image influence the evaluation of a game’s salient qualities? (Essays III and IV)
- RQ3: How does prior product experience influence the evaluation of a game’s salient qualities? (Essays III and IV)
- RQ4: How are salient qualities embedded in games and communicated to important stakeholders? (Essay V)

By answering these questions, this thesis aims to contribute to the existing theories by adding new elements and theoretical insights (Sutton and Staw 1995). The results of this thesis are intended to provide both theoretical and pragmatic suggestions by using theoretical lenses and statements and testing relationships between central concepts related to games.

With particular reference to information systems research, this study introduces new insights into how marketing and consumer behaviour -related knowledge can be used during the development and marketing of a new game. In particular, the results of this thesis aim to fill the current, existing gap in IS research regarding games as experience information goods, particularly from the perspectives of both consumers and developers.

The results of the study will be summarized in a new model depicting the sources of brand equity of digital games. These targets are also the main objectives of good IS research; a sound theoretical foundation with high empirical relevance (Benbasat and Zmud 1999).

This thesis consists of two sections. The aim of the introductory section (Part I), consisting of Chapters 1-5, is to link the essays portraying the theorizing process (Weick 1995). It includes an overview of the motivation, background and research objectives of the study and each individual research paper. In addition, a review of the research methods used and the results attained in the individual research papers is presented. To

conclude Part I, research question answers and results of the study are summarized in a new model, illustrating the sources of brand equity of digital games, accompanied by a discussion of conclusions and contributions of the study. The individual research essays of the dissertation are presented in Part II.

## 2. Research background and theoretical lenses

### 2.1 Background

The thesis draws on the literature on information systems (IS), consumer behavior, marketing and games. Throughout this study, these main streams of literature are integrated in order to conceptualize the relationship between brand equity and a game. The richness and variety of perspectives are used advantageously to construct multidisciplinary conclusions by combining prior theoretical and practical research studies from these fields. Next we demonstrate why, in particular, games are a field of study requiring further attention in information systems research.

#### 2.1.1 Digital games as information goods

Digital games are an example of information technology (IT) products which have an impact on people's everyday lives (ESA 2011;Kallio et al. 2007;Raessens and Goldstein 2005;Rutter and Bryce 2006). Games as IT products involve many different aspects of consumer behaviour such as technology adoption (Davis 1989), innovation diffusion (Rogers 1983), social norms (Bearden and Etzel 1982), feelings (Holbrook and Hirschman 1982) and motivational factors (Gagné and Deci 2005). Games impact people's everyday lives not only by diverting time from other activities (Cole and Griffiths 2007) but also by providing a social dimension which increasingly affects daily behaviour (Mäyrä 2008;Rutter and Bryce 2006). The games industry is a premium example of how games are the result of a series of actions; multidisciplinary innovations where technology, sociology, economics and design meet (Callon et al. 2002).

The history of the computer and video games industry, from which digital games descend, spans approximately forty years. The origins of digital games are in the toy industry from the early 1970's (Uemura and Iwatani 2007). The games industry expanded dramatically in the late 1970's when the first popular game titles the Asteroids, Space Invaders, Centipede and Pong were launched into consumer markets (Herman et al. 2002). Since the early days of games, when only a few game players existed and the industry was just a niche market, it has grown and become a significant software entertainment industry (Crandall and Sidak 2006;ESA 2011;Neogames and ry

2010;Siwek 2007). The games industry not only encompasses games but has in addition extended into a number of different domains such as movies, toys and comics.

Throughout this study we refer to games as *digital information goods*. Games are digital information *goods* as they are intangible, embedded with knowledge and delivered in a digital format (Shapiro and Varian 1999;Varian 1998), often with a tangible support device such as a disc (DVD). Games are also intangible *products*, or software applications created from program code, that is increasingly delivered through various digital channels. Some games are becoming more comparable to services in which information technology based services are delivered to users over the Internet (Bolton 1998;Susarla et al. 2010). Many games are playable online, continuously updated with new content.

The economics perspective distinguishes *goods* and *products* by emphasizing that any economic activity regarding a good aims to satisfy fundamental needs (what is good, sought after, wanted). On the other hand, a product is an economic good seen from the point of view of its production, circulation and consumption. A product is a sequence of actions where its characteristics change, a series of operations that transform it, move it and result in exchange. A product is a process whereas the good corresponds to a state, to a result or to a moment within the product process. (Callon et al. 2002) In the process of the exchange of goods between buyer and seller, both parties agree on combining worlds which marketing practices frame, utilizing actions such as segmentation (Slater 2002).

The goods-centered view on exchange of goods emphasizes that goods are embedded with utility and value which renders them superior in relation to competitors (Fishburn 1968;Vargo and Lusch 2004). However, the service-centered view on exchange of goods emphasizes that goods are the distribution mechanism for service provision and derive their value through use of the service they provide (Vargo and Lusch 2008). The value of the service that both intangible and tangible goods provide is perceived and determined by the consumer while using it. Marketing functions as a continuous series of social and economic processes that are focused to propose better value propositions than competitors. The service-centered view is customer centric and market driven and implies collaborating with customers and being adaptive to their individual and dynamic needs. (Vargo and Lusch 2008)

These defining descriptions of value propositions of information goods portray the primary objective of a game - to fulfill a consumer's need for an enjoyable gameplay experience. Gameplay exemplifies the intricate and dynamic communication between a player and a game to which the characteristic elements (structure, characters, virtual space, rules, story) of a game are integral (Ermi and Mäyrä 2005).

### **2.1.2 Earlier research on games**

Research on games has been conducted for over 30 years in many different scientific disciplines and perspectives such as computer, health and social sciences (Bragge and Storgårds 2007a). Nevertheless, game research is still an emerging, diverse and interdisciplinary field that is growing and spreading steadily into new scientific disciplines.

Games research is divided into two main streams of research. First, as a contribution to other fields of research such as health and engineering, where the focus of the study is phenomena in which the game is only an artifact. For example, games have been widely used by researchers in psychology to study adolescents' behaviour and in medical care from the perspective of obesity interventions and physical activity. Second, from a developmental perspective, games research has been conducted both in engineering and in computer science fields (Bragge and Storgårds 2007a).

Research efforts that are used to understand games from the perspective of experience and playfulness are termed *digital games research* or *game studies*. Game studies are strongly based on narrative stories and game design (Raessens and Goldstein 2005). In spite of thousands research studies published on games, only a few focus on theorizing games from an information systems science perspective and even less attention has been paid to the marketing aspects of games (Bragge and Storgårds 2007b). Thus, there is a deficiency of research on games and building theoretical integrations between IS and marketing and games.

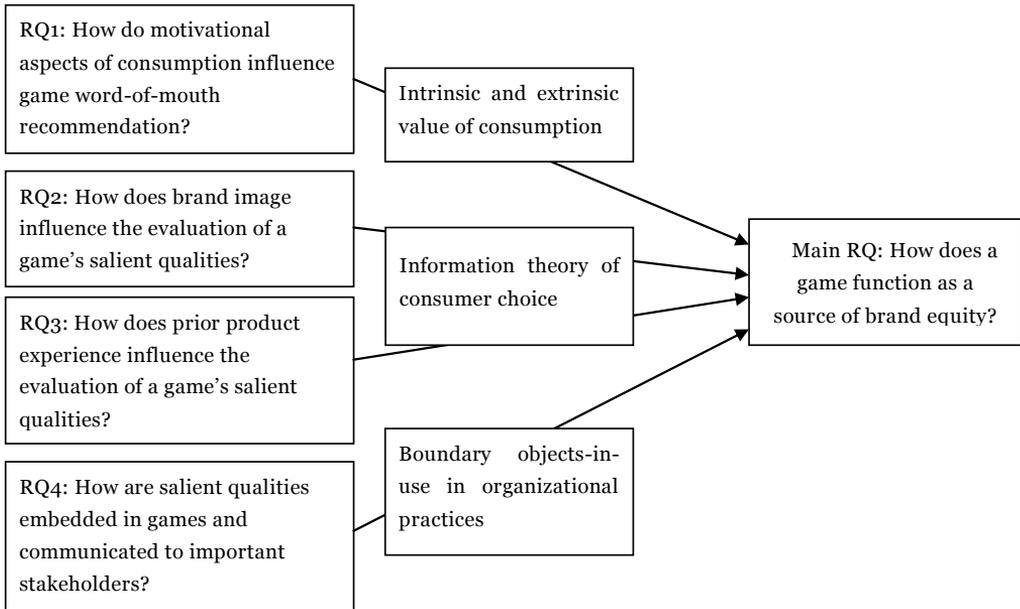
## **2.2 Theoretical lenses**

In this thesis, theories are used as tools to achieve the study's research aims (Robey 1996). Theories are simultaneously both "seeing and not seeing" (Walsham, 1993), and provide us with a focus and research setting for the collection of empirical observations to study a phenomena and answer various hypotheses (Kerlinger 1973). Dubin (1969) states, in his seminal work on theory building, that a considerable effort in integrating theoretical perspectives is necessary, particularly if the theory has not as yet been used for study in a particular context. According to Chen (2003) the integration of theory is best used for combining differing schools of thought.

In this thesis, the theorizing process (Weick 1995) is constructed by using earlier theories to create hypotheses which are then used to test the assumptions (Bacharach 1989). The theories are also integrated in an interpretative way (Walsham 1995;Walsham 2006) which facilitates our intention to gain an understanding of individuals' behaviour within a social system in which information technology is embedded (Land 1992).

Accordingly, we adapt four theories and theoretical lenses to respond to our research questions (Figure 1). This thesis builds on the theories of brand equity, motivational

theory, information processing theory of consumer choice and the theory of use of boundary objects in organizational practices. These theoretical lenses are used to study sources of unique value in the context of digital games.



**Figure 1. Research questions and theoretical lenses.**

In particular, prior studies on brand equity (Aaker 1991; Farquhar 1993; Kapferer 2006; Keller 1993, 2006) are used to conceptually define the relationship between brand equity, game brand, consumers' prior game experience and game characteristics. These same studies are essentially used to study how a game functions as a source of brand equity and subsequent effects on product evaluation. The motivational theory (Deci 1975; Ryan and Deci 2000) is used to describe the motivational basis of game playing representing the hedonic and utilitarian aspects of consumption. The theory of information processing (Bettman, 1979, 1980) is used to test the influence of the brand image on product evaluation through two mechanisms of attitude change; changing beliefs and changing attribute importance (Blackwell et al. 2006). This theory supports the notion that consumers' choice criterion is influenced by prior product knowledge and experience (Bettman and Park 1980; Hong and Sternthal 2010). Finally, the theory of practice (Schatzki et al. 2001; Orlikowski 2002) is used to study the use of digital game ideas as transforming boundary objects in digital games studios. The theory functions as lenses to illustrate how boundary objects embedded with knowledge are used to build unique value elements into digital games.

**Table 1. Theoretical background, references and selected viewpoints.**

Theoretical background	References	Viewpoint	Source of unique value
Brand Equity	Aaker (1991), Erdem (1998, 2004), Farquhar (1993), Kapferer (2006), Keller (1993, 2006).	Incremental effect on consumer product evaluation.	The product brand and consumer's prior experience.
Motivational theory	Deci (1975), Ryan and Deci (2000), Hirschman and Holbrook (1982), Holbrook (1978), Holbrook (1996, 1999).	Hedonic and utilitarian aspects of consumption.	Enjoyment and usefulness.
Information processing theory of consumer choice.	Bettman (1979), Bettman and Park (1980), Blackwell et al. (2006), Foxall (2005), Ajzen (2005), Hansen (1976), Howard (1969), Johnson and Russo (1981, 1984).	Brand signaling information about product's salient qualities.	The brand image, product attributes and prior experience.
Boundary objects in-use in "knowing in practice"	Star (1989), Carlile (2002, 2004), Orlikowski (2002), Schatzki et al. (2001).	Use of boundary objects in transforming knowledge to embed value into products and services.	The organizational practices.

**2.2.1 The brand and brand equity as a signaling phenomenon**

Erdem et al. (1999) propose that a brand channels a consumer's cognitive information processing through incremental effects exhibited by a product on all facets of a consumer's evaluation and choice process. It is based on the idea that a product's value for consumers, the trade and the company is somehow enhanced when it is associated or identified over time with a set of unique elements that define the brand concept (AMA 2008).

Brand equity is conceptually an individual's perception or desire that a product brand will fulfill a promise of benefits (Keller 2006) and functions as a moderator of the impact of marketing activities on consumers' actions (Raggio and Leone 2007). In other words, the imagery associated with the brand creates perceptions and preferences for products that reflect various types of associations held in a consumer's memory (Leone et al. 2006).

In this study, we differentiate the brand and brand equity as follows: The associations related to the *brand* represent the product as *an entity with all its attributes and non-*

*attributes* (Park and Srinivasan, 1994) whereas *brand equity* represents those *significant unique value characteristics* that result in incremental effects on consumer evaluation (Erdem and Swait, 1998). Brand equity is the vital part of the brand that allows it to stand out from the mass. These definitions emphasize the unique value characteristics of the product and are adapted from and reiterated by previous brand and brand equity related literature by Aaker (1991), Keller (1993), Erdem et. al. (1998), Farquhar (1989), McQueen (1991) and Villanueva and Hanssens (2007).

Underpinnings in information economics in general (Stigler 1961) and in signaling theory in particular maintain that intangible qualities such as the brand image make it difficult for consumers to accurately observe product quality prior to purchase through information search activities (Stiglitz 1987; Stiglitz 1989). Brands are used to overcome this common challenge associated with information goods (Shapiro and Varian 1999), which lack physical format, by conveying information of a product's salient qualities to potential game players.

A brand is an information source for the consumer, which in turn influences the consumer's perception of the product (Erdem and Swait 1998; Erdem et al. 2006). It provides consumers with a visible presentation of the differences between various product alternatives, and benefits that can positively influence consumer evaluation (Nandan 2004). For a consumer a brand is a belief that the product is capable of meeting the consumer's expectations and product promises (Sweeney and Swait 2008).

Accordingly, a brand represents a collection of recalled knowledge, information and reputation contained in each specific product. Consumers process both internal and external information which influences their knowledge of brands. While consumers gain experience, product familiarity grows and influences the acquisition of new product knowledge. The knowledge surrounding brands resembles a hierarchy. Consumers with no prior experience of the brand, first process attribute level information (such as price and features) and then ascend in the hierarchy of product knowledge towards the brand (Johnson and Russo 1981). Experienced consumers tend to first process a brand and then utilize their prior knowledge about the salient attributes of the product (Bettman 1979).

A brand signals information about the product at different attribute levels. Park and Srinivasan (1994) separate consumer brand preferences into attribute and non-attribute based components. Keller (1993) defines product attributes as "*descriptive features that characterize a product or service*" and divides features into two categories. First, product-related attributes which are directly related to the necessary features, such as use of the product or service, and second, non-product related attributes which include information such as cost, packaging and user imagery (where and how the product can be used). In contrast, non-attribute based components are brand associations unrelated to product attributes, such as the brand image (Park and Srinivasan 1994). Srinivasan et

al. (2005) state that non-attribute related factors are equally significant differentiating drivers and influence choice probability.

Companies use brands with an objective to maintain and improve the perceived quality of a product and improve consumer's levels of confidence towards its salient qualities while creating positive associations towards the product or service (Aaker 1991). Both product attribute and non-attribute related components of a product are important tools used to position products among other products that compete within the same market space (Vriens and Frazier 2003; Vriens and Hofstede 2000). From the information processing perspective, companies should create promotional strategies to gain an understanding of consumers' reactions to specific associations related to the product. This will facilitate the creation of components which will lead to positive reactions and feelings around how credible the source of the message is (Bettman 1979).

From a marketing perspective, it is claimed that brand awareness is the most important source of brand value (Aaker 1991; Keller 1993; Srinivasan et al. 2005). Rossiter and Perry (1987) regard brand awareness primarily as a communication issue. A predominant form of communication active in the games industry is word-of-mouth (WOM). WOM product recommendation entails either positive or negative commentary about a product to consumers which can result in product recommendation (Oliver 2006; Park and Kim 2008) and is regarded as an effective method of influencing consumers in their product evaluation process (Brown and Reingen 1987).

Two main types of WOM can be identified. First, traditional WOM is based on private conversations between people in which information exchange is proactive and dependent on physical contexts (Gilly et al. 1998). The effects of WOM are stronger when the source of recommendation has high expertise of the product in question (Gilly et al. 1998). Second, electronic word-of-mouth (eWOM) includes written comments on a product available on websites, or sharing links to websites (Park and Kim 2008). For instance, publicly available positive product reviews can be considered as product recommendations that generate a complementary effect in addition to general marketing actions and pricing which generate increased sales in consumer goods (Chen and Xie 2005; Chevalier and Mayzlin 2006). Intentional or not, these different sources of information act as recommendations which influence a consumer's product evaluation process positively or negatively thereby creating awareness of a product's salient qualities among consumers (Smith et al. 2005).

### **2.2.2 Intrinsic and extrinsic motivations of consumption**

The first two essays of this thesis draw on the theories of motivational aspects of consumption through the use of hedonic and utilitarian value of products and services. The motivational theory by Deci (1975) lays the foundation for understanding how digital games are chosen and why they are played. Intrinsic motivation is about *“the*

*inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn is performing an activity for the satisfaction of the activity itself*" (Ryan and Deci 2000). Intrinsic value occurs when some consumption experience is appreciated as an end in itself, as self-justifying (Holbrook 1999). Extrinsic motivation, in turn, is expected to lead to performance of an activity, in order to attain some separable outcome (Ryan and Deci 2000). Both intrinsic and extrinsic motivation influence people's attitudes, beliefs and behaviour (Brief and Aldag 1977).

From a motivational perspective of consumption, hedonic goods entail intrinsic value, whereas utilitarian goods entail more extrinsic values. Hirschman and Holbrook's (1982) early outlook of hedonic consumer behaviour considered the relationship between the multisensory, fantasy and emotive aspects of consumer behaviour and product experience. In other words, motivated by the intrinsic aspects of consumer value, hedonic or pleasure-oriented consumption is expected to be motivated by the desire for pleasure, fantasy and fun (Strahilevitz and Myers 1998).

There are different ways of expressing the hedonic aspects of different information systems provided to users (Van der Heijden 2004). Such expressions are enjoyment, flow and fun. For example, Davis et al. (1992) define perceived enjoyment as the scope of a computer activity independent of performance consequence and enjoyable in its own right (Davis et al. 1992). Perceived enjoyment plays an important role in explaining the consumer's behaviour of participating in an entertainment-oriented community such as game playing (Hsu and Lu 2007).

Utilitarian consumption is more cognitively driven, instrumental and goal oriented and accomplishes a functional or practical task (Dhar and Wertenbroch 2000 p. 61; Strahilevitz and Myers 1998). Extrinsic value pertains to a means-end relationship, defined as a functional activity instrumental in achieving a specific goal. (Holbrook 1999). This is typically related to efficiency that results from the active use of a product or consumption experience as a means to achieve a self-oriented purpose. In practice it is often utilitarian outcomes that can be measured, time for instance, or the relationship between input and output.

Since the 1980's, various studies on consumer goods and services (Batra and Ahtola 1990; Dhar and Wertenbroch 2000; Okada 2005; Sheth et al. 1991; Turel et al. 2010; Voss et al. 2003), information systems (Davis 1989; Van der Heijden 2004) and games (Choi and Kim 2004; Hsu and Lu 2005) have shown that consumer choice and the use of different products and services are driven by both utilitarian and hedonic considerations. Earlier research has identified major differences between the perceived value of utilitarian and hedonic software applications in the context of games (Davis 1989; Raessens and Goldstein 2005). Games are most often assumed to be high in hedonic value, and the motives for using hedonic systems, such as games, are different from those for utilitarian systems, such as office information systems (Van der Heijden 2003).

### **2.2.3 Information processing theory of consumer choice**

The theoretical ideas of information processing theory of consumer choice (Bettman 1979; Bettman and Park 1980; Johnson and Russo 1981; Johnson and Russo 1984), the model of consumer knowledge and the amount of external pre-purchase search (Blackwell et al. 2006) are applied as the main underlying theories for Essays III and IV. These theories are adapted in order to study two significant elements of consumer product evaluation. The first element is the formation of evaluation criteria using beliefs and attitudes (Ajzen 2005; Ajzen and Fishbein 1980), and the second is the influencing role of relevant prior product knowledge from game playing experience on product evaluation (Bettman and Park 1980; Duhan et al. 1997; Hong and Sternthal 2010).

Consumer behaviour is formally defined as actions people are involved in while consuming or rejecting products or services (Blackwell et al. 2006). The essence of consumer behaviour is in the assumption that a consumer builds a strategy to evaluate products within different contexts according to different sets of decision rules necessary to select the best product from various alternatives (Ajzen and Fishbein 1980; Fishburn 1968; Johnson and Russo 1984). The value of the choice probability research stream is in the illustration of the various ways that market practices and transactions can be modeled to understand and utilize different choice contexts and situations (Foxall 2005).

Traditionally, product choice has been modeled in marketing through utility functions in which consumer behaviour is most frequently modeled as an intellectual and cognitive evaluation process (Hansen 1976). Several researchers (see e.g. Ajzen 2005; Ajzen et al. 1980; Bettman 1979; Bettman et al. 1980; Blackwell et al. 2006; Fishbein et al. 1975; Foxall 2005; Hansen 1976; Howard et al. 1969) have tried to describe an individual's decision making behaviour from the perspective of cognitive information processing. These processes serve as tools for describing and understanding the complex phenomenon of consumer choice (Ballantyne et al. 2006). Ajzen and Fishbein (Ajzen and Fishbein 1980) suggest that the essence of choice lies within the concept of attitude, which is the weighted sum total of perceived outcomes of an act. The lucrative promise of the attitude concept is that consumer behaviour can be altered through changing perceptions. New, relevant information drives change in one's behaviour. The actual choice, however, exposes consumer decision making preferences (Drolet et al. 2009).

Behavioural changes related to choice are dominated by cognitive processes and the systematic use of available information, even though people often strive to simplify their decision making (Howard and Sheth 1969). Ajzen and Fishbein (Ajzen and Fishbein 1980) suggest that only salient beliefs should be included in the analysis of attitude

formation. Yet, consumers' capacity of simultaneously handling product attributes is limited (Miller 1956) and every consumer uses a different set of beliefs for each choice situation (Ajzen 2005). For instance, consumer decisions are context dependent and subject to the influence of product type and category (Zeithaml et al. 2006). Consumers' apparent methods of creating structures to facilitate the classification of objects, experiences and feelings are referred to as modeling. It is a natural process of handling the abundance of information received from a multitude of different sources simultaneously (Mervis and Rosch 1981).

Decision making involves many environmental factors that lie outside the control of the individual. Foxall (Foxall 2005) maintains that social, business, cultural and economic factors affect consumers' stimuli and attention. When information is received, it is recorded either in short or long term memory, and processed depending on the consumer's prior experiences, beliefs, attitudes, goals and other evaluation criteria. However, as these processes differ, each and every consumer manages their behaviour processes differently depending on many factors and situations (Foxall 2005).

The contemporary literature on choice maintains that choice modeling is a good example of the practical process of singularization of goods, which is utilized by managers in order to create a modeled supply of goods to those who consume them (Callon et al. 2002). The results of rational analysis are often used to innovate new products according to the demand and to artificially organize markets through translating consumer demand to the production of actual goods (Kjellberg and Helgesson 2007). Consumers perceive qualities of products and services through grading importance of the information they receive while the way in which they appreciate, evaluate and classify products often depends on their own preferences (Callon, 2002). Then, consumers summarize the process in quality-based rational judgments, or "qualculation" that occurs in different choices and contexts continuously in practical situations (Cochoy 2008).

#### **2.2.4 Boundary objects in organizational practices**

Over the past two decades, growing interest has been shown in the study of practice within the social sciences at large (Corradi et al. 2010;Orlikowski 2000;Schatzki et al. 2001) and in boundary objects, in particular (Carlile 2002). Several approaches have emphasized the importance of studying practice, for example work on science in action (Latour, 1987), technologies-in-practice (Orlikowski, 2000) and communities of practice (Brown and Duguid 2001;Wenger 1999). Of particular relevance to new product development is the crucial skill of knowing how to repeatedly enact and portray competence of "knowing how and what to do." This is an ongoing social accomplishment constituted in practices and in organizations (Gasson 2006). Organizational "knowing how and what to do" is a collective practice in which various types of entities, such as

ideas, are circulated for practical contribution and completion (Nicolini and Gherardi 2000). This is the theoretical focus of Essay V.

The use of boundary object theory originated from Star and Griesemer's (1989) prominent ideas. Boundary objects provide a concrete means from which individuals are able to specify and learn about differences and dependencies across given organizational boundaries. Boundary objects are artifacts, documents, terms, concepts and other forms of reification around which communities of practice can organize their interconnections (Wenger 1999).

The majority of prior research regarding the use of boundary objects in practice has focused primarily on boundary objects as translation devices embedded with knowledge (Carlile 2004; Levina and Vaasta 2005); their use during practical approaches in organizations (Karsten et al. 2001; Orlikowski 2002; Schatzki et al. 2001); the ways they are formed and shared (Star et al., 1989); and their use in organizational and functional boundaries (Carlile 2002; Gal et al. 2008) in knowledge exchange by information brokerage (Pawlowski and Robey 2004; Wenger 1999). These studies have validated the importance of the use of boundary objects in organizations in numerous diverse contexts (Carlile 2002).

In order to attract consumers' attention to their games, it is imperative for developers to build unique game characteristics by optimally coordinating their studios' organizational practices. In this way, knowledge from various sources is combined with an objective to process and select the core benefits that best represent a game's unique value. Subsequently, organizations should communicate and market product characteristics effectively and credibly through brand development. Thus, unique value characteristics represent an organization's individuality through creativity (Hargadon and Sutton 2000; Tiwana and McLean 2005).

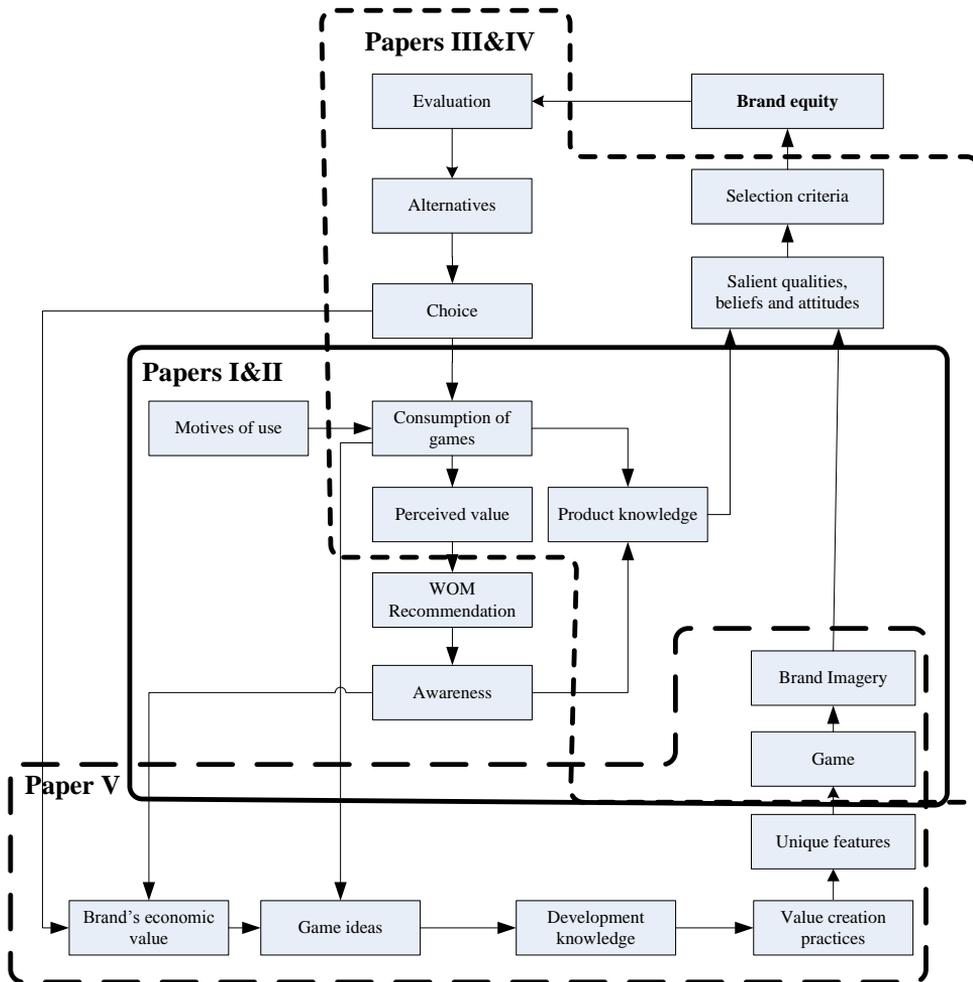
### **2.3 Positioning of the essays and theories**

Figure 2 combines and summarizes the theoretical concepts and their relationships discussed in this thesis. Three presented research trajectories are used to explain how a game functions as a source of unique value. Each essay presented provides separate theoretical and practical contributions. These are summarized and used as a part of the theorizing process used to construct a new model depicting sources of brand equity of digital games.

The first research trajectory consists of the concepts central to the Essays I and II. Consumers have display differing motivation to play games (Deci 1975; Hirschman and Holbrook 1982; Holbrook 1978; Ryan and Deci 2000). They also perceive value (Holbrook 1999; Sweeney and Soutar 2001; Zeithaml 1988; Zeithaml et al. 2006) differently and recommend games (Brown and Reingen 1987; Oliver 2006) to others and create

awareness of the product (Park and Kim 2008; Rossiter and Percy 1987). Consumption (Blackwell et al. 2006) and awareness of games further increases product knowledge (Hong and Sternthal 2010) of individuals and the community of gaming practice (Orlikowski 2002).

The second trajectory of this thesis (Essays III and IV) explores the influence of brand image on product evaluation. Prior knowledge about games and digital game studios' marketing actions modify consumers' beliefs and attitudes about the salient qualities of the game, which are used to form selection criteria (Keller and Lehmann 2006). The unique beliefs and attitudes about the attributes and non-attributes included in the selection criteria (Blackwell et al. 2006; Sweeney and Swait 2008) function as sources of the brand equity, which influences the product evaluation in an incremental manner, within a set of product alternatives (Ajzen 2005). A credible brand decreases the perceived risk of making detrimental decisions rendering the product more attractive and desirable to consumers, and thus, facilitating product choice above available alternatives (Erdem and Swait 1998; Foxall 2005; Nandan 2004). In this way, consumer choice leads to higher value of the brand in the form of sales and reputation (Kapferer 2006).



**Figure 2. Conceptual framework and positioning of essays.**

The third trajectory (Essay V) focuses on processing novel product ideas (Hargadon and Sutton 2000) in game studios, collected from various sources, and modifying them according to various knowledge domains (Carlile 2002; Carlile 2004; Hippel von 2005; Prahalad and Ramaswamy 2004). An organization works altogether as a creative, collective mind (Tiwana and McLean 2005; Weick and Roberts 1993) to process ideas in a multitude of value creation practices (Star and Griesemer 1989) to develop a unique game. The most promising ideas are selected and developed into a game and used in game marketing actions (Araujo 2007).

In summary, the motivational theory provides the possibility for better understanding of two important sources of value, hedonic and utilitarian, concerning game evaluation and awareness creation process and their importance in relation to brand equity. Information processing theory of consumer choice provides us with a platform from

which to investigate how brand image, product attributes and prior experience in game playing change beliefs and attribute preferences in games. Theory concerning boundary objects is used to explain how unique value is embedded into games and why game developers prefer various types of knowledge from various sources. The three theoretical lenses are used to gain an in-depth understanding of the consumption and development of games and explain the significance of the theoretical concept of brand equity in the context of digital games.

### **3. METHODOLOGY OF THE STUDY**

The use of distinct theoretical and methodological research perspectives have laid the foundations of information systems (IS) science (Kaplan and Duchon 1988). Several IS researchers have concluded that using multiple methods is the preferred manner in which to conduct the study of IS in different contexts as richer and more credible results are possible (Mingers 2001). The use mixed methods may lead to distinct results, new insights and alert the researcher to potential analytical errors (Kaplan and Duchon 1988). Further, the use of multiple methods such as case studies and surveys increases the reliability of results (Benbasat et al. 1987;Jick 1979). The value of combining research methods is thus evident in complementing the multidisciplinary nature of IS research and adding richness and relevance to the findings (Galliers 1992). This thesis maintains a positivist approach in Essays I-IV and an intepretivist viewpoint in Essay V (Galliers 1992).

#### **3.1 Research approach and design**

Simply, the first four first essays utilize quantitative methods of inquiry and the last essay adopts a qualitative study method (Table 2). Quantitative methods were used to identify relationships between elements indentified as antecedents and outcomes and qualitative methods to describe phenomenon in each context by providing richer explanations as to why certain outcomes occurred and why others did not (Markus and Robey 1988).

**Table 2. Summary of the methods used in individual essays.**

<b>Paper</b>	<b>Main viewpoint</b>	<b>Research methods</b>	<b>Sample and unit of analysis</b>	<b>Data collection method and analysis tool.</b>
I	Hedonic and utilitarian value at the product category level.	Survey, quantitative, data analysis.	135 University students 16 game categories.	Observational electronic survey. Multi-attribute regression analysis using single, summated scales, ANOVA, and factor variables. SAS Enterprise Guide 4.2.
II	Hedonic and utilitarian value at the brand level.	Survey, quantitative, data analysis.	160 Active male game players. Eight games in 4 categories, two other applications.	Electronic survey in 5 game sites. Multi-attribute regression analysis using summated scales, ANOVA. SAS Enterprise Guide 4.2.
III	Influence of the brand to inexperienced consumers product evaluation.	Experiment, Survey, quantitative, data analysis.	127 University students. One game (WoW), 16 attributes.	Paper based questionnaire. Means procedures and t-test. SAS Enterprise Guide 4.2.
IV	Influence of the brand to the consumers product evaluation for both experienced and inexperienced consumers.	Experiment, Survey, quantitative, data analysis.	520 University students. One game (WoW), 16 attributes.	Paper based questionnaire. Means procedure, t-test, multi-attribute regression analysis with ANOVA. SAS Enterprise Guide 4.2.
V	Developers' insight into the development of game ideas.	Interviews, qualitative, interpretative .	26 professionals, 13 digital game studios. Organizational practices.	Semi-structured interviews. Transcript analysis with QSR Nvivo 8.0.

### **3.2 Quantitative, positivist approach**

Essays I-IV follow a positivist survey research approach incorporating quantitative methods. The positivist survey research approach refers to the collection of data by the use of questionnaire forms where the data is then analyzed using statistical techniques.

Pinsonneault and Kraemer (Pinsonneault and Kraemer 1993) identified three ways of gathering information from a group of people in the form of marketing or opinion surveys which can be distinguished from survey research. First, survey research is a quantitative method concerned with relationships between variables requiring standardized information from subjects being studied. The researcher has defined independent and dependent variables and a specific model of the expected relationships which are tested using observations of the phenomenon. The survey methodology aims to uncover relationships that are common across data samples and intends to provide generalizable statements concerning the object of study (Gable 1994). Second, the primary mode of data collection is achieved by asking participants structured and predefined questions which define the unit of analysis and data to be analyzed. Third, collected data is a limited sample but large enough to allow extensive statistical analysis.

In addition to the survey research approach, Essays III and IV adopt an experimental research approach in order to study a variety of actions that are conducted among different groups of participants to generate results which explain potential effects experienced in various groups (Chalmers 1999). Babbie (1998) explains that experimentation is appropriate for research projects involving relatively limited and well-defined concepts and propositions. It is better suited for explanatory rather than descriptive purposes. Through experimental design, a researcher takes an action and observes the consequences of that action.

### **3.3 Qualitative, interpretative approach**

Essay V is characterized as a *qualitative*, interpretative case study conducted in multiple game studios, which aims to uncover how sources of brand equity are discovered, developed and communicated between different organizational functions. Qualitative research corresponds well with the context of games and games research as it has the potential to reflect information about people's lives, experiences, behaviour, emotions, feelings, organizational functioning, social movements, cultural phenomena and interactions (Strauss and Corbin 1998).

The interpretative study approach (Walsham 1995;Walsham 2006) assumes that "*the knowledge about the reality is gained through social constructions such as a language, consciousness, shared meanings, documents, tools and other artifacts*" (Klein and Myers 1999). This choice of interpretive approach was adopted to facilitate an intention to gain an understanding of such a reality within games studios (Miles and Huberman, 1994). Interpretive perspectives assist in understanding how people participate and interact in social processes from their particular realities through beliefs, meanings and intentions (Orlikowski and Baroudi 1991).

In addition to the interpretative research approach, Essay V is a case study. A case study is a study of phenomenon within its real-life context, even though boundaries between the phenomenon and its context may not always be clearly evident (Yin 2008). Case studies involve an observation and examination of a phenomenon in its natural setting, employing multiple methods of data collection, one or a few entities in which no experimental controls or manipulation are involved (Benbasat et al. 1987).

Cases can be defined in various ways. They are often thought of as social units such as individuals, groups and organizations; however, they can also be defined in other ways. A case can be also defined temporally, spatially or as a process to name a few. In this thesis a case as unit of analysis represents the topic of study empirically as “the case of practice of idea processing in game studios” in Essay V. Individuals involved in the process, information rich in the context of study, function as sources of information describing the case of practice of idea processing. (Miles and Huberman 1994)

Regarding data collection in case studies, multiple sources of information provide a deeper understanding of the phenomenon under study compared with a single source. While the strength of multiple sources of information lies in replication of observations (Arnould and Epp 2006), it is not only the number of sources such as individuals that are crucial but also than how they are studied (Yin, 2008).

During the interpretive research approach, analysis is achieved through social interaction; the interpretation comes via understanding of group action and interactions, where collected materials using a method such as interviewing, are a collaboration of both parties (participant and researcher) (Miles and Huberman, 1994). The interpretative case study approach provides a rich picture and a well established answer to the research questions addressed in this thesis because it provides a good opportunity for the interpretation to conceptualize the research findings from observations to more general theoretical suggestions.

### **3.4 Summary of the research design of each essay**

This thesis consists of five individual studies, reported in five essays of which the first four utilize a positivist approach and quantitative methods whereas the fifth takes an interpretative approach and utilizes a qualitative method.

The first Essay, “*The hedonic and utilitarian value of digital games at product category level,*” presents results from an electronic survey study in which digital games were investigated at the games subcategory level. The aim of the essay is to examine the differences in weights consumers place on hedonic and utilitarian value between evaluations of experienced and inexperienced consumers. The essay utilizes hedonic and utilitarian constructs defined by Voss et al. (Voss et al. 2003) where four variables were adapted in both constructs to express perceived enjoyment and usefulness in digital

games. The level of hedonic and utilitarian value is measured by using single, summated and latent factor variables, which were reported using scatter plot distributions, and the effect of hedonic and utilitarian latent factor variables on recommendation, with a multiple linear regression model. We argue that by using these concepts we can examine two significant aspects of consumption and sources of brand equity and their importance in creating awareness through WOM (word-of-mouth) in the context of digital games.

In Essay II, *“The effect of the hedonic and utilitarian value of digital games on product recommendation at product brand level”* we continue examining the hedonic and utilitarian aspects of consumption using a similar methodological stance as in Essay I. This essay aims to illustrate the hedonic and utilitarian value at game brand level and the effects on product word-of-mouth product recommendation. Further, it aims to differentiate games from other consumer software applications. An internet survey was conducted among active game players who assessed the hedonic and utilitarian value of eight digital games and other applications. The essay uses a deductive method of research by forming hypotheses from research questions and measures them by using a set of observations. The level of hedonic and utilitarian value is measured by using summated variables and reported results using scatter plot graphs (Voss et al. 2003) and the influence of the hedonic and utilitarian summated variables on recommendation with a multiple linear regression model. We argue that by using a similar theoretical perspective and research model as in Essay I and by collecting a new sample from active game players at the brand level, we extend overall understanding of the hedonic and utilitarian perspectives of digital games and the influence on product recommendation and awareness creation.

In the third Essay, *“Digital game brand image information influence on the inexperienced consumer’s product evaluation”* the ideas from the information processing theory of Bettman (1979) are used to study consumer choice and the brand’s influence on consumer evaluation of individual perceptions of a product’s salient attributes in the context of digital games. The essay uses a method of experimenting where independent variables and game attributes are biased by an experimental stimulus - the brand image - which is present or absent (Babbie 1998). The study analyzes a usable sample of 127 university students that appropriately represent the target group of high activity in playing Massively Multiplayer Online Role Playing Games (Cole and Griffiths 2007). Means procedure and t-tests were used to provide answers about the differences between the two groups of respondents. We argue that our research relates and connects product attributes, brand image information, perceived beliefs and product evaluation.

The fourth essay, *“Influence of the Brand Image on Product Evaluation in the Context of Digital Games”* continues from the findings described in Essay III. Here we examine the mechanisms of product evaluation in more detail. We adopt the information processing perspective to test the capacity of a brand to influence digital game evaluation

through two established mechanisms of attitude change; changing beliefs and changing attribute importance (Blackwell et al. 2006). We tested these influences in an experimental setting where participants evaluated games while brand evaluation information was either present or absent. Altogether 520 students from three European universities were asked to complete questionnaires. Means procedures, t-test, Duncan's Multiple Range Test and attribute based multiple regression model with one-way ANOVA were used to describe differences in the game evaluations between the four participant groups. Research procedure followed the suggestions provided by Hair et al. (1984-2004).

The final essay of the thesis, "*Any good ideas? Developers' insights into the development process of game ideas in digital game studios*" takes a different perspective on the study of brand equity. By drawing on a case study method the essay offers a theoretical conceptualization of the main stages of idea processing practices and their contribution to the idea transformation process. This research is based on an investigation of 13 organizations and 26 professionals working in the game industry. It uses the theoretical lenses of communities of practice (Orlikowski 2002) and boundary objects in-use (Levina and Vaasta 2005; Star and Griesemer 1989) to study value creation in the form of processing new game ideas.

## 4. Review of the results

In this section the results of each individual essay are presented. First, the results are presented as individual research projects linked to research objectives. Second, the results of the thesis are presented by answering the research questions addressed in this thesis. Finally, based on the findings, how a game functions as a source of brand equity will be demonstrated by describing a theoretical model of predominant relationships between the digital game and the consumer's game evaluation.

### 4.1 Essay I: The Hedonic and Utilitarian Value of Digital Games at Product Category Level

Consumers' product evaluation, choice and actions are driven by both utilitarian and hedonic considerations. Digital games are typically considered as a homogenous product category, perceived to be high in hedonic value. The multitude of different types of games available, their difference in appeal, gameplay and purpose in practice indicate that they vary significantly in their proposed outcome.

In this study, we used the motivational theory (Deci, 1975) and theories of consumer behaviour (Ajzen et al. 1980, Bettman et al. 1980) to describe the effect of prior knowledge and experience on the perceived value, hedonic and utilitarian, of games and their influence on the willingness to recommend a game category to friends and others socially relevant to the consumer. Hedonic and utilitarian value of digital games was analyzed in different game subcategories.

We hypothesized that different digital games vary by their perceived hedonic (HED) and utilitarian (UT) value. Following that, we proposed that HED is a better predictor of game category recommendation than UT. Altogether 135 University students completed a questionnaire survey including 16 different game categories and a general category "digital games" containing all digital games available. By using a multiple linear regression model with factor analysis we examined how much HED and UT value explained product recommendation. Table 3 summarizes the hypothesis used and the results.

**Table 3. An overview of the results of the Essay I.**

Hypothesis	Result
H1: Consumer's prior experience significantly influences his/her perceived level of both HED and UT value of digital games at the product subcategory level.	supported
H2: Consumer's perceived HED value of digital games predicts better strong-tie recommendation than the UT value.	rejected

The results indicate that prior game playing experience in a specific game category moderates the perceived level of both HED and UT value of digital games at the product subcategory level (H1). A higher gaming experience may lead to a more optimistic evaluation of subcategories. Second, while HED and UT can be used to explain recommendations (H2), the main interactive variable differs between product categories. There was no general, systematic evidence that only HED would explain recommendation but rather that it was dependent on the subcategory.

Theoretically, our evidence suggests that subcategories act as a more assuring source of information than the general product category of digital games (higher explanatory power  $R^2$ ). Rather than grouping digital games into one category and treating them all as hedonic products, they should be discussed at their specific subcategory level, by researchers and practitioners, alike. Second, unlike the majority of studies on hedonic aspects of digital games consumption, our analysis suggests that digital games are not only high in hedonic value but that the level of perceived HED and UT value depends on user's gaming experience and the product subcategory. Third, prior experience was found to be a influencing factor for evaluation of the different outcomes of digital games.

The results of this study contribute to the discussion of the important unique value elements perceived by consumers at the product category level. The study demonstrated that the level of analyzing games at the product subcategory level is an important starting point of a product's perceived value. Further, it shows that digital games can be perceived both low in HED/UT value, in particular amongst inexperienced consumers and high in HED/UT value amongst consumers with prior game playing experience from the products within the game subcategory.

#### **4.2 Essay II: The Influence of the Hedonic and Utilitarian Value of Digital Games on Product Recommendation at Product Brand Level**

There is growing interest in the emotional and functional aspects of digital games. Grounded in the motivational aspects of consumption of products, this study examined the hedonic (HED) and utilitarian (UT) value of digital games and their effect on product recommendation at the product brand level.

The findings of an internet survey conducted among 160 active male game players assessed the HED and UT value of eight digital games and two other applications. The collected data was analyzed with regression analysis in order to explain product recommendation, which is an important element in creating product awareness amongst consumers, referred as the starting point of brand value.

We hypothesized that digital games are high in hedonic value (H1) and low in utilitarian value (H2). Then, we hypothesized that consumers' prior experience positively influences the perceived level of both HED and UT value of digital games brands (H3 and H4, respectively). Further, we hypothesized prior game experience influenced the likelihood of recommendation of game brands (H5). Finally, we were interested in examining whether hedonic value is a more important determinant of digital game recommendation than utilitarian value (H6). A summary of the results are presented in Table 4.

**Table 4. An overview of the results of the Essay II.**

Hypothesis	Result
H1: Digital games are high in hedonic value at the product brand level.	accepted
H2: Digital games are low in utilitarian value at the product brand level.	rejected
H3: A consumer's prior experience positively moderates the perceived level of HED value of digital game brands.	accepted
H4: A consumer's prior experience positively moderates the perceived level of UT value of digital game brands.	accepted
H5: The game playing experience influences the likelihood of recommendation of game brands.	accepted
H6: The hedonic value is a more important determinant of digital game recommendation than utilitarian value.	accepted

In contrast to prior research, we showed that game products are not only high in HED value but *also* high in UT value; even though games have often been considered as entertainment applications with a low level of perceived usefulness. In addition, prior game playing experience moderates perceived HED/UT value and the willingness to recommend a game to others. Yet, we found no great difference in the source of recommendation between experienced and inexperienced game players.

The results of this study demonstrate not only how both HED and UT are key determinants of product value but also how these value elements explain product recommendation. By demonstrating HED and UT as antecedents of product recommendation we advance theoretical literature of product evaluation by positioning

games within the HED/UT scale on a brand level. Our results contribute to prior research as empirical evidence and theories which highlight the importance and purpose of HED and UT when studying entertainment information systems. Further, we extended the literature on attitude towards brands and sources of product recommendation.

By taking into account the results of this study, and from a practical point of view, we propose that managers use the knowledge we have produced to focus their attention on how they plan marketing strategies for different customer groups, both inexperienced and experienced, and how to optimally express the main benefits of their products to their customers in order to create WOM (Word-of-Mouth) and enhance positive product recommendations within different media.

The results of this study emphasize the importance of the unique value creation for each game separately, particularly since the evaluation of games is formed at the brand level of the products.

#### **4.3 Essay III: Digital Game Brand Image Information Influence on the Inexperienced Consumer's Product Evaluation**

The role of brand image is to maintain and improve the perceived quality of the product and improve consumers' level of confidence towards its salient qualities. Yet, frequently, consumers cannot rely on the facts and prior experience of the product while making purchase decisions. They may lack firsthand experience with the product class, or their product related knowledge may be insufficient.

In this essay, we used the theoretical background of Bettman (1979) on information processing theory of consumer choice which implies that consumer choice criteria are influenced by prior knowledge and experience. We utilized prior theoretical propositions to study the brand influence on inexperienced consumer product evaluations. We tested the influence of brand image on the perceived quality and overall evaluation within the context of a digital game among 127 inexperienced consumers.

We investigated the prior literature on games and collected the salient attributes of a digital game. Then, we conducted an experiment to examine the effect of the brand image on inexperienced consumers' beliefs about product attributes and the level of importance of the criteria to the respondents was rank ordered. The total sample was randomly divided into two groups, to those assessing a widely know digital game brand, World of Warcraft (WoW), and to those assessing a game without any specific game brand by providing a similar description of the game than in the case of the WoW.

First, as expected, the importance of the respondents' evaluation criteria did not differ significantly between the investigated groups. The most important salient beliefs were *fun, a lot to discover and play* and *easy to start to play*. The least importance was given to *real money usage for success, fame* and *usefulness*.

Second, the results of a t-test indicated that the only variable with a statistically significant difference between the groups was *fun*. Surprisingly, the result was in favour of the non-branded game. That is, inexperienced consumers perceived the non-branded game to be more *fun* than the widely known and heavily branded WoW. This result was unexpected because the brand image was initially predicted to create a strong positive bias towards branded games. The importance of this finding is emphasized as *fun* was also the most salient criteria for game choice.

The findings suggest that brand image does not greatly bias inexperienced consumers' product evaluation. In fact, when inexperienced consumers are exposed to a brand, such as WoW, the influence may be negative, which was observed in the example of belief about the perceived *fun* of WoW.

Theoretically, the results provided us with a preliminary platform to understand the factors that influence brand image and its effect on consumer beliefs and attitudes in the context of digital games. The results advance prior literature of beliefs and attitudes towards products (Ajzen and Fishbein, 1980) and brands (Srinivasan et al. 2005). Second, the results demonstrate a wide array of important salient attributes in digital games. Our results indicated that the positive effect of brand is ambiguous during digital game evaluation processing, and thus, further research is required.

We emphasize that marketing practitioners should carefully consider what information is used and how they eventually brand their games, particularly to inexperienced consumers who are the target group for attracting new consumers to play the game.

Related to the research framework of the thesis, we argue that the influence of the brand image is ambiguous. First, a brand does not always influence the consumer's salient beliefs. Second, the influence may be negative. In the next essay, we expand the preliminary findings and examine consumer beliefs and attitude formation more closely.

#### 4.4 Essay IV: Influence of Brand Image on Product Evaluation in the Context of Digital Games

The software industry is in the habit of producing strong branding campaigns, as software lacks physical shape that would otherwise enable customers to observe its characteristics to form attitudes towards purchasing the product. It is widely known that the brand functions as a tool to influence consumer attitudes towards the product, as brands can favourably bias the perceived quality of products. This mechanism suggests that brands may covertly influence consumer choice, without the consumer being aware of such an influence. Contemporary consumer psychology suggests that brands may also influence behaviour through framing and that a surprisingly wide array of behaviours can be influenced.

In essay IV, we test covert brand influences on digital game evaluation. We tested the mechanisms that relate and connect product information, brand image, prior experience and beliefs by influencing consumer stimuli in an experimental research setting. A sample of 520 university students from three Universities in different countries responded to our paper –based survey. The sample was divided into six treatment groups by prior product knowledge level and by the presence or absence of brand influence. Table 5 presents an overview of the initial hypotheses and associated results.

**Table 5. An overview of the results of the Essay IV.**

Hypothesis	Result
H1: A positive brand image biases beliefs about a digital game favorably.	partial support
H2: The brand bias effect is modified by game playing experience.	not supported
H3: A brand influences attribute importance in digital games evaluation	not supported
H4: Consumer experience does not modify the influence of a brand on attribute importance.	supported

Empirical evidence suggests that even if a brand does bias some beliefs for product evaluation at the attribute level, it *does not* favourably bias the most important beliefs and game selection criteria (*fun and discovery*) for product evaluation at the attribute level (H1). Furthermore, brand *does not* bias overall judgment of the game towards more positive evaluation (H2), even though evaluation is biased by the product experience. Further, brand exposure does not influence the overt evaluation criteria for a digital game (H3). Lastly, expertise did not shield the treatment group members from the attribute importance bias effects as we hypothesized (H4).

However, both the experienced and the moderately experienced (aware) participants were equally subject to brand image influence. The evaluation making structure of both experienced and aware consumers changes from game characteristic (discovery) based evaluation to motivation (fun) based evaluation when brand information is available. In summary, we propose that brand influences the game selection criteria formation rather than attribute beliefs. While such an influence is counterintuitive, it is in line with the regular observation of advertising having limited success, at best, in changing overt consumer attitudes and behavior.

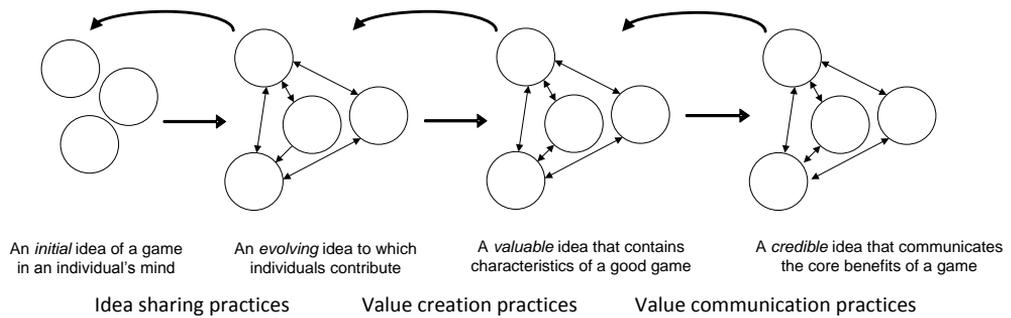
In this study we tested the influence of the brand considering the two important mechanisms of attitude formation - changing beliefs and changing attribute importance. We found no attribute bias effect on perceived product quality. However, game brand exerted a strong framing effect. Contrary to conventional wisdom, game brands may instruct consumers more about how to choose than what to choose, even though, these aspects of choice may often be closely related. The results of our study indicate that in addition to innovative product development, brands and brand management are of great importance in the context of digital products.

#### **4.5 Essay V: Any good ideas? Developers' Insight into the Development Process of Game Ideas in Digital Game Studios**

Throughout this thesis we have discussed and demonstrated the importance of different sources of unique value elements such as hedonic and utilitarian value and the effect of brand image and prior experience during consumer information processing. Essay V aims to demonstrate *how* salient qualities are embedded into games and communicated to important stakeholders by using different organizational practices when processing a wide array of game ideas.

Successful product or service ideas, in both the software industry in general as well as the digital games industry in particular, are often hard to come by. Nevertheless, idea processing practices are often unable to exhibit the value of ideas to important stakeholders. In this essay we present how invariably dynamic game ideas travel through an organization and are transformed into valuable, shareable objects which lead to an improved understanding of a product's expected quality and outcomes.

In this study we used the theoretical lenses of boundary objects and value creation practices in organizations to develop a model of idea transformation and utilized an interpretive case study approach in order to analyze this process (Figure 3) by interviewing 13 video game studios and 26 professionals working in the games industry.



**Figure 3. A process model for idea transformation.**

The main findings which resulted in a conceptual model for idea transformation are presented in Figure 3. An idea is transformed from imperfect, fragmented thoughts in an individual's mind into a clear marketing message utilizing various organizational practices. The *initial* idea for a game in an individual's mind is often brought to the organization as a collection of thoughts untouched, not yet contested via idea sharing practices. The resulting *evolving* idea moves through organizational knowledge boundaries to which individuals contribute by adding value. In this phase the idea is in a changing and dynamic form. A *valuable* idea contains a set of characteristics that are required to develop a good game. This valuable idea also satisfies the requirements of those who are involved in the game (e.g. developers, publishers and game players), referred to as communities of practice. It is a structured set of prior related knowledge at a stage suitably changed and evolved and ready for specific decisions regarding the idea. Then, management knowledge is used to build an understandable boundary object with a *credible* marketing message that promotes the game and distinguishes it from the mass of similar products through marketing practices. The marketing message has to be relevant to its listeners because only then can it exert an impact. To accomplish these objectives, good ideas are used to differentiate the product from other similar products.

Good games are derived from good ideas, but if participants don't go through the process of knowledge transformation, a good idea cannot emerge from different knowledge disciplines such as design, programming, marketing and management. If the pieces of knowledge from different disciplines are not collected appropriately and in a resourceful way the series of actions required for idea translation in a creative industry, such as the digital games industry, cannot occur. Therefore, innovation is a multidisciplinary series of acts combining different practices.

Game developers are responsible for the management of the relationships between different participants involved in the game idea transformation process. They need to be aware of how to build, break and move knowledge boundaries and find the optimal way of balancing these relationships for building better games.

Our research provides a rich picture of how knowledge transformation occurs in organizations in practice. Second, it contributes to ongoing discussions of how different social structures suffer from distance and inertia in different forms. Third, we developed pragmatic guidelines with clear steps indicating how value elements can be moulded into a game through idea processing practices. According to our observations, good ideas emerge from knowledge conflicts in the form of knowledge preferences that are thought to best correspond with and lead to the success of the game idea.

The contribution of this Essay is in illustrating how the unique value elements are developed into digital games through idea processing practices and through transforming these elements from intangible non-shareable objects to something that delivers a more concrete means of communicating the unique value built into a game.

#### **4.6 Results of the thesis**

The main research question addressed in this thesis was “*How does a game function as a source of brand equity?*” The main research question was further subdivided into four more specific questions addressed in the five research essays included in this thesis.

*RQ1: How do motivational aspects of consumption influence game recommendation?*

To describe the hedonic and utilitarian aspects of consumption as part of the perceived value of digital games we listed important characteristics of successful games. Throughout the research process we collected a range of various game characteristics that serve as determinants of good and successful games by utilizing prior literature, interviews conducted in game studios, opinions and many external sources of materials concerning games.

We conclude that both intrinsic and extrinsic motivational factors are important determinants of digital game value for their users. Digital game playing is motivated by both hedonic and utilitarian perspectives of consumption, which are different from other information systems such as office systems which offer predominantly utilitarian value (Essay I and II).

In particular *perceived fun* is an important selection criteria (Essays III and IV). Perceived fun is also an important game design criteria (Essay V) and an important source of a game’s value (Essays I and II), which in turn influences game recommendation (Essay I and II).

The *usefulness* of games is not considered an important decision making criteria (Essay III and IV). Furthermore, usefulness was not found to be an important game design element for digital game studios (Essay V). However, *usefulness* is an important

motivational factor for game players (Essays I and II). Experienced game players find a game useful in order to attain a separate, external outcome such as the objective of accomplishing game levels (Essays I and II).

*RQ2: How does brand image influence the evaluation of a game's salient qualities?*

Brand image is thought to influence consumers' product evaluation processes (Essays III and IV). However, in this study, surprisingly the brand image influence *did not* greatly bias product beliefs (Essays III and IV). Yet, according to our findings, brand image altered the covert mechanism of evaluation structures. The presence of brand information influenced the evaluation making structure of both experienced and aware consumers, shifting the attribute importance from a game characteristic (discovery) based evaluation to a motivation (fun) based evaluation.

In summary, we propose that a brand influences consumers' choice formation of game selection criteria rather than attribute beliefs. Our findings suggest that the information attributed to and represented by a brand influences product evaluation structures by influencing the perceptions of salient qualities and highlighting attribute importance rather than biasing attribute beliefs.

*RQ3: How does prior product experience influence the evaluation of a game's salient qualities?*

Product knowledge gained through prior game playing experience has a significant influencing role in product evaluation situations. Prior game playing experience, according to our findings, leads to more positive evaluations. The results of all the essays (I-V) presented in this study support this finding. Yet, and most importantly, both the brand and prior game play experience influence product evaluation (Essay IV). Whereas experience positively moderates the overall product evaluation (Essays I-IV), the brand influences the decision making structure underlying that evaluation (IV).

Further, prior experience positively influences the perceived level of both hedonic and utilitarian value of digital games at the product *subcategory* (Essay I) and game *brand* level (Essay II). Digital games can be perceived both low in hedonic and utilitarian value levels, in particular among inexperienced consumers, however, high among consumers with prior game playing experience within a subcategory or a specific game. In addition, prior game playing experience influences perceived hedonic and utilitarian value and the willingness to recommend a game to others. We, however, found no great difference in the source of recommendation between experienced and inexperienced game players.

In Essay V, developers emphasized the importance of prior development knowledge above game playing knowledge, necessary during the consideration of a potential game

idea. Prior development knowledge provides the capability to estimate the elements needed to develop an idea, through idea processing practices, into a unique game. Developers' responses regarding the role of consumer's in developing good ideas was not perceived as very influential.

*RQ4: How are salient qualities embedded in games and communicated to important stakeholders?*

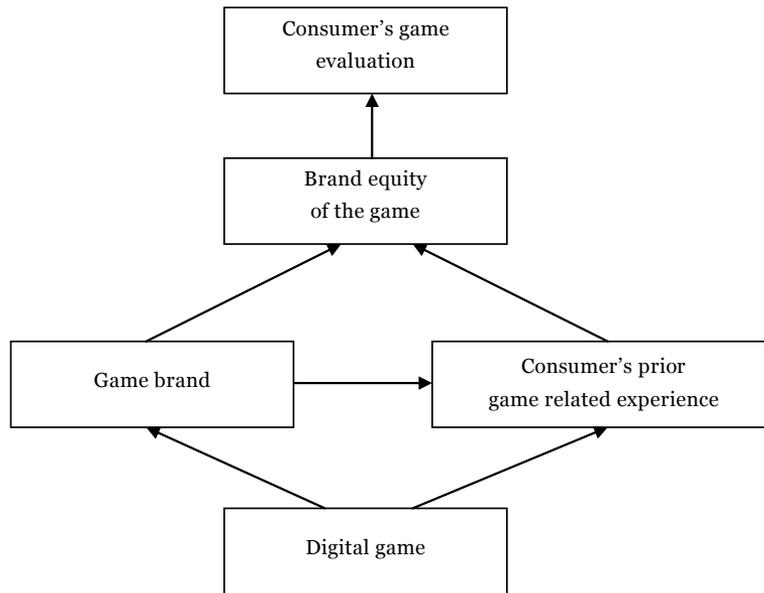
The salient qualities that are important, from the perspective of brand equity, are discovered through processing game ideas. Game idea processing is a core value creation practice within a game developer's knowledge management process; where transforming ideas *before* making decisions about new product development and marketing actions enhances a game's value.

The relationship between different forms of ideas is dependent on different practices of how ideas are modified. There is not only one way of creating ideas and following idea processing practices to build good ideas. The most suitable and optimal way ultimately requires a series of required actions: a) idea sharing, b) value creation and c) marketing practices. These components support the development and processing of ideas which lead to the creation and building of successful games. Yet, the social structures in game studios suffer from distance and inertia which result in a barrier and inaccessibility to idea processing practices. Thus, developers need to be aware of how to build, restructure break and move knowledge boundaries in order to find the optimal way of balancing the relationships between developers and other stakeholders for building unique games.

#### **4.7 Theoretical conceptualization**

The objective of this study was to explore and investigate selected sources of brand equity, that is, the sources of unique value characteristics that influence product evaluation in the context of digital games.

Based on the findings of this thesis it can be demonstrated how a game functions as a source of brand equity illustrated by the theoretical model presented in the Figure 5. The model conceptualizes the contribution of this thesis by depicting the relationships between the digital game and the consumer's game evaluation. It integrates four theoretical perspectives relevant to the field of information systems science: the brand equity theory, motivational theory, information processing theory of consumer choice and the theory of use of boundary objects in organizational practices. This study incorporates these four perspectives with unique value creation mechanisms within the context of digital games which, to the best of our knowledge, has not been previously done.



**Figure 4. Model of sources of brand equity of digital games.**

Brand equity represents the two sources of unique value, the game brand and consumer's prior game playing experience, which incrementally influences consumer's game evaluation. First, unique value characteristics are added to the game and all its aspects; both attribute and non-attribute aspects. During this process, the digital game studio assumes an important role because marketing practices are utilized to emphasize the game brand's unique characteristics (Essays I-V). Digital game studios' intend to emphasize salient qualities that are considered important to a game's success and that may modify consumers' perceptions positively. The perceptions influence consumers' product evaluation mechanisms by accentuating attribute importance (Essay III and IV).

On the one hand, game experience is concerned with product knowledge about digital games' salient qualities via product prior usage (game playing). On the other hand, game playing experience is an outcome described as fun and usefulness. For those consumers experienced in games, the brand signals not only information about the product qualities but also the experiences. Experiences are used as a source of discussion, emphasizing those unique characteristics that stand out in the form of playing experience (Essay I and II). Discussing game playing experiences creates awareness among consumers about the unique characteristics of the game. However, individuals with less experience have to make product evaluations based on incomplete or insufficient information relying on external sources of information.

Such external sources are for instance friends that have experience in a game or publicly available game reviews on the internet. Less experienced consumers use the information available to build associations about the salient qualities and brand imagery of what kind of experience the game could provide if it would be selected from many other alternatives available.

## **5. Discussion and contribution**

The objective of this study was to explore and conceptualize selected sources of brand equity, that is, the sources of unique value characteristics that ultimately influence product evaluation in the context of digital games. We have explained relationships between constructs by testing them and extended them into statements to offer solutions and recommendations of what can be done in practice. The findings of this thesis add to the knowledge on games as experience information goods both theoretically and in practice. In this section, we will discuss the findings and implications as theoretical propositions with relevant practical suggestions.

### **5.1 Theoretical implications**

This study makes four principal contributions. The contributions are based on several theoretical and empirical findings in various essays from different perspectives (Whetten 1989). Accordingly, we have uncovered new dimensions about games.

First, this thesis demonstrates how motivational perspectives of consumption influence awareness creation through product recommendation, such as the strong utilitarian aspects among experienced consumers. Second, it demonstrates how prior experience moderates product evaluation, whether the brand image is present or absent. The importance of the brand is in its effect on consumer's decision making structures in product evaluation situations. Third, this study discusses various, distinct possible sources of brand equity from the perspective of digital game developers, emphasizing the importance of knowledge conflicts between developers, consumers and publishers in developing new ideas and innovative games. Fourth, it proposes a conceptual, theoretical framework for how a game functions as a source of brand equity, which can be used by both academics and practitioners in digital games studios.

In summary, both the brand of the product and experience of the consumer are sources of brand equity. They signal the unique value characteristics that determine brand equity. Therefore, this study recommends the definition derived from Erdem et al. (1999) be extended to include and emphasize the influence of consumer experience; thus

defining brand equity as the incremental combined influence of the product *brand* and consumer *experience* on consumer evaluation and choice processes.

By building games that meet the escalating requirements of digital game communities of practice, game studios propose a certain gameplay experience to meet the needs of the consumers. The findings suggest that the unique value of products and services is as a result of various individuals' actions that contribute to the market in multiple, different ways, both while developing and while using products (Araujo 2007;Callon et al. 2002;Vargo and Lusch 2008).

## **5.2 Managerial implications**

Marketing is about positioning, defining products in order to reach an optimum demand average in which the product categories are “*renegotiated, redefined and intensively battled over*” (Slater 2002). A game is produced and brought to the market as an economic good to meet the needs of consumers. In this process many companies do not wish to leave any surprises and therefore they use market-based facts and measurements as communicative devices for deciding which unique qualities to invest resources in (Callon and Muniesa 2005;Kim and Mauborgne 2004;Kotler 1997).

We argue that increased economic, added value of the brand can be achieved in two predominant ways. First, game studios should consider marketing actions regarding a game's strengths in comparison to other games while being truthful to their brand, which would result in increased preference to other choices. Second, games studios should emphasize both the emotional and instrumental outcome of games while simultaneously differentiating some parts of the core benefits to different target groups.

Finally, both consumers and developers, by using their prior knowledge gained through experiences; evaluate games continuously with the goal of communicating the core value and unique value elements efficiently to each other and different stakeholders. Therefore, a successful game brand is developed through people who are fully engaged and possess the ability to deliver on the brand promise and communicate it emphasizing unique value elements openly. Developers would benefit from knowledge gained by continuous evaluation of user perceptions of their brands and game player experiences, which can be used for building unique games that stand out from the mass.

## **5.3 Reliability and validity**

Methodology triangulation provides a richer perspective of the results, compared with only a single method of study. Multiple methods have for this reason, and appropriately so, been utilized for our study of games. In this thesis both quantitative (surveys and

multivariate data analysis) and qualitative methods (interpretative case study) were applied to five data collection samples; four from consumers and one from game developers. All studies presented in this thesis focused on essential characteristics of games from various perspectives.

The results are presented in a sequential order where methods are listed in sequence with results from one study complementing the following study. Statistical analysis using questionnaires were performed and in-depth interviews were conducted in order to understand the results from another perspective (Mingers 2001). We believe that the results of this study are repeatable in the context of games and could be used as a platform to study other types of entertainment applications (Galliers 1992).

#### **5.4 Generalizability, limitations and further research**

Lee and Baskerville (2003) claim that if a theory cannot be generalized in any way its use is limited. This thesis has concentrated on representative samples from gaming communities. Therefore, we believe the results of the studies are generalizable to wider gaming contexts.

The findings of the Essays I-IV can be generalized from theory to descriptions (Theory - Empirical) in which using statistical methods and sampling have been used as a basis of generalizability (Lee and Baskerville 2003). The results of the Essays I-IV have been gained through representative samples from both experienced and inexperienced game players. In all of the essays prior game playing experience was a significant element influencing product evaluation. Larger samples however, are needed to study how prior experience influences the digital game evaluation process, as it seems that prior experience is one determinant factor of a more positive or negative evaluation of digital games.

Essay V, provides another perspective. It generalizes the results from empirical descriptions to theory (Empirical - Theoretical) (Lee and Baskerville 2003). Essay V is based on rich descriptions of multiple individuals which are generalized to concepts and to specific implications. Multiple cases were used to document and interpret unique circumstances in organizations with the intention to use the findings to build theoretical abstractions of the cases studied (Klein and Myers 1999). The developed concept can be used in other contexts within other organizations of similar type.

Our findings are suggestive and require further consideration. As the main limitation of our study, we emphasize that our selection of games covered only a few of the tens of thousands digital games titles available. A wider selection of various games from different game categories could have resulted in different conclusions.

Further, our prior research (Storgårds and Sokura 2009) suggests that gender may influence game evaluation, which most likely reflects the effects of prior experience and

the choice of gender-specific games, games that are more appealing to either males or females, rather than the effect of gender itself. Females and males are born similar regarding the ability to use technology (eg. Calvert et al. 2005), but our society, community and school system would seem to have an influence on our later gaming behaviour. Traditional stereotypical gender roles between women and men in game playing however, are still in existence (Cassell and Jenkins 2000). There are still women that want to play “masculine” games such as FPS and vice versa (Nakamura and Wirman 2005) though. Therefore, it is recommended that future research take a look at more a comprehensive selection of games and more focused selection of game player segments.

As theoretical limitations of the study, it is acknowledged that the theoretical concepts only encompass a very limited fragment of the various decision making processes presented in prior research of consumer behaviour (Blackwell et al. 2006). The results of one thesis are not capable of demonstrating all underlying issues of brand equity. For instance, there is a multitude of consumer information processing models available, and thousands of research papers of belief-attitude models towards brands and intention to use which are presented and tested. However, the aim was to study, in particular, the relationships between the game, product brand, product experience and brand equity from a holistic perspective. The theoretical proposition is not fully explored but open for further discussion.

A methodological limitation of this study includes the use of employed statistical methods. Multivariate attitude models, factor analysis and ANOVA have been widely used in research on cognitive information processing and attitude formation and change (Ajzen 2005; Bettman et al. 1975). The main limitation is that these techniques can only examine a single relationship at a time. There are many other possible techniques that could have been used in this thesis such as SEM (Structured Equation Modeling) (Hair et al. 1984-2004). Nevertheless, by using these methods, the objectives were achieved successfully.

Case studies study human activity embedded in the real world which is studied in an existing context (Gillham 2000). The process of idea development was studied in various organizational contexts by interviewing multiple individuals from the games industry providing a rich interpretive insight of the organizational practices (Walsham 1995). The main limitation of the qualitative approach was that in most organizations one informant was used. However, CEOs (Chief Executive Officer) and other members of management interviewed represented rich sources of information. They have access to information and both provided both general detailed information necessary for our cases, providing views of how different practices function. Further, industry experts were used, individuals that coordinate, manage and consult within the Finnish game industry in various national level organizations to provide a more general perspective of how the games industry operates.

Future research considerations may involve a more detailed account of value creation practices of specific game platforms (Wii, PS3, Xbox), novel mobile operating systems (e.g. Android, Symbian^3, MeeGo) and their influencing factors of product evaluation. Furthermore, further studies are required to investigate the relationships between the theoretical models of sources of brand equity of games presented in this study by using additional theoretical and methodological perspectives.

The findings are explored in great detail and it is believed that the findings are relevant for academics and practitioners that consider research about developing, branding and experiencing games as a part of information systems research and development. The study provides a valuable platform for understanding these vital elements in the context of digital games. Knowledge of the sources of brand equity is an asset vital to the development of unique, successful games that stand out from the mass.

# References

- Aaker, D.A., *Managing Brand Equity*, The Free Press, New York, 1991.
- Ajzen, I., *Attitudes, Personality, and Behavior*, The Dorsey Press, Chicago, Illinois, 2005.
- Ajzen, I. and M. Fishbein, *Understanding Attitudes and Predicting Social Behavior*, Prentice-Hall, NJ, 1980.
- AMA, "Dictionary of Marketing Terms," 2008, 2008: 5th February,
- Araujo, L., "Markets, market-making and marketing," *Marketing Theory*, 2007, 7: 3, pp. 211-226.
- Arnould, E.J. and A. Epp, "Deep Engagement With Consumer Experience," In *The Handbook of Marketing Research: Uses, Misuses, and Future Advances*, R. Grover and M. Vriens (Ed.), SAGE Publications, 2006,
- Babbie, E., *The Practice of Social Research*, Wadsworth Publishing Company, 1998.
- Bacharach, S.B., "Organizational Theories: Some Criteria for Evaluation," *Academy of Management Review*, 1989, 14: 4, pp. 496-515.
- Ballantyne, R., A. Warren and K. Nobbs, "The Evolution of Brand Choice," *Brand Management*, 2006, 13: June 4/5, pp. 339-352.
- Batra, R. and O.T. Ahtola, "Measuring the Hedonic and Utilitarian Sources of Consumer Attitudes," *Marketing Letters*, 1990, 2: 2, pp. 159-170.
- Bearden, W.O. and M.J. Etzel, "Reference Group Influence on Product and Brand Purchase Decisions," *Journal of Consumer Research*, 1982, 9: 2, pp. 183-194.
- Benbasat, I., D.K. Goldstein and M. Mead, "The Case Research Strategy in Studies of Information Systems," *MIS Quarterly*, 1987: September.
- Benbasat, I. and R.W. Zmud, "Empirical Research in Information Systems: The Practice of Relevance," *MIS Quarterly*, 1999, 23: 1, pp. 3-16.
- Bettman, J.R., *An Information Processing Theory of Consumer Choice*, Addison-Wesley Publishing Company, 1979.
- Bettman, J.R., N. Capon and R.J. Lutz, "Multiattribute Measurement Models and Multiattribute Attitude Theory: A Test of Construct Validity," *Journal of Consumer Research*, 1975, 1: March, pp. 1-15.
- Bettman, J.R. and C.W. Park, "Effects of Prior Knowledge and Experience and Phase of the Choice Process on Consumer Decision Processes: A Protocol Analysis," *Journal of Consumer Research*, 1980, 7: 3, pp. 234-248.
- Blackwell, R.D., P.W. Miniard and J.F. Engel, *Consumer Behavior*, Thomson, South-Western, Mason, Ohio, 2006.
- Bolton, R.N., "A dynamic model of the duration of the customer's relationship with a continuous service provider: The role of satisfaction.," *Marketing Science*, 1998, 17: 1, pp. 45-65.

- Bragge, J. and J. Storgårds, "Profiling Academic Research on Digital Games Using Text Mining tools," Tokyo, 2007a.
- Bragge, J. and J. Storgårds, "Utilizing Text-Mining Tools to Enrich Traditional Literature Reviews. Case: Digital Games.," Tampere, Finland, 2007b.
- Brief, A.P. and R.J. Aldag, "The Intrinsic-Extrinsic Dichotomy: Toward Conceptual Clarity," *The Academy of Management Review*, 1977, 2: 3, pp. 496-500.
- Brown, J.J. and P.H. Reingen, "Social Ties and Word-of-Mouth Referral Behavior," *Journal of Consumer Research*, 1987, 14: 3, pp. 350-362.
- Brown, J.S. and P. Duguid, "Knowledge and Organization: A Social-Practice Perspective," *Organization Science*, 2001, 12: 2, March-April, pp. 198-213.
- Callon, M., C. Méadel and V. Rabeharisoa, "The economy of qualities," *Economy and Society*, 2002, 31: 2, pp. 194-217.
- Callon, M. and F. Muniesa, "Peripheral Vision: Economic Markets as Calculative Collective Devices," *Organization Studies*, 2005, 26: 8, pp. 1229-1250.
- Calvert, S.L., V.J. Rideout, J.L. Woolard, R.F. Barr and G.A. Strouse, "Age, Ethnicity, and Socioeconomic Patterns in Early Computer Use," *American Behavioral Scientist*, 2005, 48: 5, pp. 590.
- Carlile, P.R., "A Pragmatic View of Knowledge and Boundaries: Boundary Objects in New Product Development," *Organization Science*, 2002, 13: 4, July-August, pp. 442-455.
- Carlile, P.R., "Transferring, Translating, and Transforming: An Integrative Framework for Managing Knowledge Across Boundaries," *Organization Science*, 2004, 15: 5, pp. 555-568.
- Cassell, J. and H. Jenkins, *From Barbie to Mortal Kombat: Gender and Computer Games*, MIT Press, 2000.
- Chalmers, A.F., *What is This Thing Called Science?* Hackett, 1999.
- Chen, Y. and J. Xie, "Third-Party Product Reviews and Firm Marketing Strategy," *Marketing Science*, 2005, 24: 2, pp. 218-240.
- Chevalier, J.A. and D. Mayzlin, "The Effect of Word of Mouth on Sales: Online Book Reviews," *Journal of Marketing Research*, 2006, 43: 3, pp. 345-354.
- Choi, D. and J. Kim, "Why People Continue to Play Online Games: In Search of Critical Design Factors to Increase Customer Loyalty to Online Contents," *CyberPsychology & Behavior*, 2004, 7: 1, pp. 11-24.
- Cochoy, F., "Calculation, qualculation, calculation: shopping cart arithmetic, equipped cognition and the clustered consumer," *Marketing Theory*, 2008, 8: 1, pp. 15-44.
- Cole, H. and M.D. Griffiths, "Social Interactions in Massively Multiplayer Online Role-Playing Gamers," *CyberPsychology & Behavior*, 2007, 10: 4, pp. 575-583.

- Corradi, G., S. Gherardi and L. Verzelloni, "Through the Practice Lens: Where is the Bandwagon of Practice-Based Studies Heading?" *Management Learning*, 2010, 41: 3, pp. 265-283.
- Crandall, R.W. and G.J. Sidak, "Video Games, Serious Business for America's Economy," Entertainment Software Association, 2006.
- Davis, F.D., "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information," *MIS Quarterly*, 1989, 13: 3, pp. 319-340.
- Davis, F.D., R.P. Bagozzi and P.R. Warshaw, "Extrinsic and intrinsic motivation to use computers in the workplace," *Journal of Applied Social Psychology*, 1992, 22: 14, pp. 1111-1132.
- Deci, E.L., *Intrinsic motivation*, Plenum, New York, 1975.
- Dhar, R. and K. Wertenbroch, "Consumer Choice Between Hedonic and Utilitarian Goods," *Journal of Marketing Research*, 2000, XXXVII: February, pp. 60-71.
- Drolet, A., M. Frances Luce and I. Simonson, "When Does Choice Reveal Preference? Moderators of Heuristics versus Goal-Based Choice," *Journal of Consumer Research*, 2009, 36: June, pp. 137-147.
- Duhan, D.F., S.D. Johnson, J.B. Wilcox and G.D. Harrell, "Influences on consumer use of word-of-mouth recommendation sources," *Journal of the Academy of Marketing Science*, 1997, 25: 4, pp. 283-295.
- Erdem, T. and J. Swait, "Brand Equity as a Signaling Phenomenon," *Journal of Consumer Psychology*, 1998, 7: 2, pp. 131-157.
- Erdem, T., J. Swait, S. Broniarczyk, D. Chakravarti, J.-N. Kapferer, M. Keane, J. Roberts, J.-B.E.M. Steenkamp and F. Zettelmeyer, "Brand Equity, Consumer Learning and Choice," *Marketing Letters*, 1999, 10: 3, pp. 301-318.
- Erdem, T., J. Swait and A. Valenzuela, "Brands as Signals: A Cross-Country Validation Study," *Journal of Marketing*, 2006, 70: January, pp. 34-49.
- Ermi, L. and F. Mäyrä, "Fundamental Components of the Gameplay Experience: Analysing Immersion," *Proceedings of the Changing Views: Worlds in Play. Selected Papers of the 2005 Digital Games Research Associations's Second International Conference*, 2005, pp. 15-27.
- ESA, "Essential Facts About the Computer and Video Games Industry 2010," Entertainment Software Association, 2011.
- Farquhar, P.H., "Managing Brand Equity," *Marketing Research*, 1989, 1: September, pp. 24-33.
- Fishburn, P., "Utility Theory," *Management Science*, 1968, 14: 5, pp. 335-378.
- Foxall, G.R., *Understanding Consumer Choice*, Palgrave Macmillan, New York, 2005.
- Gable, G.G., "Integrating Case Study and Survey Research Methods: An Example in Information Systems," *European Journal of Information Systems*, 1994, 3: 2, pp. 112-126.

- Gagné, M. and E. Deci, "Self-determination theory and work motivation," *Journal of Organizational Behavior*, 2005, 26, pp. 331-362.
- Gal, U., K. Lyytinen and Y. Youngjin, "The dynamics of IT boundary objects, information infrastructures, and organisational identities: the introduction of 3D modelling technologies into the architecture, engineering, and construction industry.," *European Journal of Information Systems*, 2008, 17, pp. 290-304.
- Galliers, R.D., "Choosing Information Systems Research Approaches," In *Information Systems Research*, R. Galliers (Ed.), Alfred Waller Ltd., Warwick, 1992,
- Gasson, S., "A genealogical study of boundary-spanning IS design," *European Journal of Information Systems*, 2006, 15, pp. 26-41.
- Gillham, B., *Case study research methods*, Continuum International Publishing Group, 2000.
- Gilly, M.C., J.L. Graham, M.F. Wolfenbarger and L.J. Yale, "A Dyadic Study of Interpersonal Information Search," *Journal of the Academy of Marketing Science*, 1998, 26: 2, pp. 83-100.
- Gregor, S., "The Nature of Theory in Information Systems," *MIS Quarterly*, 2006, 30: 3, pp. 611-342.
- Hair, Anderson, Tatham and Black, *Multivariate Data Analysis*, Prentice Hall Inc., Upper Saddle River, New Jersey, 1984-2004.
- Hansen, F., "Psychological Theories of Consumer Choice," *Journal of Consumer Research*, 1976, 3: December, pp. 117-142.
- Hargadon, A. and R.I. Sutton, "Building Innovation Factory," *Harvard Business Review*, 2000, 78: 3 May-June, pp. 157-166.
- Herman, L., J. Horwitz, S. Kent and M. Skyler, "The History of Video Games," 2002.
- Hippel von, E., *Democratizing innovation*, MIT Press, 2005.
- Hirschman, E.C. and M.B. Holbrook, "Hedonic consumption: Emerging concepts, methods and propositions," *Journal of Marketing*, 1982, 46: Summer, pp. 92-101.
- Holbrook, M.B., "Beyond Attitude Structure: Toward the Informational Determinants of Attitude," *Journal of Marketing Research*, 1978, XV: November, pp. 545-556.
- Holbrook, M.B., *Consumer Value: A Framework for Analysis and Research*, Routledge, 1999.
- Holbrook, M.B. and E.C. Hirschman, "The Experimental Aspects of Consumption: Consumer Fantasies, Feelings, and Fun.," *The Journal of Consumer Research*, 1982, 9: 2, pp. 132-140.
- Hong, J. and B. Sternthal, "The Effects of Consumer Prior Knowledge and Processing Strategies on Judgments," *Journal of Marketing Research*, 2010, XI.VII: April, pp. 301-311.
- Howard, J.A. and J.N. Sheth, *The Theory of Buyer Behavior*, John Wiley & Sons, Inc., New York, 1969.

- Hsu, C.-L. and H.-P. Lu, "Consumer Behavior in Online Game Communities: a Motivational Factor Perspective," *Computers in Human Behavior*, 2005, 23: 2007, pp. 1642-1659.
- Hsu, C.-L. and H.-P. Lu, "Consumer Behavior in Online Game Communities: a Motivational Factor Perspective," *Computers in Human Behavior*, 2007, 23: 3, pp. 1642-1659.
- Jick, T.D., "Mixing Qualitative and Quantitative Methods: Triangulation in Action," *Administrative Science Quarterly*, 1979, 24: 4, pp. 602-611.
- Johnson, E.J. and E.J. Russo, "Product Familiarity and Learning New Information," *Advances in Consumer Research*, 1981, 8.
- Johnson, E.J. and E.J. Russo, "Product Familiarity and Learning New Information," *The Journal of Consumer Research*, 1984, 11: 1, pp. 542-550.
- Kallio, K.P., K. Kaipainen and F. Mäyrä, "Gaming Nation? The Pilot Case Finland: International Study of Games Cultures," Tampere, 2007, Hypermedia Laboratory Net Series 14.
- Kapferer, J.-N., *The New Strategic Brand Management: Creating and Sustaining Brand Equity Long Term*, Les Editions d'Organization, London, 2006.
- Kaplan, B. and D. Duchon, "Combining Qualitative and Quantitative Methods in Information Systems Research: A Case Study," *MIS Quarterly*, 1988: December, pp. 571-586.
- Karsten, H., K. Lyytinen, M. Hurskainen and T. Koskelainen, "Crossing boundaries and conscripting participation: representing and integrating knowledge in a paper machinery project," *European Journal of Information Systems*, 2001, 10, pp. 89-98.
- Keller, K.L., "Conceptualizing, Measuring, and Managing Customer-Based Brand Equity," *Journal of Marketing*, 1993, 57: January, pp. 1-22.
- Keller, K.L., "Measuring Brand Equity," In *The Handbook of Marketing Research*, R. Grover and M. Vriens (Ed.), SAGE Publications, Thousand Oaks, California, 2006.
- Keller, K.L. and D.R. Lehmann, "Brands and Branding: Research Findings and Priorities," *Marketing Science*, 2006, 25: 6, pp. 740-759.
- Kerlinger, F.N., *Foundations of Behavioral Research*, London, 1973.
- Kim, W.C. and R. Mauborgne, "Blue Ocean Strategy," *Harvard Business Review*, 2004, 82: 10.
- Kjellberg, H. and C.-F. Helgesson, "On the nature of markets and their practices," *Marketing Theory*, 2007, 7: 2, pp. 137-162.
- Klein, H.K. and M.D. Myers, "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems," *MIS Quarterly*, 1999, 23: 1, pp. 67-93.

- Oliver, R.L., "Customer Satisfaction Research," In *The Handbook of Marketing Research: Uses, Misuses, and Future Advances*, R. Grover and M. Vriens (Ed.), 1, SAGE Publications, Inc., Thousand Oaks, California, 2006.
- Orlikowski, W.J., "Using technology and constituting structures: A practice lens for studying technology in organizations," *Organization Science*, 2000, 4: 11, pp. 404-428.
- Orlikowski, W.J., "Knowing in Practice: Enacting a Collective Capability in Distributed Organizing," *Organization Science*, 2002, 13: 3, May-June, pp. 249-273.
- Orlikowski, W.J. and J.J. Baroudi, "Studying Information Technology in Organizations: Research Approaches and Assumptions," *Information Systems Research*, 1991, 2: 1.
- Park, C.S. and V. Srinivasan, "A Survey-Based Method for Measuring and Understanding Brand Equity and Its Extendibility," *Journal of Marketing Research*, 1994, 31: 2, pp. 271-288.
- Park, C.W. and B.J. Moon, "The relationship between product involvement and product knowledge: Moderating roles of product type and product knowledge type.," *Psychology & Marketing*, 2003, 20: 11, pp. 977-997.
- Park, D.-H. and S. Kim, "The effects of consumer knowledge on message processing of electronics word-of-mouth via online consumer reviews," *Electronic Commerce Research and Applications*, 2008, 7, pp. 399-410.
- Pawlowski, S. and D. Robey, "Bridging User Organizations: Knowledge Brokering and the Work of Information Technology Professionals," *MIS Quarterly*, 2004, 28: 4, pp. 645-672.
- Pinsonneault, A. and K.L. Kraemer, "Survey research methodology in management information systems: an assessment," *Journal of Management Information Systems*, 1993, 10: 2.
- Prahalad, C.K. and V. Ramaswamy, "Co-creating unique value with customers," *Strategy and Leadership*, 2004, 32: 3, pp. 4-9.
- Raessens, J. and J. Goldstein, *Handbook of Computer Game Studies*, The MIT Press, Cambridge, Massachusetts, 2005.
- Raggio, R.D. and R.P. Leone, "The theoretical separation of brand equity and brand value: Managerial implications for strategic planning," *Journal of Brand Management*, 2007, 14: 5, pp. 380-395.
- Robey, D., "Research commentary: Diversity in Information Systems Research: Threat, Promise, and Responsibility," *Information Systems Research*, 1996, 7: 4, pp. 9.
- Rogers, E.M., *Diffusion of Innovations*, The Free Press, New York, 1983.
- Rossiter, J. and L. Percy, *Advertising and Promotion Management*, McGraw, New York, 1987.
- Rutter, J. and J. Bryce, "Understanding Digital Games," London, UK, 2006, pp. 272.

- Kotler, P., *Marketing Management: Analysis, Planning, Implementation and Control*, Prentice Hall International Inc., New Jersey, 1997.
- Land, F., "The Information Systems Domain," In *Information Systems Research*, R. Galliers (Ed.), Alfred Waller Ltd., Warwick, 1992.
- Lee, A.S. and R.L. Baskerville, "Generalizing Generalizability in Information Systems Research," *Information Systems Research*, 2003, 14: 3, pp. 221-243.
- Leone, R.P., V.R. Rao, K.L. Keller, A.M. Luo, L. McAlister and R. Srivastava, "Linking Brand Equity to Customer Equity," *Journal of Service Research*, 2006, 9: November, pp. 125-138.
- Levina, N. and E. Vaasta, "The Emergence of Boundary Spanning Competence in Practice: Implications for Implementation and Use of Information Systems," *MIS Quarterly*, 2005, 29: 2 June, pp. 335-363.
- Markus, M.L. and D. Robey, "Information Technology and Organizational Change: Causal Structure in Theory and Research," *Management Science*, 1988, 34: 5, pp. 583-598.
- McQueen, J., "Leveraging the Power of Emotion in Building Brand Equity," *Proceedings of the ARF Third Annual Advertising and Promotion Workshop*, 1991,
- Mervis, C.B. and E. Rosch, "Categorization of Natural Objects," *Annual Review of Psychology*, 1981, 32, pp. 89-115.
- Miles, M., B. and A.M. Huberman, *Qualitative data analysis: an expanded sourcebook*, SAGE, 1994.
- Miller, G.A., "The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information," *Psychological Review*, 1956, 63: 2, pp. 81-97.
- Mingers, J., "Combining IS Research Methods: Towards a Pluralist Methodology," *Information Systems Research*, 2001, 12: 3, pp. 240-259.
- Mäyrä, F., *An Introduction to Game Studies*, SAGE Publications Ltd, London, 2008.
- Nakamura, R. and H. Wirman, "Girlish Counter-Playing Tactics," 2005, 5: 1,
- Nandan, S., "An exploration of the brand identity-brand image linkage: A communications perspective.," *Journal of Brand Management*, 2004, 12: 4, pp. 264-278.
- Neogames, "The Finnish Games Industry," Centre of Game Business, Research and Development, 2009.
- Neogames and Suomen Pelinkehittäjät ry, "Suomen pelitoimialan strategia 2010-2015," 2010.
- Nicolini, D. and S. Gherardi, "To Transfer is to Transform: The Circulation of Safety Knowledge," *Organization*, 2000, 7: 2, pp. 329-348.
- Okada, E.M., "Justification Effects on Consumer Choice of Hedonic and Utilitarian Goods," *Journal of Marketing Research*, 2005, XLII: February, pp. 43-53.

- Ryan, R.M. and E.L. Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," *American Psychologist*, 2000, 55: 1, pp. 68-78.
- Sánchez-Fernández and M.Á. Iniesta-Bonillo, "The Concept of Perceived Value: A Systematic Review of the Research," *Marketing Theory*, 2007, 7: 4, pp. 427-451.
- Schatzki, T.R., K. Knorr-Cetina and E.v. Savigny, *The practice turn in contemporary theory*, Routledge, 2001.
- Shapiro, C. and H.R. Varian, *Information Rules: A Strategic Guide to the Network Economy*, Harvard Business School Pres, Boston, Massachusetts, 1999.
- Sheng, H., F.F.-H. Nah and K. Siau, "Value-focused Thinking and Its Application in MIS Research," *Journal of Database Management*, 2007, 18: 3: I-V Jul-Sep 2007,
- Sheth, J.N., B.I. Newman and B.L. Gross, "Why we buy what we buy: A theory of consumption values," *Journal of Business Research*, 1991, 22: 2, March, pp. 159-170.
- Simmel, G., *Philosophie der Mode*, 1905.
- Siwek, S.E., "Video Games in the 21st Century," Entertainment Software Association, 2007.
- Slater, D., "From calculation to alienation: disentangling economic abstractions," *Economy and Society*, 2002, 31: 2, pp. 234-249.
- Smith, D., S. Menon and K. Sivakumar, "Online peer and editorial recommendations, trust, and choice in virtual markets.," *Journal of Interactive Marketing*, 2005, 19: 3, pp. 15-37.
- Srinivasan, V., C.S. Park and D.R. Chang, "An approach to the measurement, analysis, and prediction of brand equity and its sources," *Management Science*, 2005, 51: 9, pp. 1433-1448.
- Star, S.L. and J.R. Griesemer, "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology," *Social Studies of Science*, 1989, 19, pp. 387-420.
- Stigler, G.J., "The Economics of Information," *The Journal of Political Economy*, 1961, LXIX: 3, pp. 213-225.
- Stiglitz, J.E., "The Causes and Consequences of the Dependence of Quality on Price," *Journal of Economics Literature*, 1987, 25: 1, pp. 1-48.
- Stiglitz, J.E., "Imperfect information in the product market," In *Handbook of industrial organization*, R. Schmalensee and W. Robert (Ed.), 1, Elsevier, Amsterdam, 1989, pp. 769-847.
- Storgårds, J.H. and B. Sokura, "The Role of Gender in the Hedonic and Utilitarian Value of Digital games," *Proceedings of the 15th Americas Conference on Information Systems (AMCIS)*, San Francisco, California, 2009.

- Strahilevitz, M.A. and J.G. Myers, "Donations to Charity as Purchase Incentives: How Well They Work May Depend on What You Are Trying to Sell," *Journal of Consumer Research*, 1998, 24: March, pp. 434-446.
- Strauss, A.L. and J.M. Corbin, *Basics of qualitative research: techniques and procedures for developing grounded theory*, SAGE, 1998.
- Susarla, A., A. Barua and W.A. B., "Multitask Agency, Modular Architecture, and Task Disaggregation in SaaS," *Journal of Management Information Systems*, 2010, 26: 4, pp. 87-117.
- Sutton, I.R. and B.M. Staw, "What Theory is Not," *Administrative Science Quarterly*, 1995, 40: 3, pp. 371-384.
- Sweeney, J. and J. Swait, "The Effects of Brand Credibility on Customer Loyalty," *Journal of Retailing and Consumer Services*, 2008, 15, pp. 179-193.
- Sweeney, J.C. and G.N. Soutar, "Consumer perceived value: The development of a multiple item scale," *Journal of Retailing*, 2001, 77: 2, pp. 203-220.
- Tiwana, A. and E.R. McLean, "Expertise Integration and Creative in Information Systems Development," *Journal of Management Information Systems*, 2005, 22: 1, pp. 13-43.
- Turel, O., A. Serenko and N. Bontis, "User acceptance of hedonic digital artifacts: A theory of consumption values perspective," *Information & Management*, 2010: 47, pp. 53-89.
- Uemura, M. and T. Iwatani, "History and Development of Game Industry in Japan," *Proceedings of the DiGRA 2007, Situated Play, International Conference*, Tokyo, Japan, 2007.
- Walsham, G., "Interpretive Case Studies in IS Research: Nature and Method," *European Journal of Information Systems*, 1995: 4, pp. 74-81.
- Walsham, G., "Doing interpretive research," *European Journal of Information Systems*, 2006, 15, pp. 320-330.
- Van der Heijden, H., "Factors Influencing the Usage of Websites: the Case of a Generic Portal in The Netherlands," *Information & Management*, 2003, 40, pp. 541-549.
- Van der Heijden, H., "User Acceptance of Hedonic Information Systems," *MIS Quarterly*, 2004, 28: 4, pp. 695-704.
- Vargo, S.L. and R.F. Lusch, "Evolving to a New Dominant Logic for Marketing," *Journal of Marketing*, 2004, 68: January, pp. 1-17.
- Vargo, S.L. and R.F. Lusch, "Service-dominant logic: continuing the evolution," *Journal of the Academy of Marketing Science*, 2008, 36, pp. 1-10.
- Varian, H.R., "Markets for Information Goods," <http://people.ischool.berkeley.edu/~hal/Papers/japan>, 1998.
- Weick, K.E., "What Theory is not, Theorizing Is," *Administrative Science Quarterly*, 1995, 40: 3, pp. 385-390.

- Weick, K.E. and K.H. Roberts, "Collective Mind in Organizations: Heedful Interrelating on Flight Decks," *Administrative Science Quarterly*, 1993, 38: September, pp. 357-381.
- Wenger, E., *Communities of practice: learning, meaning, and identity*, Cambridge University Press, 1999.
- Whetten, D.A., "What Constitutes a Theoretical Contribution," *Academy of Management Review*, 1989, 14: 4, pp. 490-495.
- Villanueva, J. and D.M. Hanssens, *Customer Equity: Measurement, Management and Research Opportunities: Volume 1 of Foundations and Trends in Marketing*, Now Publishers Inc., 2007.
- Voss, K.E., E.R. Spangenberg and B. Grohmann, "Measuring the Hedonic and Utilitarian Dimensions of Consumer Attitude," *Journal of Marketing Research*, 2003, XL: August, pp. 310-320.
- Vriens, M. and C. Frazier, "The hard impact of the soft touch," *Marketing Research*, 2003, 15: 2, pp. 22-27.
- Vriens, M. and F.T. Hofstede, "Linking attributes, benefits, and consumer values," *Marketing Research*, 2000, Fall: 12, 3.
- Yin, R.K., *Case Study Research, Design and Methods*, Sage Publications, Beverly Hills, CA, 2008.
- Zeithaml, V.A., "Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence," *Journal of Marketing*, 1988, 52: July, pp. 2-22.
- Zeithaml, V.A., M.J. Bitner and D.D. Gremler, *Services Marketing*, McGraw Hill, Singapore, 2006.

## **Appendices: Original research instruments used in the Essays I-V.**

### **Appendix I.** Questionnaire items used in ESSAY I (in Finnish).

Hienoa, että sinulla on mahdollisuus osallistua tähän tutkimukseen tietokone- ja videopeleistä.

Seuraavilla sivuilla sinulle esitetään erilaisia kysymyksiä ja väitteitä liittyen digitaalisiin peleihin. Termillä digitaalipeli tarkoitetaan tässä tutkimuksessa tietokone-, elektroniikka-, konsoli-, internet-, video-, mobiilipelejä pois lukien vedonlyöntiin liittyvät pelit.

Tulet näkemään myös useita kuvia erilaisista peleistä, joita yhdistää niihin liittyvä pelityyppi. Katso kuvia hetki ennen vastaamistasi, jotta voit paremmin arvioida niihin liittyviä ominaisuuksia.

Vastaathan kaikkiin kysymyksiin mahdollisimman totuudenmukaisesti. Kyselyyn vastaaminen vie n. 20 minuuttia.

Vastaajien kesken arvotaan kolme vapaavalintaista musiikkilevyä.

Kiitos!

Jan Storgårds

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### **Osa A. Taustiedot.**

- 1) Sukupuoli (Nainen/Mies)
- 2) Ikä (vuosissa)
- 3) Minkä ikäisen pelasit digitaalipelejä ensimmäisen kerran?
- 4) Kuinka paljon keskimäärin pelaat digitaalipelejä viikossa? Huomioi viimeiset 12kk. (En pelaa ollenkaan/Pelaan viikossa: kirjoita määrä tunneissa oikealla olevaan laatikkoon).

### **Osa B. Digitaalipelit yleensä.**

Ohje: Seuraavilla sivuilla sinulle esitetään pelityyppihin liittyviä vastakkaisia adjektiiveja kuten esimerkiksi hyödytön (-3) - hyödyllinen (+3). Merkitse hiirellä klikkaamalla vastauksesi asteikolle -3 - +3. Vastaamalla o tarkoitat, että pelityyppi

sisältää yhtä paljon molempien adjektiivien sisältämiä ominaisuuksia. Jos jostain syystä et pysty arvioimaan pelityyppiä niin vastaa kohtaan "en osaa sanoa".

### 5) Yleisesti ottaen, DIGITAALIPELIT ovat mielestäni...

(Termillä digitaalipeli tarkoitetaan tässä tutkimuksessa tietokone-, elektroniikka-, konsoli-, internet-, video-, mobiilipelejä pois lukien vedonlyöntiin liittyvät pelit.)

	-3	-2	-1	0	+1	+2	+3	En osaa sanoa	
Ikävyyttäviä	<input type="radio"/>	Jännittäviä							
Toimimattomia (tehtävänsä huonosti täyttävä)	<input type="radio"/>	Toimivia (tehtävänsä hyvin täyttävä)							
Epäkäytännöllisiä	<input type="radio"/>	Käytännöllisiä							
Kärsimystä	<input type="radio"/>	Nautinnollisia							
Tehottomia	<input type="radio"/>	Tehokkaita							
Tylsiä	<input type="radio"/>	Hauskoja							
Epämiellyttäviä	<input type="radio"/>	Miellyttäviä							
Pitkästyttäviä	<input type="radio"/>	Sävähdyttäviä							
Hyödyttömiä	<input type="radio"/>	Hyödyllisiä							
Tarpeettomia	<input type="radio"/>	Tarpeellisia							

### 6) Ovatko digitaaliset pelit mielestäsi HYÖDYLLISIÄ vai NAUTINNOLLISIA?

(hyödyllinen = toiminnallinen, käytännöllinen / nautinnollinen = tunteita, aistihavaintoja)

- vain HYÖDYLLISIÄ
- enimmäkseen hyödyllisiä
- hyödyllisiä ja nautinnollisia yhtä paljon
- enimmäkseen nautinnollisia
- vain NAUTINNOLLISIA

### 7) Monet minulle tärkeät ihmiset (perhe, ystävät, kollegat jne.) ovat sitä mieltä, että minun tulisi pelata digitaalisia pelejä.

	-3	-2	-1	0	+1	+2	+3	
Ehdottomasti eivät	<input type="radio"/>	Ehdottomasti kyllä						

### 8) Suositteisitko digitaalipelien pelaamista ystävällesi?

-3   -2   -1   0   +1   +2   +3

Ehdottomasti en                        Ehdottomasti kyllä

### Pelikategoriat (16)



### 10) Yleisesti ottaen, URHEILUPELIT kuten yllä ovat mielestäni...

	-3	-2	-1	0	+1	+2	+3	En osaa sanoa	
Ikävystyttäviä	<input type="radio"/>	Jännittäviä							
Toimimattomia (tehtävänsä huonosti täyttävä)	<input type="radio"/>	Toimivia (tehtävänsä hyvin täyttävä)							
Epäkäytännöllisiä	<input type="radio"/>	Käytännöllisiä							
Tehottomia	<input type="radio"/>	Tehokkaita							
Kärsimystä	<input type="radio"/>	Nautinnollisia							
Tylsiä	<input type="radio"/>	Hauskoja							
Epämiellyttäviä	<input type="radio"/>	Miellyttäviä							
Pitkästyttäviä	<input type="radio"/>	Sävähdyttäviä							
Hyödyttömiä	<input type="radio"/>	Hyödyllisiä							
Tarpeettomia	<input type="radio"/>	Tarpeellisia							

### 11) Oletko koskaan pelannut tämänkaltaista digitaalipeliä?

KYLLÄ    EN

### 12) Oletko pelannut tämänkaltaista digitaalipeliä viimeisten kahdentoista (12) kuukauden aikana?

KYLLÄ    EN

**13) Suosittelisitko tämänkaltaisten digitaalipelien pelaamista ystävällesi?**

-3   -2   -1   0   +1   +2   +3  
Ehdottomasti en                        Ehdottomasti kyllä

**14) Monet minulle tärkeät ihmiset (perhe, ystävät, kollegat jne.) ovat sitä mieltä, että minun tulisi pelata tämänkaltaisia digitaalipelejä.**

-3   -2   -1   0   +1   +2   +3  
Ehdottomasti eivät                        Ehdottomasti kyllä

**Osa C. Palaute.**

**95) Kuinka helppoa oli vastata tähän kyselyyn?**

1   2   3   4   5   6   7  
Vastaaminen oli erittäin vaikeaa.                        Vastaaminen oli erittäin helppoa.

**96) Onko sinulla tähän kyselyyn liittyviä kommentteja?**

**Pelikategoriat**

Yleisesti pelaamiseen liittyviin kysymyksiin ei liitetty kuvia. Käytetyt pelikategorianimikkeet, joista kuvia näytettiin olivat (tässä järjestyksessä):

Urheilupelit

Sotastrategiapelit

Opetuspelit

Ampumispelit (First Person Shooter)

Toimintaseikkailupelit

Lemmikkien kasvatuspelit

Biletuspelit (Party games)

Massiiviset internetissä pelattavat roolipelit (MMORPG)

Todelliseen liikuntaan liittyvät pelit

Ammatteihin liittyvät pelit

Autopelit

Tekstiseikkailupelit

Tasohyppelypelit

Kamppailupelit

Pulmien ratkomispelit

Oikeaa elämää jäljittelevät pelit

## Appendix II. Questionnaire items used in ESSAY II (in Finnish).

Hyvä vastaaja,

Hienoa, että sinulla on mahdollisuus osallistua tähän tutkimukseen tietokone- ja videopeleistä.

Seuraavilla sivuilla sinulle esitetään erilaisia kysymyksiä ja väitteitä liittyen digitaalisiin peleihin. Termillä digitaalipeli tarkoitetaan tässä tutkimuksessa tietokone-, elektroniikka-, konsoli-, internet-, video-, mobiilipelejä pois lukien vedonlyöntiin liittyvät pelit. Vastaathan kaikkiin kysymyksiin mahdollisimman totuudenmukaisesti. Kyselyyn vastaaminen vie n. 20 minuuttia.

Ystävällisin terveisin,

Jan Storgårds, tutkija

Helsingin kauppakorkeakoulu

Liiketoiminnan teknologian laitos, tietojärjestelmätiede

### Osa A. Taustatiedot.

#### 1) Sukupuoli.

Nainen  Mies

#### 2) Koulutus ja työ.

Olen päätoiminen opiskelija/koululainen  Olen päätoimisesti ansiotyössä  Jokin muu.

#### 3) Ikä (vuosissa).

**4) Minkä ikäisenä pelasit digitaalipelejä ensimmäisen kerran?**

**5) Kuinka paljon keskimäärin pelaat digitaalipelejä viikossa?**

(arvioi keskimääräinen aika viimeisten 12 kuukauden mukaan)

En pelaa ollenkaan.

Pelaaan viikossa: kirjoita määrä tunneissa oikealla olevaan laatikkoon

## 6) Arvioi peliasiantuntemuksesi.

- Olen mielestäni peliasiantuntija (pelit kuuluvat työhöni tai pelaan ammatikseni).
- Olen aktiivinen peliharrastaja.
- Tunnen pelit ja pelaan niitä silloin tällöin.
- En tiedä peleistä juuri mitään enkä pelaan niitä.

## Osa B. Digitaalipelit.

### 7) Kirjoita tähän n. 10 asiaa, jotka kuvaavat digitaalipeleihin liittyviä yleisiä mielikuvia kuten ominaisuuksia, tunteita, uskomuksia, asenteita ja kokemuksia.

Termillä digitaalipeli tarkoitetaan tässä tutkimuksessa tietokone-, elektroniikka-, konsoli-, internet-, video-, mobiilipelejä pois lukien vedonlyöntiin liittyvät pelit.

### 8) Yleisesti ottaen, DIGITAALIPELIT ovat mielestäni...

Sinulle esitetään peleihin liittyviä vastakkaisia adjektiiveja kuten esimerkiksi hyödytön (-3) - hyödyllinen (+3). Merkitse hiirellä klikkaamalla vastauksesi asteikolle -3 - +3. Vastaamalla 0 tarkoitat, että pelityyppi sisältää yhtä paljon molempien adjektiivien sisältämiä ominaisuuksia.

	-3	-2	-1	0	+1	+2	+3	
Ikävystyttäviä	<input type="radio"/>	Jännittäviä						
Toimimattomia (tehtävänsä huonosti täyttäviä)	<input type="radio"/>	Toimivia (tehtävänsä hyvin täyttäviä)						
Epäkäytännöllisiä	<input type="radio"/>	Käytännöllisiä						
Kärsimystä	<input type="radio"/>	Nautinnollisia						
Tehottomia	<input type="radio"/>	Tehokkaita						
Tylsiä	<input type="radio"/>	Hauskoja						
Epämiellyttäviä	<input type="radio"/>	Miellyttäviä						
Pitkästyttäviä	<input type="radio"/>	Sävähdyttäviä						
Hyödyttömiä	<input type="radio"/>	Hyödyllisiä						
Tarpeettomia	<input type="radio"/>	Tarpeellisia						

### 9) Monet minulle tärkeät ihmiset (perhe, ystävät, kollegat jne.) ovat sitä mieltä, että minun tulisi pelata digitaalipelejä.

	-3	-2	-1	0	+1	+2	+3	
Ehdottomasti en	<input type="radio"/>	Jokin muu, mikä?						

## 10) Suosittelisitko digitaalipelien pelaamista ystävällesi?

	-3	-2	-1	0	+1	+2	+3	
Ehdottomasti en	<input type="radio"/>	Ehdottomasti kyllä						



## 11) Kirjoita tähän n. 5 asiaa, jotka kuvaavat tähän yllä olevaan digitaalipeliin liittyviä mielikuvia kuten ominaisuuksia, tunteita, uskomuksia, asenteita ja kokemuksia.

## 12) Yleisesti ottaen, yllä olevan kuvan peli on mielestäni...

Sinulle esitetään peliin liittyviä vastakkaisia adjektiiveja kuten esimerkiksi hyödytön (-3) vs. hyödyllinen (+3). Merkitse hiirellä klikkaamalla vastauksesi asteikolle -3 - +3. Vastaamalla o tarkoitat, että peli sisältää yhtä paljon molempien adjektiivien sisältämiä ominaisuuksia. Jos jostain syystä et pysty arvioimaan peliä niin vastaa kohtaan "en osaa sanoa".

	-3	-2	-1	0	+1	+2	+3	En osaa sanoa	
Ikävystyttävä	<input type="radio"/>	Jännittävä							
Toimimaton (tehtävänsä huonosti täyttävä)	<input type="radio"/>	Toimiva (tehtävänsä hyvin täyttävä)							
Epäkäytännöllinen	<input type="radio"/>	Käytännöllinen							
Tehoton	<input type="radio"/>	Tehokas							
Kärsimystä	<input type="radio"/>	Nautinnollinen							
Tylsä	<input type="radio"/>	Hauska							
Epämiellyttävä	<input type="radio"/>	Miellyttävä							
Pitkästyttävä	<input type="radio"/>	Sävydyttävä							
Hyödytön	<input type="radio"/>	Hyödyllinen							
Tarpeeton	<input type="radio"/>	Tarpeellinen							

**13) Tunnistatko yllä olevan kuvan pelin? Onko se sinulle jostain tuttu?**

KYLLÄ  EN

**14) Oletko pelannut yllä olevan kuvan peliä viimeisten kahdentoista (12) kuukauden aikana?**

KYLLÄ  EN

**15) Suositteletko yllä olevan kuvan pelin pelaamista ystävällesi?**

Ehdottomasti en         Ehdottomasti kyllä

**Osa C. Palaute.**

**74) Kuinka helppoa oli vastata tähän kyselyyn?**

Vastaaminen oli erittäin vaikeaa.         Vastaaminen oli erittäin helppoa.

**75) Onko sinulla tähän kyselyyn liittyviä kommentteja?**

**Pelituotteet.**

Yleisesti pelaamiseen liittyviin kysymyksiin ei liitetty kuvia. Käytetyt pelit ja kaksi muuta sovellusta, joista kuvia näytettiin olivat (esitetty tässä järjestyksessä):

WiiSports

SingStar

Halo3

Super Mario Galaxy

MS Office (ei peli)

Guitar Hero

Facebook (ei peli)

WiiFit

Half-Life2: The Orange Box

Little Big Planet

### Appendix III. Questionnaire items used in ESSAY III and IV.

Overall evaluation: How good would you estimate this game to be on a scale from 0-100?  
(0=very bad, 100=perfect)

#### Product attributes:

Beliefs: (1 (I totally disagree) – 7 (I totally agree), in order of appearance in the questionnaire).

1. It is *easy* to learn to play this game.
2. This game is *fun*!
3. The ways to personalize my *character* are limitless in this game.
4. It is easy to be *famous* in this game community.
5. It is easy to increase and level up my character's *experience level* in this game.
6. The *story* telling of this game is very exciting.
7. The ways to *socialize* with others are great in this game.
8. It is easy to join *groups* in this game.
9. It is *easy to play* this game.
10. *Graphics and audio* are great in this game.
11. It is *easy to start* playing this game.
12. This game is very *cheap* to play.
13. There is lot to *discover and play* in this game.
14. This game is easily *available*.
15. In this game, using *real money* increases the chance of success.
16. This game is *useful*.

Additional questions for each attribute:

Self-confidence about the judgment: I am confident about my previous judgment (I totally disagree 1 – 7 I totally agree).

Criteria: It is important that the games I choose to play are *attribute 'easy to learn to play'* (I totally disagree 1 – 7 I totally agree).

**Appendix IV:** Original, semi-structured questions used in the interviews in ESSAY V (Finnish) and participation information leaflet in Finnish and English.

### **Haastattelurunko:**

#### **Taustakysymykset (Background)**

1. Voisitko kertoa tämänhetkisestä roolistasi ja taustoistasi pelien kehittämisessä ja peliteollisuudessa yleensä?
2. Voisitko kertoa minkälaisia pelejä olet ollut mukana kehittämässä ja minkälaisille pelaajille ne on tarkoitettu?

#### **Peli-ideat, pelien kehittämisprosessi (Product ideas and development process):**

1. Voisitko kertoa minkälainen on karkeasti ottaen pelienne kehittämisprosessi ideasta tuotteeksi?
2. Mistä saatte ideat peleihinne?
3. Millainen on hyvä peli?
4. Minkälaisia asioita ja ominaisuuksia pidätte peleissänne tärkeänä?
5. Mikä tekee mielestäsi pelistä laadukkaan?
6. Mitkä tekijät mielestäsi erottavat hyvät pelit huonoista peleistä?
7. Minkälaisia arvomielikuvia pidät tärkeinä pelissä? (esimerkkejä; tekniset ominaisuudet, hauskuus, hyödyllisyys, helppokäyttöisyys jne.)

#### **Pelin tuotemerkkiin liittyvät mielikuvat (Brand Image)**

1. Voisitko kertoa näkemyksesi minkälaisia peliin liittyviin asioihin kuluttajien eli pelaajien tulisi kiinnittää huomiota peleissänne?
2. Voisitko kertoa kuinka kehittäte peleihin liittyviä arvomielikuvia? (esim. design, grafiikka tms.)
3. Kuinka sovitte muiden kehittäjien ja organisaatioyksiköiden kanssa minkälaisia asioita (toimintoja ja mielikuvia) pelin tulisi viestiä?
4. Minkälaista lisäarvoa mielestäsi pelien kehittäjät (koodarit, graafinen suunnittelu, testaus jne.) tuottavat pelinne erilaisille mielikuvulle?
5. Voisitko kertoa minkälaisia käytännön toimenpiteitä käytätte pelien markkinoinnissa?
6. Ketä ja mitä osapuolia on mukana pelin markkinoinnin suunnittelussa?

#### **Pelin uniikki lisäarvo (Brand Equity)**

1. Kuinka teidän pelinne eroaa kilpailijoiden peleistä?

#### **Kuluttajiin liittyvät vaikutusmekanismit (Customer Behavior)**

1. Minkälaista vaikutusta kuluttajiin toivot syntyvän pelien kehittämiseen ja markkinointiin liittyvistä toimenpiteistä, investoinneista ja resurssien käytöstä?

2. Mitä asioita pidät erityisen tärkeänä menestyksen kannalta?

### **Pelin arvotekijät pelaajille (Game value)**

1. Minkälaista arvoa pelinne tuottaa niiden pelaajille?
2. Minkälaisilla asioilla uskotte pelaajien sitoutuvan pelaamaan juuri teidän pelejanne?
3. Mitkä ovat ne asiat peleissä jotka niin kehittäjät kuin kuluttajatkin jakavat yhteisinä peleistä?
4. Tulisiko kehittäjien ja kuluttajien jakaa mielikuviin liittyvät tekijät? kyllä/ei? Miksi?
5. Mikä on mielestäsi pelin hinnan merkitys kuluttajalle?

## **PART II: ORIGINAL ESSAYS**

# Essay I

Storgårds, J., Tuunainen, V.K., and Öörni, A. (2009) "The Hedonic and Utilitarian Value of Digital Games at Product Category Level," in: European Conference on Information Systems (ECIS), Verona, Italy.



**THE HEDONIC AND UTILITARIAN VALUE OF DIGITAL GAMES  
AT PRODUCT CATEGORY LEVEL**

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## THE HEDONIC AND UTILITARIAN VALUE OF DIGITAL GAMES AT PRODUCT CATEGORY LEVEL

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### Abstract

*Consumers' product evaluation, choice, and use are driven by both utilitarian and hedonic considerations. Digital games, that are typically considered to be a homogenous product category, are often claimed to be high on hedonic value. However, there is a multitude of digital games genres available. Differences in their appeal, gameplay, and purpose in practice indicate that digital games vary significantly in their proposed outcome.*

*In this research paper, we present results from an observational survey study in which digital games were investigated at subcategory level. We found differences in weights consumers place on hedonic and utilitarian value at the product subcategory level, and also observed differences between evaluations of experienced and inexperienced consumers. The results indicate that subcategories act as a more assuring source of information than the general product category of digital games. Furthermore, higher gaming experience may lead to more optimistic evaluation on subcategories.*

*Rather than grouping digital games into one category and treating them all as hedonic products, they should be discussed at their specific subcategory level, by researchers and practitioners, alike.*

*Keywords: digital games, hedonic value, utilitarian value, product categories*

## 1 INTRODUCTION

Since the 1980's, various studies in consumer goods and services (Dhar et al. 2000; Okada 2005); information systems (Davis 1989; Van der Heijden 2004), and digital games (Choi et al. 2004; Hsu et al. 2005) have shown that consumer choice and use of different products and services are driven by both utilitarian (UT) and hedonic (HED) considerations.

Hirschman and Holbrook's (1982, p. 99) early outlook to hedonistic consumer behavior is that "*hedonic consumption designates those facets of consumer behavior that relate to the multisensory, fantasy and emotive aspects of one's experience with products*". In other words, hedonic or pleasure oriented consumption is expected to be motivated by the desire for sensual pleasure, fantasy and fun (Strahilevitz et al. 1998, p. 436). In contrast, utilitarian or goal oriented consumption is "*more cognitively driven, instrumental, and goal oriented and accomplishes a functional or practical task*" (Dhar et al. 2000 p. 61; Strahilevitz et al. 1998).

Earlier research has found major differences between the perceived value of utilitarian and hedonic software applications, also in the context of digital games (Davis 1989; Raessens et al. 2005). Digital games are most often assumed to be high on hedonic value (Batra et al. 1990; Chen 2007; Hirschman et al. 1982; Hsu et al. 2005; Voss et al. 2003), and the motives for using hedonic systems, such as digital games, are different than those for utilitarian systems, such as office information systems (Van der Heijden 2004).

Digital game production has grown to be a significant sector of software business (Crandall et al. 2006; Siwek 2007). Even though digital games are often treated as a product category among other, relatively heterogeneous consumer products (e.g. paper clips, beer, blue jeans) Batra et al., (1990), Voss et al., (2003), there are multitudes of different types of games, and the reasons to play them vary greatly: games can be played, for example, for educative purposes, or mainly just for fun. The great differences in the appeal and use of games in practice suggest that instead of studying games as one general category, we should be looking at the subcategories.

In this study, we will analyze the perceived hedonic and utilitarian value of digital games in different game subcategories. We will also explore the differences in these values between experienced and inexperienced players, as expressed in recommendations to others.

The structure of this paper is as follows: In section 2, we present our theoretical background. In section 3 we introduce the hypotheses and research model. We then describe our research method and the empirical study setting in section 4, and present the results of our study in section 5. Section 6 summarizes and concludes the paper.

## 2 THEORETICAL BACKGROUND

Our study builds on the Motivational theory (Deci 1975) to understand the motivation of players of digital games, and on the theories of consumer behavior (Ajzen et al. 1980, see e.g.; Bettman et al. 1980) to understand the effect of prior knowledge and experience on the perceived value of the games.

### 2.1 *Motivation of Game Playing*

One of the objectives of game developers is to optimize game experience by designing elements of gameplay that motivate the player to continue playing without too much anxiety or boredom (Chen 2007). Specifically, in digital games production, this concept of *flow experience* (Csikszentmihalyi 1975) is widely used to provide outcomes such as enjoyment, pleasure, and

fun, and to maintain the flow at the desired level. The flow experience is a part of an individual's motivation to play games and has been defined as "*an extremely enjoyable experience, where an individual engages in an on-line game activity with total involvement, enjoyment, control, concentration and intrinsic interest.*" (Hsu et al. 2004).

Therefore, the motivational theory by Deci, (1975) lays the basis for the understanding of how digital games are chosen and why they are played. From motivational perspective of consumption, hedonic goods entail intrinsic value, whereas utilitarian entail more extrinsic values. Intrinsic motivation has been defined as "*the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn it is performing an activity for the satisfaction of the activity itself*" (Ryan et al. 2000, p. 70). Extrinsic motivation, in turn, is expected to lead to performance of an activity, in order to attain some separable outcome (Ryan et al. 2000).

Different products and services often vary greatly in their proposed outcomes (Hirschman et al. 1982). For instance, many services intend to provide an outcome closer to hedonistic value (e.g. movies, concerts) rather than utilitarian value provided by many packaged goods (e.g. shoe laces, hammers). Different digital games are similar in their delivery format, but many times distinct in their proposed outcome, making the analysis of the game subcategories necessary.

A category exists "*when two or more distinguishable objects or events are treated equivalently*" (Mervis et al. 1981, p. 89). This equivalent treatment means different ways of labeling distinct objects or events with the same name, or performing the same action on different objects. Consumers have been found to rely on the categorizing process: Evaluation of a product depends on the particular category to which it is perceived to belong (Blackwell et al. 2006, p. 110). Given this, specific brands can be built around these consumer segments (Rust et al. 2004).

We define digital games as examples of social systems which have information technology embedded in them (Land 1992). In practice, digital games are software applications, the purpose of which is to entertain (Hsu et al. 2004) – or with some games, educate – the users.

There is a multitude of ways to categorize digital games: gameplay, technology platform, delivery channel, age limit, language, graphics, user type, purpose, producer, temporality, price, and character, to name a few (Mäyrä 2008; Rutter et al. 2006). In this study, we classify different subcategories of digital games by their proposed gameplay experience, which has been defined as "*a complex dynamics of interaction between the player and a game in which the structure of game including characters, virtual space, rules and story elements are at central focus*" (Ermi et al. 2005). Digital game sub-categories, such as, sports games, massively multiplayer online role playing games (MMORPGs), racing games, and so on, are commonly identified segments which can be benchmarked with competitive analysis and product positioning (Rust et al. 2004). Most importantly, the labels of these categories are also those used by the consumers who play the games.

## 2.2 Experience

The essence of consumer behavior has been described as a choice between different product and service alternatives (Ajzen et al. 1980). This is based on the assumption that behavioral changes related to choice are often dominated by cognitive processes and systematic use of available information, even if people often strive to simplify their decision making (Howard et al. 1969). Nevertheless, consumer decisions are context dependent and subject to, for instance, the influence of product type and category (Zeithaml et al. 2006). Additionally, individual differences drive consumers to manage their deliberative processes differently, depending on many factors and situations (Foxall 2005). Decision making involves many environmental factors that lie outside the control of the individual. Foxall (2005) maintains that social, business, cultural and

economical factors affect the consumers' stimuli and attention. When information is received, it is recorded either on the short or long term memory, and processed depending on the consumer's prior experiences, beliefs, attitudes, goals and other evaluation criteria.

Consumers' choice criteria are influenced by prior knowledge and experience (Bettman et al. 1980). People with little prior knowledge and experience tend to simplify their product evaluation process and decision making. While they acknowledge the benefits of additional product information, the perceived high cost of information processing discourages search for and processing of more information. In contrast, people with high levels of prior knowledge face low search costs; yet, they tend to shortcut the search process, as they rely on previously acquired information. People with some prior knowledge have both the ability and motivation to process new information available to them. Prior experience shapes the decision process through other heuristic effects, as well. For example, consumers with high levels of experience tend to engage in brand comparisons, while less experienced consumers rely more on product attribute information (Bettman and Park 1980). Most importantly, an experienced user has different, typically higher, enjoyment related expectations than inexperienced user (Atkinson et al. 1997).

Experienced consumers are expected to be more confident sources of recommendations than inexperienced consumers. Word-of-mouth (WOM) recommendation has been depicted to be an effective method to influence consumers in their choice process. According to Brown and Reingen (1987), WOM –type of recommendation can be divided into two distinct sources. Firstly, strong tie sources are those that are socially relevant to the consumer and known personally (e.g. friends and family). Strong ties have been shown to be important at the micro level of referral behavior. Secondly, weak tie secondary sources are those seldom contacted acquaintances, or those not known personally at all, that have been found to play a crucial role in the flow of WOM information across groups (Brown et al. 1987 p. 360). Most importantly, recent research evidence suggests that a simple response to a question “How likely is it that you would recommend this product to a friend or colleague?” would actually reveal how loyal a consumer is to a specific product or a brand (Reichheld 2006). Even though our focus is on the strong tie elements, we acknowledge that the weak tie effects of larger social communities have a great importance in individual's behavior (Granovetter 1973).

In essence, digital games are experience goods, the quality of which can be determined only through consumption (Bryce et al. 2006; Zeithaml et al. 2006). Information in different forms (e.g. demonstration versions) and from different sources (e.g. reviews on websites and WOM) helps the consumers in obtaining critical pre-purchase product information (Klein 1998). Intentional or not, these different sources of information act as recommendations which influence consumers' product evaluation process positively or negatively (Smith et al. 2005).

### **3 PROPOSED RESEARCH MODEL AND HYPOTHESES**

In this study, we propose that different digital games vary by their perceived hedonic (HED) and utilitarian (UT) value. Following that, we propose that HED is a better predictor of recommendation than UT.

We formulate our hypotheses as followed:

Hypothesis 1 (H1) = Consumer's prior experience significantly influences his/her perceived level of both HED and UT value of digital games at the product subcategory level.

We report this by creating a scatter plot of the summated variables and comparing statistical differences between single, summated, and latent factor variables.

Hypothesis 2 (H2) = Consumer’s perceived HED value of digital games predicts better strong-tie recommendation than the UT value.

We measure the effect of HED and UT latent factor variables on recommendation with a multiple linear regression model:  $Recommendation = constant + HED + UT$ . Specifically, we are interested in the proportion that HED and UT explain recommendation (see Figure 2.).

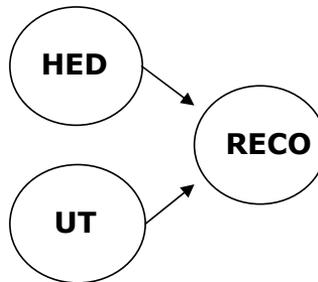


Figure 2. Research model.

#### 4 RESEARCH METHOD

According to Voss et al. (2003), the hedonistic and utilitarian constructs can be reliably observed by using five variables in both latent constructs. We adapted these variables for our survey questionnaire (see Table 1). The questionnaire item labels were translated from English to Finnish. Due to the translation issues (e.g., synonyms and overlapping terms), only four of the suggested five terms were used. Due to these issues, two attributes (Enjoyable and Useful) could not be measured as variables within their respective original constructs as they are used to define HED and UT constructs. Thus, they were observed separately as two HED/UT (single) variables. We used semantic differential scaling from -3 to +3 in questionnaire items, however, the final results were transformed to scale from 1 to 7 for easier comparability with prior research.

Hedonic variables			Utilitarian variables	
Not enjoyable	Enjoyable	← single HED/UT →	Useless	Useful
Dull	Exciting	← HED/UT constructs →	Not functional	Functional
Not delightful	Delightful		Unnecessary	Necessary
Not thrilling	Thrilling		Impractical	Practical
Not fun	Fun		Ineffective	Effective

Table 1. Utilitarian and hedonic variables used in questionnaire (adapted from Voss et al., (2003))

The questionnaire form was first commented and pre-tested by five colleagues and pilot users. A web server based application called Webropol (webropol.com) was used to create and conduct the survey. The respondents were students in a Finnish Business School, taking a course on “Personal Computing Skills” in September, 2008. The empirical set of data was processed using the SAS Enterprise Guide, version 4.1.

During the first two actual data collection sessions out of five in total, 71 respondents were asked to categorize the adjectives used in the questionnaire by their perceived meaning as utilitarian or

hedonic words. All used adjectives were correctly grouped under their respective, expected constructs.

After answering questions measuring background information, the subjects assessed digital games without any reference to any specific game brand or subcategory. For general digital games category, respondents were asked to answer to a question in which the level of HED (enjoyable) and UT (useful) was measured by using them as opposite terms.

Thereafter, respondents were asked to answer questions on 16 different digital game product categories (see Appendix 2). Users were asked to evaluate different categories such as, sports games or massively multiplayer on-line role playing games as a whole. Each questionnaire page with a product category started always with two to nine real digital game package cover pictures. The objective was to create better understanding of real-life products related to the evaluation of images rather than only by using text. All selected games were relatively well known and widely spread, and mostly published for consoles, handheld consoles and PC platforms.

After assessing the psychometric values for game categories, the respondents were asked about their experience during past twelve months in each category. The order of the variables was randomized, but they were in the same order at each product subcategory level. We deemed it unlikely that all respondents had either awareness or experience on every category. For better reliability, each psychometric questionnaire item also included an option to respond “I can not say”.

## 5 RESULTS

### 5.1 Descriptive statistics

There were 135 usable responses out of 136 in total (1 uncompleted form). Forty-eight percent of the respondents were female, and 52 % were male. The respondents were between 18-31 years, 20.4 years being the average age and 20 years the median. As many as 44 %of the respondents reported to be active game players, while the remaining 56 % had not played at all in the past 12 months. The average age of starting playing digital games was 7.6 years (Table 2.).

	<i>Total (N)</i>
Respondents (#)	135
Men / Women (#, %)	70 (52 %) / 65 (48%)
Age in years (average, median, min-max)	20.4, 20.0, 18 - 31
Age when first time played digital games (years, median, min-max)	7.6, 7.0, 2-15
Players vs. Non-players (#, %)	59 (44%), 76 (56%)
Average weekly playing time (average, median, range).	3h, 11h, 2, 6min - 16h

Table 2. Descriptive statistics on the respondents

There were only a few missing answers. Generally, with few exceptions, those who reported being experienced game players answered to all questions. There were only two categories which had relatively high amount of “I can not say” responses (*professions* and *text based adventure*). In all other categories, the number of "I can not say" -responses ranged from 3 to 28 inexperienced respondents.

5.2 Data analysis

To the general question about digital games HED/UT value level, respondents evaluated digital games to be more fun or entertaining than useful (in a scale of 1-5). Experienced respondents' (n=59) average was 3.93, while it was 3.61 for the inexperienced (n=76). Furthermore, the difference between experienced and inexperienced respondents was statistically significant (t-value = 2.46,  $p < 0.05$ ).

We first produced a correlation analysis and calculated the reliability score for both HED and UT variables in general digital game and subcategory levels. All the used variables fit well into their responding latent factor variables (Cronbach's Alpha > 0.86). Then, we formed a single composite summated measure of both HED and UT by combining their respective variables (Hair et al. 1984).

To test our hypotheses, we first created a summated scatter plot that presents the perceived HED/UT value for each category and between experienced and inexperienced respondents (Figure 3) (for detailed statistical data, see Appendix 2 and 3).

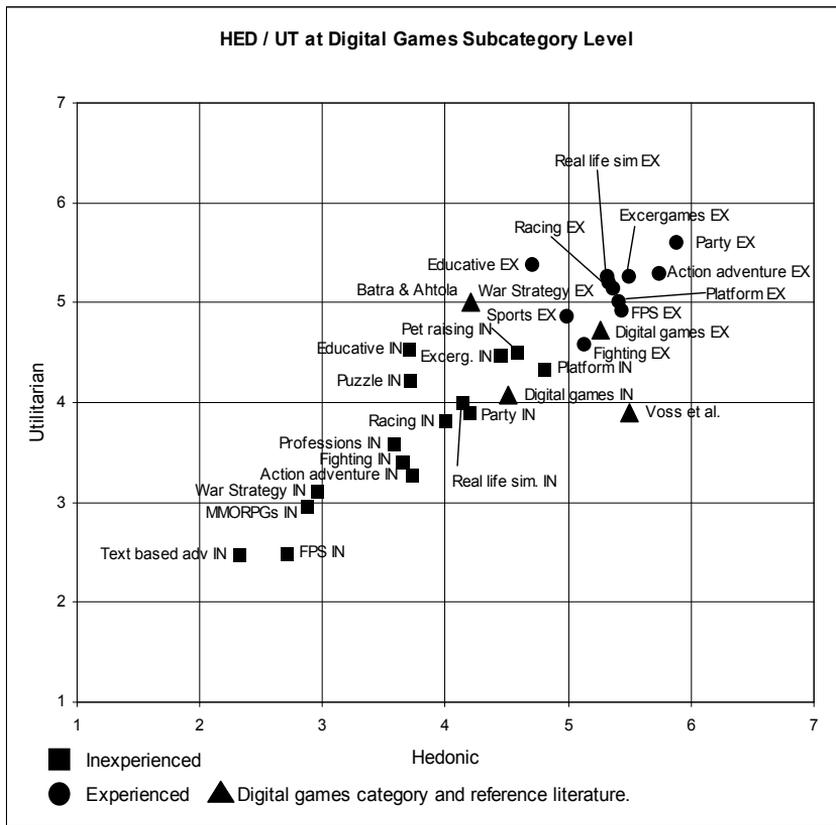


Figure 1. HED / UT summated scatter plot

We then computed factor scores for both HED and UT in all subcategories by using principal component analysis without rotation. These latent variables were used to measure the effect of HED and UT on recommendation with a linear regression model.

The summated HED/UT scatter plot indicates that there is no game subcategory which would be high on only hedonic or on utilitarian value. The experienced respondents seem to be more coherent in their opinions, and there was less variation between the game subcategories for them than for the inexperienced respondents. The inexperienced assess mainly more HED/UT value for playing games generally, but at the product subcategory level their beliefs and attitudes become more negative, decreasing both HED and UT. In contrast, the experienced game players mainly assess the subcategories higher than the digital games in general. The results indicate that higher experience may lead to more optimistic evaluation.

The most notable difference (mean difference  $\Rightarrow$  1.99 - 2.74) between experienced and inexperienced respondents in both HED and UT was in games in which war and violence are the focus of the gameplay (FPS as *first person shooters*, *war strategy* and *action adventure* games). The greatest perceived hedonic value among experienced was assessed to *party games* with a significant difference to inexperienced game players. Singing, dancing and playing together is perceived as a hedonic act also in real-life and those not experienced are probably not interested in these acts in real-life, either.

The least difference in HED and UT was assessed to the general category of *digital games* and to *exergames* (games incorporating real physical exercise). *Exergames* is a new subcategory in which especially Nintendo (Wii) has been very active, promoting the console as a new way of experiencing digital games. It can also be stated, that this category is marketed to inexperienced consumers with a purpose of enlarging the market potential for game industry. These were followed by *educative* and *platform* games. *Educative* games are probably perceived to include beneficial outcomes for their players. In this research setting, the examples of *platform* games were well known game characters such as Mario and Sonic. The extensive brand building efforts by the brand owners and earlier experiences from the respondents' childhood could have added to the positive image.

In four categories, there were not enough experienced respondents to make reliable comparisons. These were *pet raising* (targeted at children), *professions* (targeted at young girls), *text based adventure* and *MMORPGs*.

We then tested the interaction effect of HED/UT latent factor variables to recommendation (RECO) by using multiple linear regression model in all subcategories. Furthermore, the means procedure and t-tests were computed (see Appendix 3). Among the experienced respondents recommendation for all game categories was high ( $>4.2$ ) as for inexperienced respondents it was relatively low ( $<3.0$ ). In all subcategories differences were statistically significant (t-test between means,  $p < 0.5$ ). Generally, digital games were recommended based on their hedonic value, which is similar to the finding for the single variable (HED vs. UT) item. Further, the level of adjusted coefficient of determination,  $r^2$ , is notably higher in the subcategory level than in the general category of digital games. This indicates that HED and UT explain better RECO in subcategory level and respondents are more confident about their opinions.

The largest differences between experienced and inexperienced users can be found in games with war and violence (*FPS*, *war strategy*, *action adventure*). The highest recommendation would be given for *party* games among experienced and for *educative and exergames* among inexperienced consumers.

Our first hypothesis (H1) was supported. Experience significantly influences the perceived level of both hedonic and utilitarian values of digital games at the product subcategory level. The experienced have constantly higher perceived HED and UT for different subcategories.

For the second hypothesis (H2), we may conclude that even though recommendation can be explained by using hedonistic and utilitarian value, the main interacting variable varies between product categories. There is no general, systematic evidence that only HED would explain recommendation but that it depends on the subcategory. Hence, H2 was rejected.

## 6 SUMMARY AND CONCLUSIONS

In this study, we set out to investigate the hedonic and utilitarian values of digital games, as perceived by the consumers. Using Business School students as subjects, we conducted a survey to test our hypotheses.

Results of our empirical study demonstrate that, digital games, in all observed subcategories, provide more perceived hedonistic than utilitarian value. However, our analyses suggest that digital games are *not only high* on hedonic value, but that the level of perceived HED and UT depends on the user's gaming experience and the product subcategory. Hence, digital game evaluation and product positioning should be done at the product subcategory level, rather than generalizing all games being equal in their proposed outcome.

Secondly, we classified the respondents into experienced and inexperienced players. Experience was clearly found to be a differentiating factor for evaluation of the different outcomes of digital games. To accomplish these objectives we used psychometric measurement instruments, specifically hedonic and utilitarian values of information systems as an operational tool.

Statistically, HED and UT variables strongly correlate in all different kinds of data analysis and among different subcategories. This would suggest that perceived hedonic and utilitarian values are not separate constructs, but that, in the context of digital games, they are processed simultaneously in product evaluation situation.

The consumer's perception about the digital game subcategory affects the beliefs about specific products within it. Digital games subcategories act as a more confident source of information for the consumers than the general category of *digital games*. Further, the results indicate that higher experience on games within a subcategory may lead to a more optimistic evaluation of HED and UT. This finding has clear implications for the practitioners in the digital game development business who intend to attract new players for their games.

There are some limitations in this study. First, the dualistic perspective in which complex sensory and emotional experiences are measured by using two quantitative constructs such as HED and UT within a survey may be misleading. HED and UT do not fully explain what is the true meaning of these games for the users and *why* certain game categories are preferred. Therefore, a more in-depth qualitative study by interviewing game players is needed to understand why these differences may occur. Another limitation is the use of students as our subjects. This sample did, however, work well to accomplish our objective of differentiating different types of game categories.

## References

- Ajzen, I., and Fishbein, M. *Understanding Attitudes and Predicting Social Behavior* Prentice-Hall, NJ, 1980.

## 17th European Conference on Information Systems

- Atkinson, M., and Kydd, C. "Individual characteristics associated with world wide web use: an empirical study of playfulness and motivation", *The DATA BASE for Advances in Information Systems* (28:2) 1997, pp 53-62.
- Batra, R., and Ahtola, O.T. "Measuring the Hedonic and Utilitarian Sources of Consumer Attitudes", *Marketing Letters* (2:2) 1990, pp 159-170.
- Bettman, J.R., and Park, C.W. "Effects of Prior Knowledge and Experience and Phase of the Choice Process on Consumer Decision Processes: A Protocol Analysis", *Journal of Consumer Research* (7:3) 1980, pp 234-248.
- Blackwell, R.D., Miniard, P.W., and Engel, J.F. *Consumer Behavior* Thomson, South-Western Mason, Ohio, 2006.
- Brown, J.J., and Reingen, P.H. "Social Ties and Word-of-Mouth Referral Behavior", 1987, p. 350.
- Bryce, J., and Rutter, J. "An Introduction to Understanding Digital Games" in: *Understanding Digital Games*, J. Rutter and J. Bryce (eds.), Sage Publications Ltd, London, 2006, p. 272.
- Chen, J. "Flow in Games (and everything else)", *Communications of the ACM* (50:4) 2007, p. 4.
- Choi, D., and Kim, J. "Why People Continue to Play Online Games: In Search of Critical Design Factors to Increase Customer Loyalty to Online Contents", *CyberPsychology & Behavior* (7:1) 2004, pp 11-24.
- Crandall, R.W., and Sidak, G.J. "Video Games, Serious Business for America's Economy. ", Entertainment Software Association.
- Csikszentmihalyi, M. *Beyond Boredom and Anxiety* Jossey-Bassa, San Francisco, 1975.
- Davis, F.D. "Perceived Usefulness, Perceived Ease of use, and User Acceptance of Information", *MIS Quarterly* (13:3) 1989, pp 319-340.
- Deci, E.L. *Intrinsic motivation*, Plenum, New York, 1975.
- Dhar, R., and Wertenbroch, K. "Consumer Choice Between Hedonic and Utilitarian Goods", *Journal of Marketing Research* (XXXVII:February) 2000, pp 60-71.
- Ermí, L., and Mäyrä, F. "Fundamental Components of the Gameplay Experience: Analysing Immersion", *Changing Views: Worlds in Play. Selected Papers of the 2005 Digital Games Research Associations's Second International Conference, DiGRA, 2005*, pp. 15-27.
- Foxall, G.R. *Understanding Consumer Choice* Palgrave Macmillan, New York, 2005.
- Granovetter, M.S. "The Strength of Weak Ties", *The American Journal of Sociology* (78:6) 1973, pp 1360-1380.
- Hair, Anderson, Tatham, and Black *Multivariate Data Analysis* Prentice Hall Inc., Upper Saddle River, New Jersey, 1984.
- Hirschman, E.C., and Holbrook, M.B. "Hedonic consumption: Emerging concepts, methods and propositions", *Journal of Marketing* (46:Summer ) 1982, pp 92-101.
- Howard, J.A., and Sheth, J.N. *The Theory of Buyer Behavior* John Wiley & Sons, Inc., New York, 1969.
- Hsu, C.-L., and Lu, H.-P. "Why Do People Play On-line Games? An Extended TAM with Social Influences and Flow Experiences", *Information & Management*:41) 2004, pp 853-868.

## 17th European Conference on Information Systems

- Hsu, C.-L., and Lu, H.-P. "Consumer Behavior in Online Game Communities: a Motivational Factor Perspective", *Computers in Human Behavior* (23:2007) 2005, pp 1642-1659.
- Klein, L.R. "Evaluating the potential of interactive media through a new lens: search versus experience goods", *Journal of Business Research* (41) 1998, pp 195-203.
- Land, F. "The Information Systems Domain" in: *Information Systems Research*, R. Galliers (ed.), Alfred Waller Ltd., Warwick, 1992.
- Mäyrä, F. *An Introduction to Game Studies* SAGE Publications Ltd, London, 2008.
- Mervis, C.B., and Rosch, E. "Categorization of Natural Objects", *Annual Review of Psychology* (32) 1981, pp 89-115.
- Okada, E.M. "Justification Effects on Consumer Choice of Hedonic and Utilitarian Goods", *Journal of Marketing Research* (XLII:February) 2005, pp 43-53.
- Raessens, J., and Goldstein, J. *Handbook of Computer Game Studies* The MIT Press Cambridge, Massachusetts, 2005, p. 451.
- Reichheld, F. "The Microeconomics of Customer Relationships", *MIT Sloan Management Review* (47:2) 2006, pp 73-78.
- Rust, R.T., Zeithaml, V.A., and Lemon, K.N. "Customer-Centered Brand Management", *Harvard Business Review* (82:9) 2004, p 10.
- Rutter, J., and Bryce, J. (eds.) *Understanding Digital Games*. Sage Publications, London, UK, 2006.
- Ryan, R.M., and Deci, E.L. "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being", *American Psychologist* (55:1) 2000, pp 68-78.
- Siwek, S.E. "Video Games in the 21st Century", Entertainment Software Association, p. 36.
- Smith, D., Menon, S., and Sivakumar, K. "Online peer and editorial recommendations, trust, and choice in virtual markets.", *Journal of Interactive Marketing* (19:15) 2005, pp 15-37.
- Strahilevitz, M.A., and Myers, J.G. "Donations to Charity as Purchase Incentives: How Well They Work May Depend on What You Are Trying to Sell", *Journal of Consumer Research* (24:March) 1998, pp 434-446.
- Van der Heijden, H. "User Acceptance of Hedonic Information Systems", *MIS Quarterly* (28:4) 2004, pp 695-704.
- Voss, K.E., Spangenberg, E.R., and Grohmann, B. "Measuring the Hedonic and Utilitarian Dimensions of Consumer Attitude", *Journal of Marketing Research* (XL:August) 2003, pp 310-320.
- Zeithaml, V.A., Bitner, M.J., and Gremler, D.D. *Services Marketing* McGraw Hill, Singapore, 2006.

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### Appendix 2. HED/UT sample size, means, and statistical differences in means.

Category	HED - UT S*	HED- UT F*	HED - UT Si*	HED M	HED M	UT M	UT M	MD HED **	MD UT **	n Ex/In	
	SSD	SSD	SSD	EX	IN	EX	IN	EX/IN	EX/IN	HED	UT
Digital games	YES	YES	YES	5.26	4.51	4.73	4.08	0.75	0.65	59/73	59/70
FPS	YES	YES	YES	5.44	2.70	4.92	2.50	2.74	2.42	50/75	50/73
War strategy	YES	YES	YES	5.37	2.95	5.14	3.11	2.42	2.03	47/78	47/76
Action adventure	YES	YES	YES	5.74	3.72	5.28	3.28	2.02	1.99	49/74	49/74
Party games	YES	YES	YES	5.89	4.19	5.60	3.89	1.70	1.72	87/36	87/34
Sports games	YES	YES	YES	4.99	3.49	4.86	3.60	1.50	1.26	63/64	63/62
Fighting	YES	YES	YES	5.13	3.64	4.58	3.41	1.49	1.17	34/79	34/78
Racing games	YES	YES	YES	5.33	3.99	5.19	3.82	1.34	1.37	62/61	62/60
Excergames	YES	YES	YES	5.50	4.44	5.25	4.47	1.06	0.79	38/77	38/8
Puzzle	YES	YES	YES	4.77	3.71	5.15	4.22	1.06	0.94	65/53	65/52
Educative	YES	YES	YES	4.71	3.70	5.37	4.53	1.00	0.85	36/84	36/81
Platform	YES	YES	YES	5.42	4.80	5.00	4.34	0.63	0.66	39/79	39/79
Real life simulation	YES	YES	YES	5.33	4.13	4.85	4.00	1.19	0.84	23/83	23/83
MMORPG	-	-	-	-	2.87	-	2.97	-	-	16/95	16/91
Pet raising	-	-	-	-	3.03	-	3.26	-	-	6/104	6/101
Professions	-	-	-	-	3.58	-	3.59	-	-	2/79	2/78
Text based adventure	-	-	-	-	2.32	-	2.48	-	-	2/72	2/68

\* Statistically significant diff.  $p < 0.05$ , summated scale (S), factor scale (F), single variable (Si). - = Few observations.

\*\* MD = Mean difference

### Appendix 3. RECO sample size, mean differences, and results on linear regression (HED/UT).

Category *	RECO Mean		MD Reco	n	r <sup>2</sup>	n	n M **	HED C ***	UT C ***	HED i %	UT i %	MIV ****
	EX	IN		EX/IN	Adj.							
Digital games	4.53	3.09	1.43	59/76	0.28	107	28	0.42	<b>0.16</b>	72	28	HED
FPS	4.64	2.01	2.63	50/84	0.75	105	30	0.35	0.53	39	61	UT
War strategy	4.91	2.46	2.46	47/87	0.72	107	28	0.56	0.30	65	35	HED
Action adventure	5.12	2.87	2.26	49/83	0.66	107	28	0.32	0.51	39	61	UT
Party games	5.63	3.64	1.98	88/45	0.78	109	26	0.74	<b>0.15</b>	83	17	HED
Sports games	4.71	3.07	1.64	63/71	0.63	113	22	0.39	0.43	48	52	
Fighting	4.29	3.00	1.29	34/99	0.70	99	36	0.48	0.37	57	43	
Racing games	4.74	3.50	1.24	62/70	0.53	114	21	0.47	<b>0.28</b>	63	37	HED
Excergames	4.95	4.08	0.86	38/95	0.58	104	31	0.68	<b>0.09</b>	88	12	HED
Puzzle	4.68	3.71	0.97	65/65	0.48	113	22	0.29	0.44	40	60	UT
Educative	5.06	4.12	0.93	36/99	0.50	110	25	<b>0.07</b>	0.66	9	91	UT
Platform	4.78	3.68	1.09	40/92	0.57	114	21	0.48	0.30	62	38	HED
Real life simulation	4.65	3.46	1.19	23/107	0.60	99	36	0.52	0.28	65	35	HED
MMORPG	-	2.50	-	16/117	0.65	94	41	0.55	<b>0.27</b>	67	33	HED
Pet raising	-	2.86	-	6/129	0.48	94	41	<b>0.27</b>	0.45	37	63	UT
Professions	-	3.47	-	2/129	0.48	69	66	<b>0.31</b>	<b>0.41</b>	43	57	
Text based adventure	-	2.86	-	2/130	0.51	62	73	<b>0.38</b>	<b>0.36</b>	51	49	

\* All linear regression models and differences (means t-test) were statistically significant at  $p < 0.05$ .

\*\* Non-used observations

\*\*\* Variable coefficient, **bold** = statistically insignificant variable.

\*\*\*\* **MIV** = Main interacting variable.

## Essay II

Essay II. Storgårds, Jan H. (2010) “The influence of the hedonic and utilitarian value of digital games on product recommendation at product brand level.” “Unpublished manuscript”

# The Influence of the Hedonic and Utilitarian Value of Digital Games on Product Recommendation at Product Brand Level

## Abstract

There is growing interest in the emotional and functional aspects of software products such as digital games. Grounded in the motivational aspects of consumption of products, this study examines the hedonic (HED) and utilitarian (UT) value of digital games and their influence on product recommendation at the product brand level. We present the findings of an internet survey conducted among active game players who assessed the HED and UT value of eight digital games and two other applications. The collected data was analyzed with regression analysis in order to explain word-of-mouth (WOM) product recommendation, which is considered as an important element of creating product awareness amongst consumers.

In contrast to prior research, we show that game products are not only high in HED value but also high in UT value; even though games have often been considered as entertainment applications with a low level of perceived usefulness. In addition, prior game playing experience moderates perceived HED/UT value and the willingness to recommend a game to others. We propose that a successful digital game offers both enjoyment and usefulness, enjoyment being the main source of recommendation of digital game products. The results extend both theoretical and empirical perspectives to the concepts of enjoyment and usefulness within the entertainment applications.

# 1 INTRODUCTION

This study examines the hedonic (HED) and utilitarian (UT) value of video and computer games (hence digital games) and their influence on product recommendation at the product brand level among active game players. The perceived value of products and services, particularly HED and UT value considerations, is a relevant theme in consumer behavior research which will become increasingly more important in the future (Sánchez-Fernández and Iniesta-Bonillo 2007). This is of particular relevance in the digital games industry. Digital games products are based on a program code and all the more delivered to consumers through digital channels. Thus, digital games products lack physical form which leads to difficulties in highlighting and facilitating evaluation of their defining characteristics. Motivated by the importance of the digital games industry as a software business (Crandall and Sidak 2006;ESA 2010), the influences on people's behavior (Cole and Griffiths 2007) and influence on people's daily lives, in a number of ways such as by diverting much time away from other activities (ESA 2010;Kallio et al. 2007;Rutter and Bryce 2006), it is surprising that only very limited attention has been paid to the HED and UT value of digital games from this perspective in academic information systems (IS) literature.

The motivational theory by Deci (1975) lays the foundation basis of understanding how digital games are chosen and why they are played. From the motivational perspectives of consumption, hedonic goods entail intrinsic value, whereas utilitarian goods entail more extrinsic values. Intrinsic motivation has been defined as *"the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn it is performing an activity for the satisfaction of the activity itself"* (Ryan and Deci 2000). Extrinsic motivation, in turn, is expected to lead to the performance of an activity, in order to attain some separable outcome (Ryan and Deci 2000) and is a means to an end (Sánchez-Fernández and Iniesta-Bonillo 2007). Both concepts relate to the concept of perceived value, defined as *"the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given"* (Zeithaml 1988).

Different products and services often vary greatly in their proposed outcomes (Hirschman and Holbrook 1982;Voss et al. 2003). For instance, many services intend to provide an outcome aligned more with HED value (e.g. movies, concerts) rather than UT value such as packaged

goods (e.g. shoe laces, hammers). Prior research has also analyzed major differences between the perceived value of utilitarian and hedonic software applications in the context of digital games (Davis 1989;Raessens and Goldstein 2005). The existing literature on games portrays digital games as being primarily motivated by their intrinsic elements, such as enjoyment and fun (Chen 2007;Holbrook et al. 1984). Although, principally the differences between digital games and other products seem to be natural from the theoretical perspective prior studies lack empirical evidence supporting that claim.

HED and UT are important sources of product recommendation. In particular WOM (word-of-mouth) product recommendation is regarded as an effective method of influencing consumers during their product evaluation process (Chen and Xie 2005;Chevalier and Mayzlin 2006) and is a source of consumer product awareness, which is often referred to as the starting point of product brand value (Srinivasan et al. 2005). Examining HED and UT together with product recommendation provides new insight into the motives governing what active game players find important when disseminating recommendations to their important reference groups in different contexts such as private conversations and discussions over the internet.

Relevant product knowledge and experience, such as game playing experience, significantly influences product evaluation and choice (Bettman and Park 1980;Hong and Sternthal 2010). In essence digital games are experience goods, the quality of which can be determined only through consumption (Bryce and Rutter 2006;Zeithaml et al. 2006). An experienced user often has a different enjoyment-related expectation than an inexperienced user (Atkinson and Kydd 1997).

We examine the moderating role of prior game playing experience while answering each of our research questions:

- 1) How do digital games brands fit into the HED/UT scale in comparison to other products and software applications?
- 2) What is the relationship between game playing experience and the level of HED and UT?
- 3) What is the relationship between game playing expertise and its impact on WOM product recommendation?

The above questions will be covered throughout the paper. We used a deductive method of research in which we presented our findings by forming several research questions, hypotheses and their predicted answers with the analysis of prior research and measure each finding through specific observations (Babbie 1998). By specifically focusing on HED and UT value, both vital elements of any products and services, we intended to discover the sources of perceived value in the context of digital games. We present empirical results of an internet survey of the measurement of HED and UT value of digital games conducted among active game players in which eight widely known digital games brands and two other software applications were used.

This study contributes to prior research in various ways. In essence, the study fills a gap in knowledge on how digital games are perceived with reference to HED and UT value analyzing them from the perspective of prior game playing experience. From a theoretical perspective the study integrates HED and UT value into a new context of software products, and in particular to digital games, which helps us to understand the influence of HED and UT value on product recommendation. From a managerial perspective, our findings have implications for both marketers and designers of digital games in terms of how to plan marketing actions towards different kinds of consumer groups.

The contents of this paper are structured as follows: In the next section, the main concepts derived from prior research on HED and UT value of products, experience and product recommendation will briefly be presented and used to develop hypotheses. In the following section we describe digital games as consumer goods. Then, our methods and research model will be introduced and followed by the presentation of our research findings. Finally, a limitations, future research and conclusions complete the paper.

## **2 THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT**

### **2.1. DIGITAL GAMES AS CONSUMER GOODS**

Throughout this study we refer to digital games as *digital information experience goods*. They are digital information goods as they are intangible, embedded with knowledge and always in a digital format (Shapiro and Varian 1999;Varian 1998) even often delivered with a tangible support such as a disc (DVD). Nevertheless, digital games represent also intangible products increasingly delivered through various digital channels as software applications made of program code. Furthermore, some digital games are becoming more comparable to services in which information technology is delivered to users over the Internet (Susarla et al. 2010). Many games are playable online, receiving continuous updates with new content where the provider bears the final responsibility for service execution (Bolton 1998). In addition to the digital games viewed as digital information goods, from the consumption perspective they are described as experience goods the quality of which can be determined mainly through consumption (Darby and Karni 1973;Klein 1998;Nelson 1970;Zeithaml et al. 2006).

Digital games are a good example of information technology (IT) which have had an impact to people's everyday lives (Kallio et al. 2007;Raessens and Goldstein 2005;Rutter and Bryce 2006). They are especially good example of products that involve many different aspects of consumer behavior such as technology adoption (Davis 1989), innovation diffusion (Rogers 1983), social norms (Bearden and Etzel 1982), feelings (Holbrook and Hirschman 1982) and other motivational factors (Gagné and Deci 2005). Digital games impact people's everyday lives by taking an increasing amount of time from other activities (Cole and Griffiths 2007). They also have been found to have an increasing social effect on our daily behavior (Mäyrä 2008;Rutter and Bryce 2006). For instance, game playing has long and established role in the Finnish consumption of software applications (Mäyrä, 2008).

The digital games industry and computer gaming has roughly forty years of history. The origins of digital games are actually in the toy industry in early 1970's (Uemura and Iwatani 2007). The games industry really got started in the late 1970's when the first interesting game titles like the Asteroids, Space Invaders, Centipede and Pong were launched to the consumer markets (Herman et al. 2002). Since the golden age of computer and video games when there were just a few game

players and the industry was just a niche market, it has grown to be a significant software entertainment industry (Crandall and Sidak 2006;ESA 2010;Farrand et al. 2006;Neogames 2009;Neogames and Suomen pelinkehittäjät r.y. 2010;Siwek 2007). Actually, digital gaming is not just an industry of games but it has already different extensions like movies, toys, comics etc. Furthermore, digital game industry is rich in the ways of revenue models and capturing consumer attention.

Digital games are examples of social systems which have information technology embedded in them (Land 1992). They are referred to as social systems because their participants influence their use. For instance, a First-Person-Shooter (FPS), such as Halo 3 or Half-Life, is a type of digital game in which a large number of players interact with one another in a virtual world. In these games, thousands and even millions of people gather together to play together, to cooperate and fight in teams, as well as to socialize. Socializing in games can occur in a multitude of different ways. People gather to play games at homes, dedicated public places and nowadays virtually connected over the Internet. Forming groups, chatting, team work, helping others and making friends are significant components of enjoyment (Choi and Kim 2004;Kujanpää et al. 2007) and of our social system.

In practice, digital games are software applications, the purpose of which is to entertain their users (Hsu and Lu 2004), and have been found to have an increasing social effect on our daily behavior (Cole and Griffiths 2007). They are consumed typically through the use of a wide range of different computer technology specifically designed for playing termed game consoles (Playstation 3, Xbox360, Nintendo Wii), personal computers (PC) or hand-held computers (mobile phones, Nintendo DSi, PSP). The mix of hardware (computer, controls, monitor/TV) and software (program code of operating system, user interface, content) is often termed a gaming *platform* on which games are developed for an optimized gaming experience. It is the common technological foundation toward which game studios develop games (Playstation 3, Xbox360), or in a wider perspective an industry ecosystem, toward which various technology developers contribute by delivering parts (game console, game, monitor, telecommunication), in order to deliver positive experiences for their consumers (Cusumano 2010).

Digital games differ from many other types of applications by their proposed consumption experience that has been defined as “*a complex dynamic interaction between the player and a game in which the structure of game including characters, virtual space, rules and story elements are a central focus*” (Ermi and Mäyrä 2005). Playing games is based on intrinsic value, where it is an act with the purpose to provide mainly *fun* through an activity, and aesthetics where its source of value is something reactive; *beauty* is a value on its own (Holbrook 1999; Holbrook et al. 1984; Holbrook and Hirschman 1982).

There are a number of different ways to categorize digital games products: based on gameplay experience, technology platform, delivery channel, age limit, language, graphics, user type, purpose, producer, temporality, price, and character, to name a few (Mäyrä 2008; Rutter and Bryce 2006). Mervis and Rosch (Mervis and Rosch 1981) state that a category exists “*when two or more distinguishable objects or events are treated equivalently*”. This equivalent treatment allows for different ways of labeling distinct objects or events with the same name, or performing the same action with different objects. According to Blackwell et al. (Blackwell et al. 2006) consumers rely on a categorizing process and the evaluation of a product depends on the particular category to which it is perceived to belong to. Given this, specific games (e.g. Halo 3) can be built around these consumer segments such as FPS (Rust et al. 2004).

Digital game sub-categories such as sports games, FPS, MMORPG’s (Massively Multiplayer Online Role Playing Games), racing games and so on, are commonly identified segments, which can be analyzed for competitive analysis and product positioning (Rust et al. 2004). Most importantly, these terms are often used by consumers or game players. For instance, Halo 3 and Half-Life are commonly termed *FPS* games whereas Super Mario Galaxy and Little Big Planet are considered *platform* games.

New digital game categories do not often emerge, however, and only when technology makes it possible to create new kinds of gaming experience through enhanced computing power in the form of better graphics, 3D layout or new control methods, do new categories emerge. Such an example is *exercgames* (games incorporating real physical exercise, Wii Sports and Wii Fit), in which especially Nintendo (Wii) has been very active, promoting the console as a new way of experiencing digital games.

In summary, digital games have many forms which make them different from other physical and information goods;

- 1) They are software-based (program code) consumed by using various computer technology platforms often specially designed for game playing.
- 2) Social systems - participants influence to the use of games.
- 3) Experience goods - in order to evaluate their value well, games have to be played.
- 4) Information goods - delivered to game players as intangible products or as a service.
- 5) They offer numerous varieties of different gameplay experiences.
- 6) Finally, they primarily represent different kinds of intrinsic consumer value such as fun and beauty and the motives of use are mostly intrinsic, as they are played because of the satisfaction experienced.

## 2.1. HEDONIC AND UTILITARIAN VALUE

Hirschman and Holbrook's (Hirschman and Holbrook 1982, p. 99) early outlook of hedonistic consumer behavior was that "*hedonic consumption designates those facets of consumer behavior that relate to the multisensory, fantasy and emotive aspects of one's experience with products*". In other words, motivated by the intrinsic aspects of consumer value, hedonic or pleasure oriented consumption is expected to be motivated by the desire for pleasure, fantasy and fun (Strahilevitz and Myers 1998, p. 436). Intrinsic value occurs when some consumption experience is appreciated as an end in itself for its own sake as self-justifying (Holbrook 1999). Play as such is a self-oriented experience that is actively pursued and enjoyed for its own sake which leads to having fun and characterizes the familiar distinction often made between work and leisure (Holbrook 1999). Perceived enjoyment plays an important role in explaining the customer's behavior of participating in an entertainment-oriented community such as game playing (Hsu and Lu 2007).

Utilitarian or goal oriented consumption is more cognitively driven, instrumental, and goal oriented and accomplishes a functional or practical task (Dhar and Wertenbroch 2000 p. 61; Strahilevitz and Myers 1998). Extrinsic value pertains to "*a means-ends relationship wherein consumption is prized for its functional, utilitarian, or banausic instrumentality in accomplishing some further purpose*" (Holbrook 1999). This is typically related to efficiency that results from the active use of a product or consumption experience as means to achieve some self-oriented purpose.

In practice it is often utilitarian outcomes that can be measured e.g. in forms of time or the relationship between input and output. In the context of digital games, it would imply using games for educative purposes such as learning a foreign language through playing. Perceived enjoyment however, has been shown to be a stronger determinant of an intention to use a hedonic information system rather than perceived usefulness (Van der Heijden 2004).

One of the objectives of game developers is to optimize the game experience by designing elements of gameplay that motivate the player to continue playing without too much anxiety or boredom (Chen 2007). Specifically, in digital games production, this concept of *flow experience* (Csikszentmihalyi 1975) is widely used to provide outcomes such as enjoyment, pleasure and

fun to maintain the flow at the desired level. The flow experience is a part of an individual's motivation to play games and has been defined as "*an extremely enjoyable experience, where an individual engages in an on-line game activity with total involvement, enjoyment, control, concentration and intrinsic interest*" (Hsu and Lu 2004). To receive the value of *fun* or *usefulness* a consumer has to actively take part in playing a game for fun or to accomplish a work-related task using an office system (Holbrook 1996;Holbrook 1999).

Yet, game players have to acquire and master the necessary skills that meet gameplay challenges in order to continue playing. Holbrook et al. (Holbrook et al. 1984) pivotal paper on hedonic consumption examined specific experiential phenomena involved in playful consumption by focusing on emotions, performance and personality within the enjoyment of games. They proposed that emotions influence the level of enjoyment and intrinsic motivation. In particular, competence - the capability of playing the game, is an important determinant of enjoyment of games. They suggest that performance, perceived complexity and personality game congruity determine emotional responses and the performance itself depends both on previous performance and various ability-related characteristics.

Product evaluation can be referred to as a cognitive process resulting in either a positive or negative judgment of the product (Keller 1993;Park and Srinivasan 1994). Product evaluation holds all possible information and influences of non-attribute (e.g. brand image) and attribute based components (features) (Gardial et al. 1994;Johnson and Russo 1984) and is context-dependent (Foxall 2005). However, product evaluation is often a highly subjective process influenced by the use of marketing-related actions as utilized by well known brands (Keller 2006;Srinivasan et al. 2005). Consumers have been found to rely on the categorizing process: Evaluation of a product depends on the particular category to which it is perceived to belong (Blackwell et al. 2006, p. 110).

In the context of product evaluation UT is more functional, cognitive and oriented towards fulfillment of instrumental expectations compared to HED evaluation which is mostly affective (Mano and Oliver 1993). The HED and UT values in turn however, have a distinct influence on choice preference alternatives. For instance, a hedonic alternative tends to be more appreciated than a utilitarian alternative when both choice options are presented individually but if jointly

available the utilitarian alternative is more likely be selected (Okada 2005). Further, hedonic purchases are often more difficult to justify than utilitarian products (Okada 2005). In particular, products that are highly valued in the hedonic dimension rather than the utilitarian dimension are often the products that companies are able to charge higher prices for and are more likely to be engaged in sales promotions (Chandon et al. 2000;Dhar and Wertenbroch 2000). Given this, specific brands can be built around these consumer segments (Rust et al. 2004).

Both hedonic and utilitarian goods offer benefits to the consumer, yet in academic literature on entertainment information systems, digital games are more often assumed to be high in hedonic value rather than utilitarian value. Therefore, digital games are considered hedonic information systems and we formulate our first two research hypotheses as follows:

**Hypothesis 1 (H1)** = Digital games are high in hedonic value at the product brand level.

**Hypothesis 2 (H2)** = Digital games are low in utilitarian value at the product brand level.

## **2.2. PRODUCT KNOWLEDGE AND EXPERIENCE**

Relevant product knowledge and experience, such as game playing experience, significantly influence product evaluation and choice. The essence of consumer behavior has been described as a choice between different product and service alternatives (Ajzen and Fishbein 1980) and where consumers' choice criterion is influenced by prior knowledge and experience (Bettman and Park 1980; Hong and Sternthal 2010). This is based on the assumption that behavioral changes related to choice are often dominated by cognitive processes and the systematic use of available information, often in spite of consumers' attempts to simplify their decision making process (Howard and Sheth 1969).

Additionally, individual differences drive consumers to manage their deliberative processes differently, depending on many factors and situations (Foxall 2005). Decision making involves many environmental factors that lie outside the control of the individual. Foxall (Foxall 2005) maintains that social, business, cultural and economical factors affect the consumers' stimuli and attention. When information is received, it is recorded either in short or long term memory, and processed depending on the consumer's prior experiences, beliefs, attitudes, goals and other evaluation criteria.

Bettman and Park's central thesis (Bettman and Park 1980) state that all consumers begin as novices before their first purchase in a product class. In their pivotal paper discussing the relationship between product familiarity and learning new information, Johnson and Russo (Johnson and Russo 1984) argue that the reason why experienced consumers search for less information is their higher-level knowledge of the product class and the product's important attributes. As the consumer gains experience, product familiarity grows and this knowledge affects the acquisition of new product knowledge. Experienced consumers, search for less information and are more selective in their use of external information.

People with little prior knowledge and experience tend to simplify their product evaluation process regarding a product's qualities and decision making. While they acknowledge the benefits of additional product information, the perceived high cost of information processing discourages the search for, and processing of, more information. In contrast, people with high

levels of prior knowledge face low search costs; yet, tend to shortcut the search process, as they rely on previously acquired information. People with some prior knowledge have both the ability and motivation to process new information available to them (Johnson and Russo 1981). Prior experience shapes the decision process through other heuristic influences, as well. For example, consumers with high levels of experience tend to engage in brand comparisons, while less experienced consumers rely more on product attribute information (Bettman and Park 1980).

Nevertheless, consumer decisions are context dependent and subject to, for one, the influence of product type and category (Zeithaml et al. 2006). Experienced consumers' have the capability and possess a much greater awareness and knowledge about the alternative models of products available in the market and organize this knowledge around product types (Mitchell and Dacin 1996). This shows that experienced game players first decide which game type (e.g. First Person Shooters) is most appropriate to them and then evaluate all the available products within the type-group (Halo 3, Half Life). Less experienced consumers recall fewer types and brands and they use their own knowledge to evaluate the product's performance, that is, they need to be provided with concrete attributes to compare the differences between products, particularly in the case of new products. Inexperienced consumers have only a general understanding about a specific product and less flexibility in evaluating particular products for different usage situations. In comparison to experienced gamers, individuals with less product knowledge seem to display only a general understanding of the evaluation of a product's salient attributes in different usage situations and therefore may rely more heavily on external sources of important product information such as word-of-mouth (WOM). Further, increases in the knowledge of the game through playing the game increases positive influences of and perceptions towards the game (Holbrook et al. 1984). Mano and Oliver (1993) found that product experience, whether utilitarian or hedonic, is used to produce elicited affective experience; higher utilitarian and hedonic evaluation leading to more positive affective experiences.

We can distinguish experienced consumers from inexperienced consumers in three ways. Firstly, experienced consumers possess superior knowledge which decreases the necessary amount of product related searching. Secondly, experienced consumers benefit from a superior ability to process and encode new information, which may in turn increase the need to search and learn from new alternatives. Thirdly, experienced consumers are able to more easily pay attention to

relevant information and ignore irrelevant information by using their knowledge of the product class (Johnson and Russo 1981). In sum, people with extensive prior knowledge engage in more detailed processing when they are sufficiently motivated to do so (Johnson and Russo 1984; Wood and Lynch 2002).

Whether a particular product is hedonic or utilitarian is decidedly based upon a consumer's subjective judgment of the product's value dependent on the product knowledge (Park and Moon 2003). Entertainment purpose users are motivated by intrinsic motivation whereas perceived usefulness has a significant influence for the work-purpose users (Moon and Kim 2001). Most importantly, an experienced user often has a different, probably higher, enjoyment-related expectation than an inexperienced user (Atkinson and Kydd 1997). In the light of the prior consumer experience, which influences product evaluation, we suggest that prior game playing experience moderates the HED/UT value of digital games leading to the following hypotheses:

**Hypothesis 3 (H3):** A consumer's prior experience positively moderates the perceived level of HED value of digital game brands.

**Hypothesis 4 (H4):** A consumer's prior experience positively moderates the perceived level of UT value of digital game brands.

### **2.3. THE RELATIONSHIP BETWEEN HED/UT, PRODUCT RECOMMENDATION AND EXPERIENCE**

A digital game developer's main purpose is to develop a high quality game with sufficient awareness and positive brand image that will be purchased and used by a large enough group of people (Rutherford and Knowles 2008). WOM product recommendation is regarded as an effective method of influencing consumers in their product evaluation process (Brown and Reingen 1987). WOM entails either positive or negative commentary about a product to consumers which can result in product recommendation (Oliver 2006, p. 585; Park and Kim 2008). Most importantly, product recommendations are crucial in creating brand awareness. Rossiter et. al. (Rossiter and Percy 1987) regard brand awareness as a communication issue and define it "*as the buyer's ability to recognize or recall a brand within the category in sufficient detail to make a purchase.*" From a marketing perspective, it is claimed that brand awareness is the most important source of brand value (Aaker 1991; Keller 1993; Srinivasan et al. 2005). Quite interestingly, recent research suggests that a response to a simple question such as "How likely is it that you would recommend this product to a friend or colleague?" may actually reveal how loyal a consumer is to specific products and brands (Reichheld 2006).

Three types of WOM can be identified. First, traditional WOM is based on private conversations between people in which information exchange is proactive and dependent on physical contexts (Gilly et al. 1998). Second, electronic word-of-mouth (eWOM) that includes written comments on a product available on websites, or sharing links to websites (Park and Kim 2008). Positive product reviews can be considered as product recommendations that generate a complementary effect in addition to general marketing actions and pricing which generate increased sales in consumer goods (Chen and Xie 2005; Chevalier and Mayzlin 2006). For instance, publicly available product reviews, by game industry professionals and game players, have been recognized as having a vital role in the commercial success of a digital game biasing consumers in their game choice (Chris 2007; GabuEx 2009). Information in different forms (e.g. demonstration versions) and from different sources (e.g. reviews on websites and WOM) helps consumers in obtaining critical pre-purchase product information (Klein 1998). Intentional or not, these different sources of information act as recommendations which influence a consumers' product evaluation process positively or negatively (Smith et al. 2005).

Further, there exist different types of automated web-based recommender systems that are used to assist consumers in their product choice processing (Resnick et al. 1997). For instance, automatic methods based on Web Usage Mining (WUM) are used to efficiently produce recommendations. Recommendation systems are used as a tool to customize different offerings closer to consumer product preferences (Brynjolfsson et al. 2006). Their fundamental objective is to make choice processing easier for the consumer (Baraglia and Silvestri 2007).

Product recommendations made by credible experts especially influence consumers' product choices by reducing the amount of information search effort, most notably among less experienced consumers (Smith et al. 2005). According to Smith et al. (Smith et al. 2005) subjective perceptions are significantly affected by the recommenders' expertise in different kinds of shopping situations. Experienced players, who enjoy higher credibility, influence individuals not only by making them use recommendations when making product choices, but also by decreasing the amount of search effort. Furthermore, people are more receptive to receiving information that they recognize and experience as friendly (Foxall 2005). The effects of WOM are stronger when the source of recommendation has high expertise of the product in question (Gilly et al. 1998).

The influence of product experience can also be observed in the way consumers follow product recommendations. Park et al. (Park and Kim 2008) suggest that the type of reviews can be a key moderating variable to explain the inconsistent relationship between consumer expertise and WOM that is observed when different kinds of consumers base their recommendations on different kinds of sources of value. According to prior research recommendations can, in two different ways, emphasize either attributes or benefits. In attribute-centric product recommendation, products are praised by their specific product attributes such as exact numbers (500GB hard drive) or benefit-centric where a benefit such as containing a "large" hard drive, such as 500GB, which will be able to store "many" movies. In attribute-centric reviews, arguments supporting reviewer's evaluations are based on technical attributes such as numbers representing attribute levels. The results show that the effect of cognitive fit (the type of reviews) on purchase intention is stronger for experts than for novices while the effect of the number of reviews on purchase intention is stronger for novices than experts. Furthermore, cognitive fit

occurs when experts (novices) process the reviews framed as attribute-centric or benefit-centric, respectively.

We deduce that higher levels of experience increase the impact of hedonic and utilitarian value on the likelihood of making a recommendation. Accordingly, we formulate our hypothesis as follows:

**Hypothesis 5 (H5)** = The game playing experience influences the likelihood of recommendation of game brands.

We examine two ways of moderating the effects of prior playing experience. First, experienced game players are more willing to recommend games to others and second, they base product recommendation on HED whereas inexperienced players on UT values.

According to Brown and Reingen (Brown and Reingen 1987 p. 360), WOM –type of recommendation can be divided into two distinct sources. Firstly, strong-tie sources are those that are socially relevant to the consumer and the source is known personally (e.g. friends and family). Strong ties have been shown to be important at the micro level of referral behavior. Secondly, weak-tie secondary sources are those seldom contacted acquaintances or those not known personally that have been found to play a crucial role in the flow of WOM information across groups.

The main purpose of digital games is to entertain users and when a game succeeds in attaining that objective it is then most likely also recommended to other game players (Chen 2007; Holbrook and Hirschman 1982). We hypothesize that consumers with extensive prior knowledge, not only from digital game playing in general but from specific games, exhibit a significant difference in HED/UT and are more willing to recommend a product to others. The willingness to recommend a game to another is therefore based on specific games of which game players have had experience with. In the context of digital games, we propose that HED is a better predictor of recommendation than UT.

**Hypothesis 6 (H6)** = The hedonic value is a more important determinant of digital game recommendation than utilitarian value.

### 3. RESEARCH MODEL AND METHDOD

#### 3.1. RESEARCH MODEL

We use a deductive method of research in which we present our findings by forming hypotheses from research questions and measure them by using observations (Babbie 1998). Relevant constructs in the context of digital games are ideas derived from motivational theories (Deci 1975, Ryan and Deci 2000) about hedonic and utilitarian ways of consumption products and from prior research on HED and UT value. The proposed model can be observed in Figure 1.

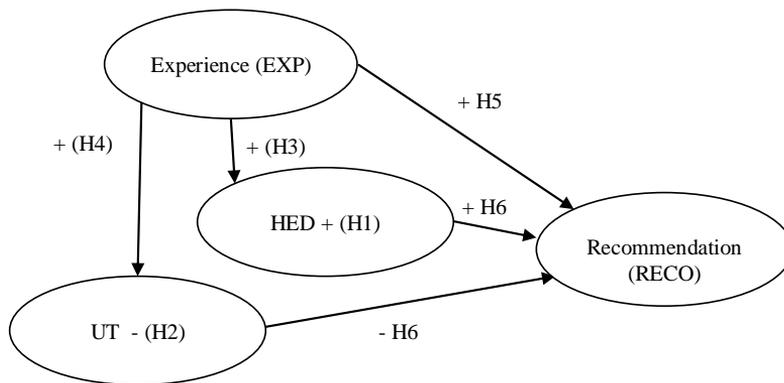


Figure 1. Research model.

Several prior studies indicate that attitudes towards brands and behaviors have at least two distinct components, hedonic and utilitarian (Batra and Ahtola 1990;Mano and Oliver 1993;Voss et al. 2003). We adapted question items from earlier research that had defined and developed valid psychometric instruments for measuring the HED and UT constructs of consumer attitude towards different product categories and brands which suggests that they are two distinct dimensions of brand attitude (Voss et al. 2003). According to Voss et al. (Voss et al. 2003) the HED and UT constructs can be reliably observed by using five variables in both latent constructs. We adapted these variables (see Figure 2) for our survey questionnaire.

The variables needed to be defined in a form that the constructs could be also measured and tested in an empirical context. Therefore, equivalent layman terms were used in our questionnaire to refer to these theoretical concepts. These operational definitions are the bridge

between the respondent and the original constructs (Kerlinger 1973). We expressed our original idea by asking consumers about their attitudes of games providing enjoyment through items such as *excitement and fun* with a relevant, easy-to-understand scale such as the semantic scale.

The questionnaire items were translated from English to Finnish. Due to translation issues (e.g., synonyms and overlapping terms) only four of the suggested five terms were used. We used semantic differential scaling from -3 to +3 in questionnaire items. For improved reliability we included “I cannot answer” – as an option for each psychometric item. Recommendation (RECO) was measured with a single semantic differential question “Would you recommend this game to a friend?” (Reichheld 2006).

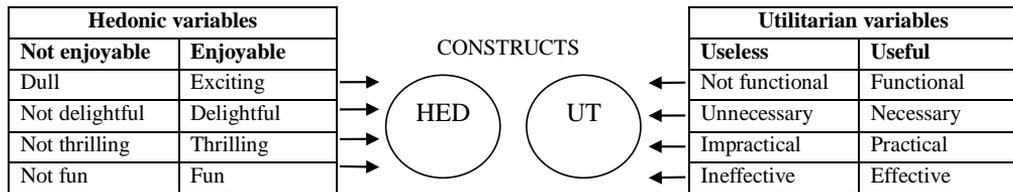


Figure 2. Utilitarian and hedonic variables used in questionnaire (adapted from Voss et al., (Voss et al. 2003))

### 3.2. DATA COLLECTION

An internet survey application called Webropol (webropol.com) was used to create and conduct the survey. Before conducting the survey adjectives, 71 business school students were asked to categorize the adjectives used in the questionnaire by their perceived meaning as utilitarian or hedonic words. All used adjectives were correctly grouped under their respective, expected constructs. Then questionnaire form was commented on and pre-tested by seven colleagues and pilot users. Thereafter, a pilot survey was completed by 14 business school students.

A brief description of the research and a web link to the survey was attached to five Finnish Internet games discussion sites. The empirical set of data was processed using the SAS Enterprise Guide, version 4.1. The questionnaire form was available online for 6 weeks between March and April 2009.

After answering background questions, the participants assessed digital games without reference to any specific game brand. Respondents were then asked to answer questions related to specific games. We used eight well known games, and two other software applications (See Table 1), Microsoft Office and Facebook which were used to position and benchmark the possible differences at the product category level used similarly by Voss et al. (Voss et al. 2003), and Batra and Ahtola (Batra and Ahtola 1990). Games were published to three gaming platforms, Nintendo Wii, Sony Playstation 3 and Microsoft Xbox 360. However, game platform information was deleted from the cover pictures so as to avoid specific platform related evaluation bias.

Table 1. List of the games and two other applications used in this study.

<b>Name of the Game</b>	<b>Type and platform</b>
Halo 3	FPS (Xbox360)
Half-Life	FPS (PC, Xbox360)
Little Big Planet	Platform (PS3, PSP)
Mario Super Galaxy	Platform (Nintendo Wii)
Wii Sports	Exergames (Nintendo Wii)
Wii Fit	Exergames (Nintendo Wii)
Guitar Hero	Party/music games, (PS3, Xbox360,DS,PS2, Wii)
Sing Star	Party/music games (PS2, PS3)
Facebook	Social utility *, PC
MS Office	Office system, PC

\* At the time of the data collection Facebook used slogan “Social utility”.

## 4. FINDINGS

### 4.1. DESCRIPTIVE STATISTICS

In total 171 responses were usable of which 11 were female. We extracted the females from the sample to represent only men. For decades digital games use and development has been targeted at and dominated by men (Haines 2004). However, according to the Entertainment Software Association (ESA 2010), forty percent of all current game players are women and the proportion of professionals in the game industry is increasing. According to Royse et al. (2007) the feminist theorists of gender and the use of technology propose that these two concepts are socially constructed in specific historical, political and cultural contexts. Hence, females prefer different games to males. In addition, women and men have different play frequencies and most popular genres (Hartman and Klimmt 2006; Royse et al. 2007). For experienced female gamers, technology and gender appear to be the most integrated; these women play more frequently and tend to play multiple genres (Royse et al. 2007). Hartmann and Klimmt (2006) list four factors for the gender gap in digital game playing. Three of them relate to the content of games; outdated gender role interpretations, violence and a lack of social interaction. And finally, if there are interactive tasks in games, men are competitive. Females and males are born similar regarding the ability to use technology (eg. Calvert et al. 2005), but our community, school etc. would seem to have an influence on our later gaming behavior. Traditional stereotypical gender roles between women and men in game playing however, are still in existence (Cassell and Jenkins 2000). There are still women that want to play “masculine” games such as FPS and vice versa (Nakamura and Wirman 2005) though.

In the context of digital games, game players are often divided into two groups: hardcore gamers and casual gamers. The differences between hardcore and casual gamers are often thought of as being related to the amount of playing time dedicated to playing a game, played game categories, seriousness and commitment to gaming and especially by the way each gamer positions himself/herself among other game players (Mäyrä 2008). We asked participants to assess their level of game playing also by categorizing it into three levels of game playing activity (expert, hobbyist and casual, respectively). In our sample, only 4% respondents categorized themselves as experts, 69% of the respondents assessed them into category of active hobbyist, following by

27% of casual players. The respondents were between 12-43 years of age, 23 years being both the average and median age. All respondents were relatively active game players with an average weekly playing time of 15,8 hours (See Table 2).

Table 2. Participants' game playing activity.

<b>AGE</b>	<b>Median</b>	<b>Max</b>	<b>N</b>	<b>Mean</b>	<b>Min</b>	<b>Range</b>	<b>StdDev</b>	<b>StdErr</b>
Sample Total	23	41	160	23.65	12	29	5.89	0.47
Expert (I consider myself as an expert in games (games are part of my profession or I play professionally))	24	32	8	23.25	16	16	5.23	1.85
Hobbyist (I am an active gaming hobbyist.)	23	39	113	23.45	12	27	5.51	0.52
Casual (I know games and I play them now and then.)	23	41	39	24.31	14	27	7.09	1.14
<b>AVERAGE PLAYING TIME</b>	<b>Median</b>	<b>Max</b>	<b>N</b>	<b>Mean</b>	<b>Min</b>	<b>Range</b>	<b>StdDev</b>	<b>StdErr</b>
Sample Total	12.5	100	160	15.74	1	99	13.85	1.11
Expert	17.5	80	8	25.5	6	74	24.63	8.71
Hobbyist	14	100	112	17.38	1	99	13.83	1.31
Casual	7	25	36	8.5	1	24	6.15	1.03

Most of the respondents had specific game playing experience of games used in this study. The median of the games played in this sample was two games for each participant (Table 3). There were 22 from 160 respondents (14%) who had not played any of the games used in this study. Respondents were very well aware of the games existing even without having always specific game playing experience from them (83% - 97%).

Table 3. Number of games played from the sample of eight games in total.

	<b>n</b>	<b>Median</b>	<b>Mean</b>	<b>#0</b>	<b>#1</b>	<b>#2</b>	<b>#3</b>	<b>#4</b>	<b>#5</b>	<b>#6</b>	<b>#7</b>	<b>#8</b>
Expert	8	4	3.71	1	1	0	2	1	3	0	0	0
Hobbyist	113	2	2.52	12	25	28	25	17	5	1	0	0
Casual	39	2	2.36	9	8	11	8	1	2	0	0	0
Total	160	2	2.55	22	34	39	35	19	10	1	0	0

## **4.2. DETAILED ANALYSIS**

We first produced a correlation analysis and calculated the reliability score for both HED and UT variables in general digital game and subcategory levels. All the used variables corresponded well with responding latent factor variables (Cronbach's Alpha, HED 0.87-0.95 and UT 0.70-0.90). A single composite summated measure of both HED and UT was then formed by combining their respective variables (Hair et al. 1984-2004). In order to ensure that there were no issues due to multicollinearity with the data we calculated tolerance and variance inflation factor (VIF) values for our data. The tolerance values were all within 0.21-0.86 range which is well above suggested the above lower limit of 0.10 and the VIF values were all close 1.16-4.70 which were below the acceptable threshold of 10 (Hair et al. 1984-2004).

## **4.3. HED/UT VALUE AND EXPERIENCE**

We hypothesized that a digital games are high on HED value (H1) and low on UT value (H2) and that both HED (H3) and UT (H4) are positively moderated by the prior experience on level of particular digital games brand. In order to test our hypotheses and following the similar procedure of Voss et al. (2003) we first created a summated scatter plot that present the perceived HED/UT value for each game between experienced and inexperienced respondents (Figure 3).

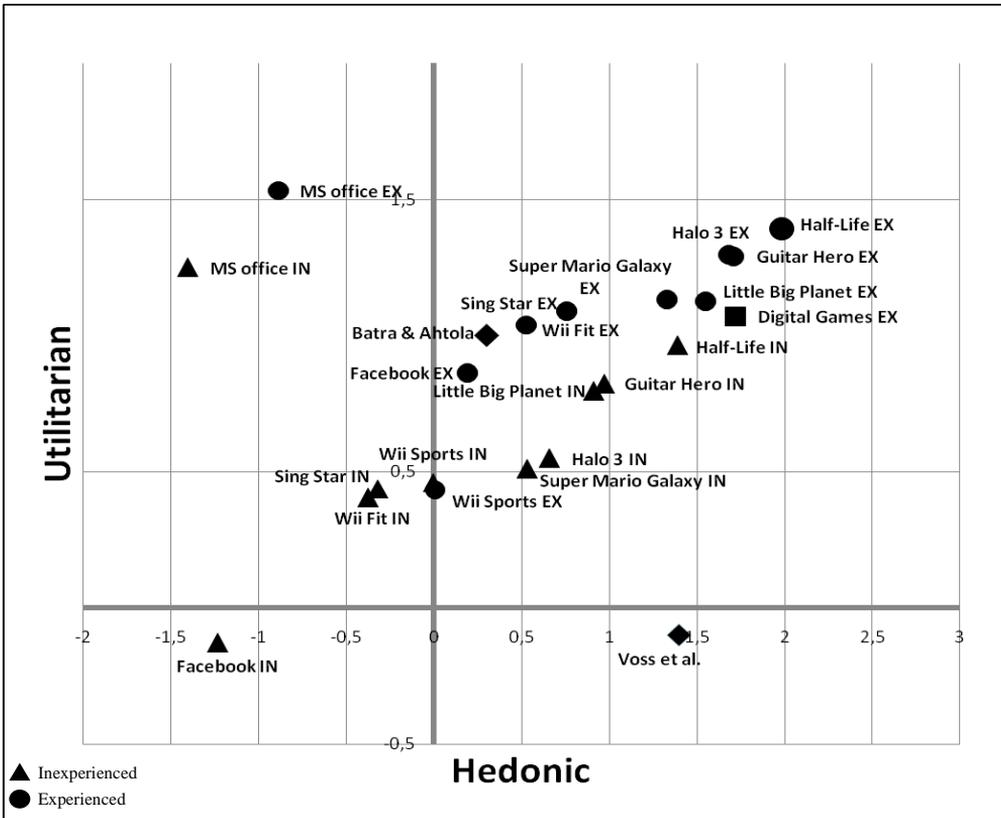


Figure 3. The hedonic and utilitarian value of digital game products on a scatter plot. EX denotes experienced and IN inexperienced players.

In a semantic differential scale, zero is neutral, plus denotes a positive, and minus a negative point of attitude towards game playing. First, digital games as a single product category is assessed with high on HED and UT (Digital Games - Figure 3). This finding is in close consensus with related studies from Batra and Ahtola (Batra and Ahtola 1990) and resemble results from Voss et. al. (Voss et al. 2003).

The highest scores for both HED and UT value was given by experienced gamers to Half-Life, Guitar Hero and Halo 3. Inexperienced gamers ranked Half-life, Guitar hero and Little Big Planet on HED value. The lowest levels of HED and UT value were linked to WiiSports, WiiFit and Singstar. Amongst the inexperienced game players lowest HED and UT was reported with

the same games; WiiFit, Singstar and Wiisports. The largest difference between experienced and inexperienced consumers was measured both in HED and UT between games Halo 3, SingStar and WiiFit.

We hypothesized that digital games are high in HED value (H1). In case of digital games being high in HED (H1) all but two exceptions of inexperienced consumers (WiiFit and SingStar) were high on HED, yet not far from being positive. On a large scale we support H1 and discuss results. We also hypothesized that digital games are low on UT value (H2). Most interestingly, all games are high on UT value leading to the rejection of H2. Digital games, contrary to most prior studies, contain high utilitarian value when active game players are questioned.

To test whether digital game brands differ statistically from other applications outside of the digital games category we conducted a Duncan's multiple range test for HED/UT and for experienced and inexperienced game players (See Table 4). Considering the other applications used in this study, MS office and Facebook are different from digital games. Facebook has been viewed differently from most of the games, experienced gamers assessing it higher in both HED and UT value, additionally Facebook displayed the largest mean difference of all measured applications between experienced and inexperienced consumers. MS Office was evaluated high on UT value and low on HED value, in contrast to games.

Table 4. Duncan multiple range for HED/UT and for experienced and inexperienced between applications.

Experienced HED				Inexperienced HED				Experienced UT				Inexperienced UT					
Group*	Mean	N	Game	Group*	Mean	N	Game	Group*	Mean	N	Game	Group*	Mean	N	Game		
A	1.98	106	hl	A	1.39	36	hl	A	1.53	140	of	A	1.25	8	of		
B	1.72	162	di	B	0.97	57	gh	B	1.39	106	hl	B	0.96	35	hl		
B	1.71	84	gh	B	0.90	69	lb	B	1.30	62	ha	B	0.82	58	gh		
B	1.68	62	ha	B	0.66	75	ha	B	1.29	83	gh	B	0.79	67	lb		
B	1.55	32	lb	B	0.53	78	ma	B	A	C	1.13	36	ma	B	0.55	76	ha
B	1.33	35	ma	D	0.00	57	wi	B	A	C	1.13	32	lb	B	0.51	77	ma
C	0.76	56	ss	D	-0.32	77	ss	B	C	1.09	56	ss	B	0.46	58	wi	
D	0.53	27	wf	D	-0.38	75	wf	B	C	1.07	162	di	B	0.44	75	ss	
D	0.19	87	fa	E	-1.24	36	fa	B	C	1.04	28	wf	B	0.41	82	wf	
E	0.01	76	wi	E	-1.41	8	of	B	C	0.86	87	fa	C	-0.13	37	fa	
F	-0.89	138	of					D	0.39	79	wi						

\*Means with the same letter are NOT significantly different.

We then assessed whether the HED/UT evaluation is moderated by game playing experience (H3 and H4). A t-test ( $p$ -value=0.05) was conducted between experienced and inexperienced consumers separately in all games. In all tests we moderated the product evaluation by using prior game play experience as a moderator between experienced and inexperienced consumers. Experienced game players evaluate all games systematically significantly higher than inexperienced game players in both values except in case of WiiSports where the differences on both values are minimal and Little Big Planet where there is a significant difference between UT. HED/UT values are, on a large scale, both positively moderated by game playing experience. We discuss WiiSports as an exception which further clarifies and enhances the indication that H3 and H4 can both be accepted.

In summary, we suggest that selected digital game brands are perceived as hedonic and utilitarian products by both experienced and inexperienced consumers among active game players. Second, we accept that attitudes towards brands are moderated by prior experiences consumers may have regarding certain brands and discuss findings using WiiSports and Half-Life as examples.

#### **4.4. PRODUCT RECOMMENDATION AND EXPERIENCE**

We hypothesized that the game playing experience moderates the recommendation (RECO) of games (H5). A t-test ( $p$ -value=0.05) was conducted between experienced and inexperienced consumers separately in all games. Table 5 denotes the differences measured between inexperienced (IN) and experienced (EX) game players with reference to recommendation parameters. In all cases except for one (WiiSports) was a statistically significant difference in recommendation between experienced and inexperienced game players observed. Similarly, as in the case of H3 and H4, WiiSports seem to differ from other game applications and we will discuss findings. Nevertheless, we accept H5.

The highest likelihood of recommendation is given for digital games playing in general (1.93 in scale of -3 to +3). Half-life and Guitar Hero have the highest recommendation measures for both experienced and inexperienced consumers. The least likelihood of game recommendation are for WiiFit and WiiSports for experienced consumers and SingStar and WiiFit for inexperienced. The

highest differences are present in Halo3, Sing Star followed by Guitar Hero and lowest WiiSports and WiiFit.

Table 5. Recommendation of digital games.

	<b>RECO</b>	<b>RECO</b>	<b>RECO</b>	<b>Significant</b>	<b>n</b>
	<b>Mean</b>	<b>Mean</b>	<b>Difference</b>	<b>(p –value &lt;0.05)</b>	
	EX	IN			EX/IN
Digital Games	1.93				
Halo 3	1.60	0.18	1.42	YES	62/96
Sing Star	0.96	-0.42	1.38	YES	56/104
Guitar Hero	1.74	0.42	1.32	YES	84/71
Half-Life	1.87	0.63	1.24	YES	108/46
Little Big Planet	1.56	0.35	1.21	YES	32/124
Super Mario Galaxy	1.24	0.23	1.01	YES	37/121
Wii Fit	0.63	-0.08	0.71	YES	29/128
Wii Sports	0.31	0.05	0.26	NO	80/78
<b>Other applications</b>					
MS Office	0.89	-0.29	1.18	YES	143/14
Facebook	0.54	-1.12	1.66	YES	89/66

Lastly, we hypothesized that the hedonic value is a more important determinant of digital game recommendation than utilitarian value between strong tie sources moderated by prior experience. To test H6 we measured the influence of HED and UT summated variables on recommendation with a multiple linear regression model:  $Recommendation_{ex/in} = constant_{ex/in} + HED_{ex/in} + UT_{ex/in} + error$ . Specifically, we were interested in the proportion that HED and UT explain recommendation.

See summary of the results in Table 6. The explanatory power  $R^2$  is high level (0.36-0.70), meaning that HED and UT have a substantial influence on the recommendation except in the case of digital games in general ( $R^2$  0.15). In all cases HED was a statistically significant interacting variable. Yet, there were eight out of twenty where UT variables did not meet the criteria of  $p$ -value < 0.05. Second, the number of respondents that declared not having the capability of answering is higher among the inexperienced than experienced consumers. The influence of the lacking experience can be observed in the results.

We set criteria for a relevant minimum difference to 10% of difference between HED and UT. Digital games are recommended both by their HED and UT value. MS Office was recommended

by its UT value, Facebook by its HED value. In overall, HED value explains (MIV %) the sources of recommendation better than UT where games were concerned.

Table 6. Sources of digital games recommendation.

		r <sup>2</sup> adj.	n	n M *	HED SE**	UT SE**	HED i %	UT i %	MIV ***	F-value	Pr > F	VIF	HED std error	UT std error	TVal ****
<b>Digital Games</b>															
Digital Games category	EX	0.15	162	1	0.24	0.20	55 %	45 %		15.06	<0.0001	1.69	0.10	0.11	0.59
Halo 3	EX	0.70	62	0	0.81	0.05	94 %	6 %	HED	73.25	<0.0001	2.60	0.13	0.16	0.09
	IN	0.63	74	22	0.54	0.31	64 %	36 %	HED	63.79	<0.0001	2.36	0.10	0.12	0.38
Half-Life	EX	0.67	106	2	0.51	0.36	59 %	41 %	HED	107.43	<0.0001	2.28	0.09	0.10	0.43
	IN	0.56	35	11	0.48	0.33	59 %	41 %	HED	22.82	<0.0001	2.51	0.22	0.27	0.40
Wii Fit	EX	0.64	27	2	0.76	<b>0.07</b>	92 %	8 %	HED	24.43	<0.0001	3.25	0.24	0.25	0.44
	IN	0.66	75	53	0.43	0.47	48 %	52 %		73.73	<0.0001	1.83	0.10	0.11	0.40
Wii Sports	EX	0.60	75	5	0.34	0.49	41 %	59 %	UT	57.37	<0.0001	2.38	0.15	0.19	0.42
	IN	0.48	57	21	0.43	0.35	55 %	45 %	HED	26.8	<0.0001	1.84	0.13	0.17	0.54
Sing Star	EX	0.64	56	0	0.50	0.35	59 %	41 %	HED	49.2	<0.0001	2.47	0.15	0.19	0.40
	IN	0.53	74	30	0.60	0.19	76 %	24 %	HED	42.31	<0.0001	1.74	0.10	0.40	0.57
Guitar Hero	EX	0.52	83	1	0.60	0.21	74 %	26 %	HED	45.46	<0.0001	1.30	0.09	0.13	0.76
	IN	0.67	57	14	0.70	<b>0.15</b>	82 %	18 %	HED	58.05	<0.0001	3.57	0.14	0.18	0.28
Super Mario Galaxy	EX	0.46	35	2	0.53	<b>0.20</b>	73 %	27 %	HED	15.5	<0.0001	2.84	0.20	0.28	0.35
	IN	0.61	77	44	0.90	<b>-0.17</b>	85 %	15 %	HED	60.39	<0.0001	2.25	0.11	0.13	0.44
Little Big Planet	EX	0.75	32	0	0.49	0.42	54 %	46 %		46.59	<0.0001	3.27	0.19	0.23	0.30
	IN	0.60	63	61	0.51	0.30	63 %	37 %	HED	48.23	<0.0001	4.70	0.19	0.22	0.21
<b>Other applications</b>															
MS Office	EX	0.36	138	5	0.23	0.48	32 %	68 %	UT	39.07	<0.0001	1.16	0.11	0.11	0.86
Facebook	EX	0.57	86	3	0.59	0.25	70 %	30 %	HED	56.34	<0.0001	1.48	0.12	0.12	0.67
	IN	0.57	35	31	0.79	<b>-0.03</b>	86 %	4 %	HED	23.61	<0.0001	2.00	0.16	0.15	0.49

**bold** not statistically significant, *italic* significant at 0.10 level, \* n Missing, \*\* SE Standardized Estimate, \*\*\* MIV (Main Interacting Variable) \*\*\*\* TVal Tolerance Value

In summary, in the case of games we accept hypothesis 6 (H6); the hedonic value of digital games plays a more important role in game recommendation than UT value. Yet, WiiSports differs from the general pattern in the case of experienced game players who recommended it more by its UT value than inexperienced game players who based recommendation on HED.

## 5. DISCUSSION

This study investigated the hedonic (HED) value of game playing as the satisfaction of an activity itself and the utilitarian (UT) value of playing games for the purpose of functional or practical benefits; both as sources of perceived value of products and services. Many prior studies have discussed and empirically tested the hedonic aspects of digital games, yet, not together with utilitarian aspects of game playing, considering experience as a moderating factor.

In order to demonstrate the importance of HED and UT value in product recommendation we conducted an internet survey among active game players who assessed eight widely known successful game brands. In addition, we evaluated games in comparison to two other applications; Facebook and Microsoft Office, both different from the perspective of consumption specifically in the way they present play and usefulness. To accomplish these objectives we used psychometric measurement instruments, specifically hedonic and utilitarian consumer value as an operational tool.

This study contributes to prior research as follows: First we expanded Voss et al. (2003) prior research on different product categories (e.g. beer, automobiles, athletic shoes and video games) and in particular on consumer goods at brand level (e.g. Adidas/Nike, Miller/Corona) by positioning digital games on the scale of HED/UT. Whereas Batra and Ahtola (1990) and Voss et al. (2003) depicted the differences between product categories and brands in categories and other consumer goods, we positioned various software applications in the HED/UT scale, in particular digital game brands. We succeeded in differentiating game brands from other consumer goods and indicatively from other software applications. The pattern of evaluation is rather similar among all games.

Our empirical results suggested that digital games are not only high on hedonic value, but that the level of perceived HED and UT (H1 and H2) is moderated by the user's gaming experience (H3 and H4), even though games have been considered as purely entertainment applications, low on perceived usefulness (Hsu and Lu 2004). The high UT value can be explained with motivational theories presented in this study. Experienced consumers perceive that playing a certain game and by using it as a means to an end, such as learning or gaining achievements,

points, promotions, a game can function as a useful tool to achieve a goal. Consumers use and experience a product and by consuming it, modify their attitudes towards it, even though those that do not usually play and who often see playing games as useless. Usefulness is a subjective state in sense of how a person sees certain aspects from his or her perspective as consumer. A higher HED value will also lead to higher UT value within the same product category. This would suggest that perceived hedonic and utilitarian values are within the context of digital games and are processed simultaneously in product evaluation situations.

The reasons for relatively high HED and UT value among inexperienced game players is, however, more difficult to explain and need further research. Some of the explanations include the influence of the marketing actions that game developers and publishers have carried out to promote these widely known games. More likely, the reason may be the perceived influence of others. Active game players follow games closely, read and discuss about games. Digital games represent search goods for the inexperienced consumers. They have had the possibility to obtain product information and assess the game relying on that information without experiencing them (Klein 1998;Zeithaml et al. 2006).

Digital games differ not only at the product category level but also as part of the investigation of individual products. Hence, digital game evaluation and product positioning should be carried out at the product level, rather than generalizing all games as being equal in their proposed outcome at product category level. Further, we succeeded in portraying a difference between office systems and digital games perceived by active players. Our indicative findings support the claim that digital games differ from other applications such as social utilities (Facebook, MySpace, Twitter) and Office Systems (MS Office, SAP, etc.) specifically in the way they present play through HED and UT value. Playing games is an act whose purpose is to provide mainly enjoyment through play (Holbrook 1999), as well as usefulness, according to our findings. MS Office better represents extrinsic values such as efficiency and excellence. Facebook is related to both HED and UT value, however, among active game players, was assessed significantly differently in comparison to games.

Prior game playing experience was clearly found to be a significant moderating element for evaluation (H3 and H4). The results indicate that prior game playing experience leads to a more

optimistic evaluation of HED and UT. This finding have clear implications for practitioners in the digital game development business who intend to attract new players for their games because consumers' prior knowledge serves as an important means of market segmentation (Hong and Sternthal 2010). It is common practice to publish game review scores and use discussion boards as a part of a way of convincing new game players. Yet, we emphasize that marketing managers should pay attention to how game players have experienced a game in real-life and use that knowledge as a source of WOM marketing campaigns.

The benefits received from a product increase the likelihood of recommendation of a product to friends and colleagues which can be explained with HED and UT (H5). Firstly, active players are willing to recommend game playing as a general activity. Further, empirical findings indicate that HED is a more important determinant of product recommendation than UT (H6). However, the influence of UT value was documented in most of the cases. Particularly in two cases, UT value was found to be a more important determinant of recommendation than hedonic value.

In essence both HED and UT influence WOM product recommendation and should be measured at the brand level. Active game players may come across difficulties in assessing and recommending digital game playing as a general group of products (low explanatory power  $R^2$  of HED and UT). By publicly discussing a single, specific game positively though, from both a HED and UT perspective within a product category, the assessment may become easier (high explanatory power of  $R^2$  HED and UT). Thus, digital games brands act as a more confident source of information. These findings indicate that product recommendation becomes diluted within the general product category level of digital games because it does not specify the possible product quality and outcomes well enough in order to facilitate an appropriate evaluation.

Further, the consumer's perception about the digital game category affects the beliefs of specific products within it. For instance, the reasons why "masculine" (Nakamura and Wirman 2005) games such as FPS and Guitar Hero succeeded in the HED/UT value exactly reinforces this concept. Our sample was only male, their gaming preferences and habits have been stated to be different. WiiFit and SingStar, in contrast, appeared to be more targeted to female game players, for instance, the product package and advertising emphasizes and appeals more female users.

We found that WiiSports varied from the other games used in this study. The HED/UT levels were rather low for both groups, further there was less likelihood of recommending WiiSports than other games. We could assume there was something at fault with the experience of WiiSports compared to the other games. We refer to the design aspects of games of flow experience which aim to design elements of gameplay that motivate the player to continue playing without experiencing any negative feelings, such as anxiety or boredom (Chen 2007) (Csikszentmihalyi 1975). We suggest that the reason why experienced gamers assessed the HED and UT almost equally to inexperienced consumers than in all other used examples is based exactly on the first claim we proposed, stating that experience of that game had been somehow disappointing. The effect of boredom or anxiety, or thinking that a game has been too easy or too difficult had probably influenced the assessment. WiiSports had been of low stimulation, that is experiences resulting in frustration or boredom (Mano and Oliver). The relatively low value of HED and UT among experienced game players, perceived from their experiences, modifies the source of recommendation from HED towards UT.

Further, WiiSports is a game delivered together with a game console (Nintendo Wii) and there is no need to buy it separately. Thus, players had not chosen the game from many other alternatives available by spending money on it. That is, playing experience on WiiSports does not fully represent gaming preferences, which are usually important in the decision making process before a choice is made (Ajzen 2005). Therefore, our findings would agree with prior research in the sense that product choice exposes consumer decision making preferences (Drolet et al. 2009) and that the influence of ownership of the valuation of objects (Strahilevitz, 1998) influences this assessment. Our contribution to this discussion is that valuation is moderated by game-specific experience rather than experience of the product category in general.

To expand this argument we utilize an additional example: Half-Life was assessed by both groups as the game with the most HED/UT value, yet values were reported significant differences between experienced and inexperienced consumers. Further, experienced gamers also reported relevant, significant difference to WiiSports. The reasons are twofold. We suggest that experienced game players' higher perceived HED and UT value, in comparison to inexperienced game players, originates in this case from past gaming experiences through two different sources. First, from emotional brand attachment (Thomson et al. 2005). This implies that

experienced game players have stronger emotional bonds to certain products than game players with less experience. It is possible that those talking about the game positively had spread the word and influenced inexperienced gamers in Half-Life. In broader terms, brand specific advertising emphasizes either HED or UT product benefits. These benefits moderated with product experience either strengthen or weaken the HED/UT value in a consumer's image of the brand. This influence is absent in the case of WiiSports and present in the case of Half-Life. In summary, the lower emotional attachment (Thomson et al. 2005), affect (Mano and Oliver) and product involvement (Park and Moon 2003) with the product may cause the lower or higher value perception of the product. Indeed, the motivational perspectives of product choice and consumption experience influence the perceived value of these products. We conclude that games are different, even within the product category of digital games; yet, the factors which influence this assessment are complex and need to be studied in greater depth.

Enjoyment and fun are widely accepted as integral components as sources of motivation to play and positively associate games to hedonic value. Yet, we emphasize the influence of the consumers' prior experience, whether positive or negative to the perceived value of a product. Further, we conclude that usefulness is in the mind of the consumer, whether a product is assumed to be hedonic or useful in its main outcome. We agree that games are, in comparison to other products, mostly hedonic information goods, as most of the literature on games suggests, however, such a generalization is problematic because many active game players consider games as something more and utilize games not only for the satisfaction derived during the experience but also as a tool, a means to an end, that allows for the perusal and achievement of something extrinsic, tangible and self-actualizing. Therefore, a successful digital game proposes both enjoyment and usefulness with enjoyment as the main source of recommendation of digital game products.

## **6. LIMITATIONS, FUTURE RESEARCH AND CONCLUSIONS**

This paper raises a number of pertinent issues that warrant further research and attention. Theoretically, the perceived value of products and services are complex and multidimensional concepts (Sánchez-Fernández and Iniesta-Bonillo 2007;Zeithaml 1988), of which only two were adapted from the typology of consumer value (Holbrook 1999) and studied during this work. HED and UT represent “active value” where consumers have to actively take part in game playing to receive it.

Second, the dualistic perspective in which complex sensory and emotional experiences are measured, by using two quantitative constructs such as HED and UT values within a survey, may be misleading. HED and UT do not fully explain what the true meaning of certain games is for the users and why certain game categories are preferred. Therefore, a more in-depth qualitative study by interviewing game players is needed to understand why these differences may occur. Third, due to the limited number of questions in the questionnaire, we were only able to use one question for measuring product recommendation. Generalizing such results on recommendation or any other variable, even indicative, need to be cautiously evaluated (Keller 2006). Fourth, our focus was on strong-tie elements yet we acknowledge that the weak-ties influences of larger social communities have great importance in an individual’s behavior (Granovetter 1973). Fifth, a limitation of our study was the use of very active male game players as study subjects. Our sample may indicate that active game site visitors are often men interested in participating in a study on games. This sample did, however, work well to differentiate game players by classifying them into those who had experience in a game and those who did not. Sixth, we used recommendation as the dependent variable. That is the recommendation of a game can be explained by the perceived HED and UT. Digital games are a type of product in which the users’ subjective tastes may have high impacts on its usage where recommendation and usage are not always consistent. In other words, users do not often follow the recommendations posed by others. Further, anyone can recommend a game, even without particularly favoring the game.

Our findings are suggestive and require further consideration. We suggest conducting a more comprehensive study of software products and services within different product categories such as social network applications, utility applications and video or music broadcasting applications

to confirm the importance of the influence of HED/UT on software product and service recommendation.

The results of this study show not only how both HED and UT are key determinants of product value but also how they explain product recommendation. By demonstrating HED and UT as antecedents of product recommendation we contribute to theoretical literature of product evaluation by positioning games within the HED/UT scale on brand level. Further, we demonstrate the moderating influence of game playing on perceived value. Our results advance prior research since empirical evidence and theories had highlighted the importance purpose of HED and UT when studying entertainment information systems. Further, we extended the literature on attitude towards brands and sources of product recommendation. A successful digital game proposes both enjoyment and usefulness with enjoyment as the main source of recommendation of digital games.

By taking into account the results of this study, and from a practical point of view, we propose that managers use the knowledge we have produced to focus their attention on how they plan marketing strategies for different customers groups, both inexperienced and experienced, and how to optimally express the main benefits of their products to their customers in order to create WOM and enhance positive product recommendations within different media.

## REFERENCES

- Aaker, D.A., *Managing Brand Equity*, The Free Press, New York, 1991.
- Ajzen, I., *Attitudes, Personality, and Behavior*, The Dorsey Press, Chicago, Illinois, 2005.
- Ajzen, I. and M. Fishbein, *Understanding Attitudes and Predicting Social Behavior*, Prentice-Hall, NJ, 1980.
- Atkinson, M. and C. Kydd, "Individual characteristics associated with world wide web use: an empirical study of playfulness and motivation," *The DATA BASE for Advances in Information Systems*, 1997, 28: 2, pp. 53-62.
- Babbie, E., *The Practice of Social Research*, Wadsworth Publishing Company, 1998.
- Baraglia, R. and F. Silvestri, "Dynamic personalization of web sites without user intervention," *Communications of the ACM*, 2007, 50: 2, pp. 63-67.
- Batra, R. and O.T. Ahtola, "Measuring the Hedonic and Utilitarian Sources of Consumer Attitudes," *Marketing Letters*, 1990, 2: 2, pp. 159-170.
- Bearden, W.O. and M.J. Etzel, "Reference Group Influence on Product and Brand Purchase Decisions," *Journal of Consumer Research*, 1982, 9: 2, pp. 183-194.
- Bettman, J.R. and C.W. Park, "Effects of Prior Knowledge and Experience and Phase of the Choice Process on Consumer Decision Processes: A Protocol Analysis," *Journal of Consumer Research*, 1980, 7: 3, pp. 234-248.
- Blackwell, R.D., P.W. Miniard and J.F. Engel, *Consumer Behavior*, Thomson, South-Western, Mason, Ohio, 2006.
- Bolton, R.N., "A dynamic model of the duration of the customer's relationship with a continuous service provider: The role of satisfaction.," *Marketing Science*, 1998, 17: 1, pp. 45-65.
- Brown, J.J. and P.H. Reingen, "Social Ties and Word-of-Mouth Referral Behavior," *Journal of Consumer Research*, 1987, 14: 3, pp. 350-362.
- Bryce, J. and J. Rutter, "An Introduction to Understanding Digital Games," In *Understanding Digital Games*, J. Rutter and J. Bryce (Ed.), Sage Publications Ltd, London, 2006, pp. 272.
- Brynjolfsson, E., Y.J. Hu and M.D. Smith, "From Niches to Riches: Anatomy of the Long Tail," *Sloan Management Review*, 2006, 47: 4, Summer, pp. 67-71.

- Calvert, S.L., V.J. Rideout, J.L. Woolard, R.F. Barr and G.A. Strouse, "Age, Ethnicity, and Socioeconomic Patterns in Early Computer Use," *American Behavioral Scientist*, 2005, 48: 5, pp. 590.
- Cassell, J. and H. Jenkins, *From Barbie to Mortal Kombat: Gender and Computer Games*, MIT Press, 2000.
- Chandon, P., B. Wansink and G. Laurent, "A Benefit Congruency Framework of Sales Promotion Effectiveness," *Journal of Marketing*, 2000, 64: October, pp. 65-81.
- Chen, J., "Flow in Games (and everything else)," *Communications of the ACM*, 2007, 50: 4,
- Chen, Y. and J. Xie, "Third-Party Product Reviews and Firm Marketing Strategy," *Marketing Science*, 2005, 24: 2, pp. 218-240.
- Chevalier, J.A. and D. Mayzlin, "The Effect of Word of Mouth on Sales: Online Book Reviews," *Journal of Marketing Research*, 2006, 43: 3, pp. 345-354.
- Choi, D. and J. Kim, "Why People Continue to Play Online Games: In Search of Critical Design Factors to Increase Customer Loyalty to Online Contents," *CyberPsychology & Behavior*, 2004, 7: 1, pp. 11-24.
- Chris, "When Pundits Attack: Game Sales vs. Game Quality," 2007,
- Cole, H. and M.D. Griffiths, "Social Interactions in Massively Multiplayer Online Role-Playing Gamers," *CyberPsychology & Behavior*, 2007, 10: 4, pp. 575-583.
- Crandall, R.W. and G.J. Sidak, "Video Games, Serious Business for America's Economy," Entertainment Software Association, 2006.
- Csikszentmihalyi, M., *Beyond Boredom and Anxiety*, Jossey-Bassa, San Francisco, 1975.
- Cusumano, M.A., "Technology Strategy and Management: The Evolution of Platform Thinking," *Communications of the ACM*, 2010, 53: 1, pp. 32-34.
- Darby, M.R. and E. Karni, "Free competition and the optimal amount of fraud," *Journal of Law and Economics*, 1973, 16: 1, pp. 22.
- Davis, F.D., "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information," *MIS Quarterly*, 1989, 13: 3, pp. 319-340.
- Deci, E.L., *Intrinsic motivation*, Plenum, New York, 1975.
- Dhar, R. and K. Wertenbroch, "Consumer Choice Between Hedonic and Utilitarian Goods," *Journal of Marketing Research*, 2000, XXXVII: February, pp. 60-71.

- Drolet, A., M. Frances Luce and I. Simonson, "When Does Choice Reveal Preference? Moderators of Heuristics versus Goal-Based Choice," *Journal of Consumer Research*, 2009, 36: June, pp. 137-147.
- Ermi, L. and F. Mäyrä, "Fundamental Components of the Gameplay Experience: Analysing Immersion," *Proceedings of the Changing Views: Worlds in Play. Selected Papers of the 2005 Digital Games Research Associations's Second International Conference*, 2005, pp. 15-27.
- ESA, "Essential Facts About the Computer and Video Games Industry 2009," Entertainment Software Association, 2010.
- Farrand, T., D. Nichols, T. Rowley and M. Avery, *Brands & Gaming*, Palgrave MacMillan, New York, 2006.
- Foxall, G.R., *Understanding Consumer Choice*, Palgrave Macmillan, New York, 2005.
- Gagné, M. and E. Deci, "Self-determination theory and work motivation," *Journal of Organizational Behavior*, 2005, 26, pp. 331-362.
- GabuEx "Do reviews really affect sales?," *Gamespot*, [http://uk.gamespot.com/users/GabuEx/show\\_blog\\_entry.php?login=true&topic\\_id=m-100-25692984&page=1](http://uk.gamespot.com/users/GabuEx/show_blog_entry.php?login=true&topic_id=m-100-25692984&page=1), 2009.
- Gardial, S.F., D.S. Clemons, R.B. Woodruff, D.W. Schumann and M.J. Burns, "Comparing Consumers' Recall of Prepurchase and Postpurchase Product Evaluation Experiences," *Journal of Consumer Research*, 1994, 20: March,
- Gilly, M.C., J.L. Graham, M.F. Wolfenbarger and L.J. Yale, "A Dyadic Study of Interpersonal Information Search," *Journal of the Academy of Marketing Science*, 1998, 26: 2, pp. 83-100.
- Granovetter, M.S., "The Strength of Weak Ties," *The American Journal of Sociology*, 1973, 78: 6, pp. 1360-1380.
- Haines, L., "Why Are There So Few Women in Games?" Research of Media Training North West by Lizzie Haines Research, 2004.
- Hair, Anderson, Tatham and Black, *Multivariate Data Analysis*, Prentice Hall Inc., Upper Saddle River, New Jersey, 1984-2004.
- Hartman, T. and C. Klimmt, "Gender and Computer Games: Exploring Females' Dislikes," *Journal of Computer-Mediated Communication*, 2006, 11, pp. 910-931.
- Herman, L., J. Horwitz, S. Kent and M. Skyler, "The History of Video Games," 2002.

- Hirschman, E.C. and M.B. Holbrook, "Hedonic consumption: Emerging concepts, methods and propositions," *Journal of Marketing*, 1982, 46: Summer, pp. 92-101.
- Holbrook, M.B., "Customer Value - A Framework For Analysis and Research," *Advances in Consumer Research*, 1996, 23: 1, pp. 138-142.
- Holbrook, M.B., *Consumer Value: A Framework for Analysis and Research*, Routledge, 1999.
- Holbrook, M.B., R.W. Chestnut, T.A. Oliva and E.A. Greenleaf, "Play as a consumption experience: The roles of emotions, performance, and personality in the enjoyment of games," *The Journal of Consumer Research*, 1984, 11: 2, pp. 728-739.
- Holbrook, M.B. and E.C. Hirschman, "The Experimental Aspects of Consumption: Consumer Fantasies, Feelings, and Fun.," *The Journal of Consumer Research*, 1982, 9: 2, pp. 132-140.
- Hong, J. and B. Sternthal, "The Effects of Consumer Prior Knowledge and Processing Strategies on Judgments," *Journal of Marketing Research*, 2010, XI.VII: April, pp. 301-311.
- Howard, J.A. and J.N. Sheth, *The Theory of Buyer Behavior*, John Wiley & Sons, Inc., New York, 1969.
- Hsu, C.-L. and H.-P. Lu, "Why Do People Play On-line Games? An Extended TAM with Social Influences and Flow Experiences," *Information & Management*, 2004: 41, pp. 853-868.
- Hsu, C.-L. and H.-P. Lu, "Consumer Behavior in Online Game Communities: a Motivational Factor Perspective," *Computers in Human Behavior*, 2007, 23: 3, pp. 1642-1659.
- Johnson, E.J. and E.J. Russo, "Product Familiarity and Learning New Information," *Advances in Consumer Research*, 1981, 8,
- Johnson, E.J. and E.J. Russo, "Product Familiarity and Learning New Information," *The Journal of Consumer Research*, 1984, 11: 1, pp. 542-550.
- Kallio, K.P., K. Kaipainen and F. Mäyrä, "Gaming Nation? The Pilot Case Finland: International Study of Games Cultures," Tampere, 2007, Hypermedia Laboratory Net Series 14,
- Keller, K.L., "Conceptualizing, Measuring, and Managing Customer-Based Brand Equity," *Journal of Marketing*, 1993, 57: January, pp. 1-22.
- Keller, K.L., "Measuring Brand Equity," In *The Handbook of Marketing Research*, R. Grover and M. Vriens (Ed.), SAGE Publications, Thousand Oaks, California, 2006,
- Kerlinger, F.N., *Foundations of Behavioral Research*, London, 1973.

- Klein, L.R., "Evaluating the potential of interactive media through a new lens: search versus experience goods," *Journal of Business Research*, 1998, 41, pp. 195-203.
- Kujanpää, T., T. Manninen and L. Vallius, "What's My Game Character Worth - The Value Components of MMOG Characters," Tokyo, Japan, 2007,
- Land, F., "The Information Systems Domain," In *Information Systems Research*, R. Galliers (Ed.), Alfred Waller Ltd., Warwick, 1992,
- Mano, H. and R.L. Oliver, "Assessing the Dimensionality and Structure of the Consumption Experience: Evaluation, Feeling, and Satisfaction," *Journal of Consumer Research*, 1993, 20: December, pp. 451-466.
- Mervis, C.B. and E. Rosch, "Categorization of Natural Objects," *Annual Review of Psychology*, 1981, 32, pp. 89-115.
- Mitchell, A.A. and P.A. Dacin, "The Assessment of Alternative Measures of Consumer Expertise," *Journal of Consumer Research*, 1996, 23:3: December, pp. 219.
- Moon, J.-W. and Y.-G. Kim, "Extending the TAM for a world-wide-web context," *Information & Management*, 2001, 38, pp. 217-230.
- Mäyrä, F., *An Introduction to Game Studies*, SAGE Publications Ltd, London, 2008.
- Nakamura, R. and H. Wirman, "Girlish Counter-Playing Tactics," 2005, 5: 1,
- Nelson, P., "Information and Consumer Behavior," *The Journal of Political Economy*, 1970, 78: 2, pp. 311-329.
- Neogames, "The Finnish Games Industry," Centre of Game Business, Research and Development, 2009.
- Neogames and Suomen Pelinkehittäjät r.y., "Suomen pelitoimialan strategia 2010-2015," 2010.
- Okada, E.M., "Justification Effects on Consumer Choice of Hedonic and Utilitarian Goods," *Journal of Marketing Research*, 2005, XLII: February, pp. 43-53.
- Oliver, R.L., "Customer Satisfaction Research," In *The Handbook of Marketing Research: Uses, Misuses, and Future Advances*, R. Grover and M. Vriens (Ed.), 1, SAGE Publications, Inc., Thousand Oaks, California, 2006,
- Park, C.S. and V. Srinivasan, "A Survey-Based Method for Measuring and Understanding Brand Equity and Its Extendibility," *Journal of Marketing Research*, 1994, 31: 2, pp. 271-288.

- Park, C.W. and B.J. Moon, "The relationship between product involvement and product knowledge: Moderating roles of product type and product knowledge type.," *Psychology & Marketing*, 2003, 20: 11, pp. 977-997.
- Park, D.-H. and S. Kim, "The effects of consumer knowledge on message processing of electronics word-of-mouth via online consumer reviews," *Electronic Commerce Research and Applications*, 2008, 7, pp. 399-410.
- Raessens, J. and J. Goldstein, *Handbook of Computer Game Studies*, The MIT Press, Cambridge, Massachusetts, 2005.
- Reichheld, F., "The Microeconomics of Customer Relationships," *MIT Sloan Management Review*, 2006, 47: 2, pp. 73-78.
- Resnick, P., H.R. Varian and G. Editors, "Recommender Systems," *Communications of the ACM*, 1997, 40: 3, pp. 56-58.
- Rogers, E.M., *Diffusion of Innovations*, The Free Press, New York, 1983.
- Rossiter, J. and L. Percy, *Advertising and Promotion Management*, McGraw, New York, 1987.
- Royse, P., J. Lee, B. Undrahbuyan, M. Hopson and M. Consalvo, "Women and games: technologies of the gendered self," *New Media & Society*, 2007, 9: 4, pp. 555-576.
- Rust, R.T., V.A. Zeithaml and K.N. Lemon, "Customer-Centered Brand Management," *Harvard Business Review*, 2004, 82: 9, pp. 10.
- Rutherford, D. and J. Knowles, *Vulcans, earthlings and marketing ROI: getting finance, marketing and advertising onto the same planet*, Wilfried Laurier University Press, 2008.
- Rutter, J. and J. Bryce, "Understanding Digital Games," London, UK, 2006, pp. 272.
- Ryan, R.M. and E.L. Deci, "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," *American Psychologist*, 2000, 55: 1, pp. 68-78.
- Sánchez-Fernández and M.Á. Iniesta-Bonillo, "The Concept of Perceived Value: A Systematic Review of the Research," *Marketing Theory*, 2007, 7: 4, pp. 427-451.
- Shapiro, C. and H.R. Varian, *Information Rules: A Strategic Guide to the Network Economy*, Harvard Business School Pres, Boston, Massachusetts, 1999.
- Siwek, S.E., "Video Games in the 21st Century," Entertainment Software Association, 2007.
- Smith, D., S. Menon and K. Sivakumar, "Online peer and editorial recommendations, trust, and choice in virtual markets.," *Journal of Interactive Marketing*, 2005, 19: 3, pp. 15-37.

- Srinivasan, V., C.S. Park and D.R. Chang, "An approach to the measurement, analysis, and prediction of brand equity and its sources," *Management Science*, 2005, 51: 9, pp. 1433-1448.
- Strahilevitz, M.A. and J.G. Myers, "Donations to Charity as Purchase Incentives: How Well They Work May Depend on What You Are Trying to Sell," *Journal of Consumer Research*, 1998, 24: March, pp. 434-446.
- Susarla, A., A. Barua and W.A. B., "Multitask Agency, Modular Architecture, and Task Disaggregation in SaaS," *Journal of Management Information Systems*, 2010, 26: 4, pp. 87-117.
- Thomson, M., D.J. MacInnis and C.W. Park, "The Ties That Bind: Measuring the Strength of Consumers's Emotional Attachments to Brands," *Journal of Consumer Psychology*, 2005, 15: 1, pp. 77-91.
- Uemura, M. and T. Iwatani, "History and Development of Game Industry in Japan," *Proceedings of the DiGRA 2007, Situated Play, International Conference*, Tokyo, Japan, 2007,
- Van der Heijden, H., "User Acceptance of Hedonic Information Systems," *MIS Quarterly*, 2004, 28: 4, pp. 695-704.
- Varian, H.R., "Markets for Information Goods," <http://people.ischool.berkeley.edu/~hal/Papers/japan>, 1998.
- Wood, S.L. and J.G. Lynch, "Prior knowledge and complacency in new product learning.," *Journal of Consumer Research*, 2002, 29: 3, pp. 416-426.
- Voss, K.E., E.R. Spangenberg and B. Grohmann, "Measuring the Hedonic and Utilitarian Dimensions of Consumer Attitude," *Journal of Marketing Research*, 2003, XL: August, pp. 310-320.
- Zeithaml, V.A., "Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence," *Journal of Marketing*, 1988, 52: July, pp. 2-22.
- Zeithaml, V.A., M.J. Bitner and D.D. Gremler, *Services Marketing*, McGraw Hill, Singapore, 2006.

## Essay III

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# Digital Game Brand Image Information Influence to the Inexperienced Consumer's Product Evaluation

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## Abstract

*It is widely held that brands positively influence the perceived quality of products. Further, brands act as signals of quality when attribute level data is missing. Hence, brands are often posited to enhance evaluation, particularly among the less experienced consumers. Surprisingly little evidence, however, exists to support these beliefs in the context of digital games, pointing us to wonder the reasoning behind brand investments.*

*In this experimental research, the ideas from the information processing theory of consumer choice by Bettman are used to study the brand influence to consumer evaluations in the context of digital games. The results of this study indicate that evaluation is not greatly biased by the brand image.*

In this paper, we document the results of an experimental study in which brand image's influence to individual beliefs about product's salient attributes is tested in the context of digital games.

There are number of reasons why this exploration is both necessary and timely. Digital game production has grown to a significant software business [14, 46]. Branding has always played a significant role in selling software due to intangibility of the product. Yet, branding has visibly grown to even higher prominence in the game industry. Actually, digital gaming is not just an industry of games, but it has already different brand extensions, such as, movies, toys, and comics. Branding of games holds potential for far reaching societal effects: Digital games impact people's everyday lives by taking increasing amount of time from other activities [20, 30, 40, 43]. They also have been found to have an increasing social effect on our daily behavior [13]. Despite the increasing supply and demand for digital games, there is little research that has focused on the relationship with the brand image and consumer behavior with these products [10].

The remainder of this paper is divided in to five sections. We will begin by introducing our theoretical background. Then, we describe the focus of this study, that is, digital games. We then introduce our research model and the salient attributes of digital games. Following that, we present our empirical study and its results. Finally, we summarize the findings and discuss future research opportunities.

## 1. Introduction

The role of the brand image is to maintain and improve the perceived quality about the product and improve consumer's level of confidence towards its salient qualities. It has been extensively recognized that brand image is an important element as a choice attribute preference for a consumer [33].

Frequently, consumers can not rely on the facts and prior experience about the product while making purchase decisions. They may altogether lack first hand experience with the product class, or their product related knowledge may have become obsolete. Product information readily available may not disclose all the attribute information relevant to populating the consumer's preference structure. Time and budget considerations often discourage search for and retrieval of factual information. Instead, the consumer fills the voids with information drawn from secondary sources. Brand is often held as a prime source for secondary product information. It may signal, for instance, quality of the product, biasing the decision in favor of the product with a positive brand image.

## 2. Theoretical background

### 2.1. Consumer knowledge and choice

Several researchers, such as Bettman and Park [6, 7], Hansen [24], Howard and Sheth [26], Fishbein and Ajzen [2, 3, 22], Foxall [23], and Blackwell et al. [8] have tried to capture individual's decision making behavior from the perspective of cognitive

information processing. Hansen [24] defines a cognitive information process “*as an intellectual sequence of thinking, evaluating, and deciding*”. These processes serve as tools to describe and understand the complex phenomenon of consumer choice.

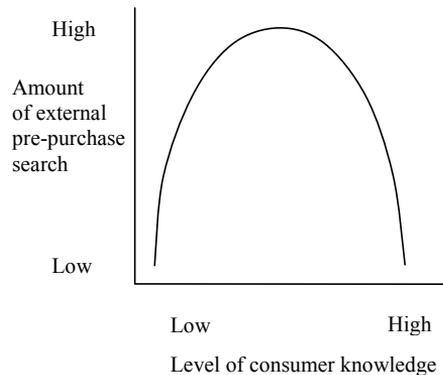
Ajzen and Fishbein [3] depict the essence of that consumer behavior as a choice between different product alternatives. They base their theories to the assumption that behavioral changes are often dominated by cognitive processes and systematic use of available information, even if people often strive to simplify their decision making [26]. However, it is good to keep in mind that consumer decisions are context dependent and subject to, for instance, influence of product type and category on evaluation capabilities [54]. Additionally, individual differences drive consumers to manage their deliberative processes differently, depending on many factors and situations [23]. Decision making involves many environmental factors that lie outside the control of the individual. Foxall [23] maintains that social, business, cultural and economical, factors affect the consumers’ stimuli and attention. When information is received in the mind, it is recorded either to the short or long term memory and processed depending on the consumer prior experiences, beliefs, attitudes, goals and other evaluation criteria. This knowledge is used to choose a response suitable to the context.

By acknowledging these challenges and limitations, we apply the theoretical findings of Information Processing Theory of Consumer Choice [6, 7] and the model of Consumer Knowledge and the Amount of External Pre-Purchase Search [8] as the main underlying theories.

The central thesis of Bettman and Park [7] is that the choice criterion is influenced by prior knowledge and experience (see Figure 1). They depict that people mostly use different types of information and heuristics to compare products at different stages of their choice process [7]. People with little prior knowledge tend to simplify their product evaluation process about the products qualities and decision making due to their lack of experience. While they acknowledge the benefits of additional product information, the perceived high cost of information processing discourages search for and processing of information. In contrast, people with high levels of prior knowledge face low search costs, yet, they tend to shortcut the search process as they rely on previously acquired information. Those people with some prior knowledge have both the ability and motivation to process new information available to them.

Prior experience shapes the decision process through other heuristic effects, as well. For example, consumers with low levels of experience tend to engage in brand comparisons, while more experienced consumers rely more on product attribute information. The heuristic effects combined help us to explain why there is usually no linear association with the need for product information and the amount of external pre-purchase search.

The effects of prior knowledge on consumer decisions have also been documented in relation to technology acceptance. Prior experience influences consumers’ evaluation possibilities [16, 51]: A person experienced with new technologies is less likely to have problems evaluating new technology – based products such as digital games [39].



**Figure 1. Consumers’ Knowledge and the Amount of External Pre-Purchase Search [adapted from 6, 7, 8].**

## 2.2. Brand image and credibility

In this context, we define the brand image effect to the consumer behavior as Leone et al. [38] describes it, referring closely to Keller [32]: “*brand image are customer perceptions of and preferences for a brand, as reflected by the various types of brand associations held in customer’s memory*”. Brand image influence consumers by creating positive or negative associations towards the product [31]. They have a perception about the brand’s quality even though they would not know its detailed features [1].

A well-known brand represents credibility and consistency to the consumer [42]. Erdem and Swait [17] define brand credibility “*as the believability of the product information contained in a brand, which requires that consumers perceive that the brand have the ability and willingness to continuously deliver*

*what has been promised*". It is a belief that the brand is capable and willing to act on its promises [48]. A good brand delivers not only well functioning features but also experiences, feelings and emotions [44].

Erdem et al. [17, 18, 19] depict that brand is an information source to the consumer and it influences perception about the brand. Brand signals the credibility of a product at different attribute levels. A credible brand decreases the perceived risk for making detrimental decisions and, thus, facilitates choice, especially for inexperienced consumers [19]. In particular, positive brand perceptions help to decrease uncertainty related to consumer held beliefs about the salient product attributes.

### 3. Digital games

We define digital games as examples of social systems which have embedded in them information technology [37]. In practice, they are software applications the purpose of which is to entertain their users [28].

There are several different terms used for digital games, mostly depending on the device used for playing the games [40]. Most common among these devices are video (e.g. Atari 2600), computer (PC), console (e.g. Playstation 1-3), mobile (phone), arcade (e.g. Midway), hand-held console (e.g. Nintendo DS) and electronic game (e.g. Nintendo Game&Watch), which all are regularly referred to by industry specialists as game platforms.

Digital games are intangible products, although they are often delivered using some sort of physical medium, like a cartridge or a DVD [34]. Moreover, in the sphere of intangible products, digital games represent information goods [45]. Information goods have been defined as goods than can be digitized, but are not necessarily digitized, like newspapers in paper format [50]. They are like any other information technology, which consumers need to learn and which evoke individual's behavioral feelings [41].

There are a multitude of different types of digital games [43]. We focus on massively multiplayer online role playing games (MMORPG) that represent a good example of digital games, which are rich in different technical features, social interaction and relatively novel revenue models, such as, monthly paid subscription fees. MMORPG is a type of digital role-playing games in which a large number of players interact with one another in a virtual world. In these games, thousands and even millions of people gather together to accomplish tasks and "quests", and to socialize. MMORPGs can be

described as a product that involves a high degree of product complexity, as compared to many casual games, such as, well known puzzle video game Tetris or PC based solitaire games (the most played digital game e.g. in Finland [30]).

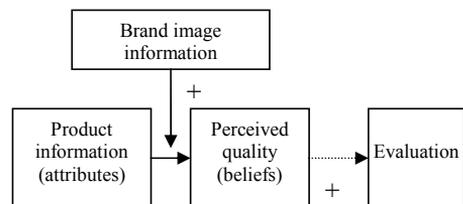
Brand images are widely utilized in the digital games industry. Digital games are commonly identified by their name (e.g. World of Warcraft - WoW, Command & Conquer 1-3, Halo 1-3, Civilization I-IV), or by a well-known game characters (e.g. Mario, Sonic, Pokemón, Max Payne). A game without an identifiable name does not have a meaning to a consumer, but a well-branded game may create strong associations and greater willingness to purchase.

### 4. Research model

The focal idea of a brand is to add value to a product [21]. A way of understanding the meaning of the brand as a value adding element is to compare the non-attribute based component such as the brand image between branded and non-branded products at the individual consumer level [47].

As proposed regularly in the brand related literature, it is assumed that evaluations of also digital games tend to be more positive for branded games than non-branded games. A branded digital game should provide better perceived quality. Thus, there should be more positive evaluation due to the brand effects.

The model presented in the Figure 2 is used as a conceptual framework of this study. The objective is to test the mechanisms that relate and connect brand and beliefs by influencing consumer stimuli in an experimental research setting.



**Figure 2. Consumer Evaluation Model.**

Our research proposition is as follows: the information provided by the brand image positively influences the perceived quality in attribute level, which in turn positively influences the consumer's evaluation of a digital game product.

#### 4.1. Salient attributes of digital games

To investigate the effect of brand image on game evaluations, it is necessary to identify the salient attributes affecting consumer decisions through creating the beliefs about the outcomes of playing the game. Based on different sources, such as, earlier studies, game magazines reviews, internet discussion, and researchers own and fellow researchers' experience, we identified sixteen different constructs, in addition to price, which is looked at separately [5].

The identified constructs can be grouped into 1) game characteristics, 2) motives to play to the game, 3) outcomes of playing, and 4) availability, usefulness and ease of use. These groups, as well as the constructs within each group, are partly overlapping, but yet, clearly identifiable as separate constructs. Particularly one construct, namely the level of enjoyment and fun, could be categorized under any or all of the proposed groups, but is here considered under the motives to play.

**4.1.1. Price of the game.** Price, brand, perceived quality, and choice are related [8, 36]. Accordingly, one of the main objectives of a strong brand is to gain higher *price* (price premium) compared to non-branded products [47]. Game revenues are mainly gained from game sales in which game price is an important factor. However, many of the MMORPGs have a mixed revenue logic. Consumer may purchase a game disc (DVD, Blu-Ray) from retail shop, order the game disc by mail, download the game file over the Internet or play it with a web browser. Sometimes, an additional monthly subscription fee is charged. However, many of the digital online games are available free of charge and the revenues are gained indirectly from other sources such as advertisements.

**4.1.2. Game characteristics.** Some of the game titles are also used to produce movies and vice versa (e.g. Tomb Raider, Star Wars, Indiana Jones). Games are not narrative stories like those that can be read in the books but more similar to story telling in movies [29]. Many games intend to provide a good *story telling*, in which the game player takes the role of an actor.

Aesthetics, visual layout, *graphic style and audio* are fundamental features of a digital game. Originally, decades ago, digital games were text-based but as computer technology has advanced games have used the latest possibilities for creating good 2D and 3D graphics and audio effects to provide an audiovisual experience [12].

There are companies that buy and sell intangible products such as characters, weapons, tools and gold for real money. A service in which somebody else improves your character in a desired level is called

"leveling". These can be used in the game to advance faster and success easier in the game play. Some of the virtual world related services are based on consumer's desire to equip and develop the character by *using real money* (Eve Online, WoW). However, using real money in MMORPGs is often considered as cheating and playing against socially constructed game rules by the most experienced game players [35].

**4.1.3. Motives to play.** The level of enjoyment and *fun* in games can be expressed as flow experience [11, 15]. Hsu and Lu [27] define flow experience of digital games as "*an extremely enjoyable experience, where an individual engages in an on-line game activity with total involvement, enjoyment, control, concentration and intrinsic interest.*". It has been stated in several studies that entertainment oriented technology is adopted and consumed differently than work-oriented technology [16, 25, 28, 49]

Yee [53] depicts that among other motives for playing online games, *discovery and extensive playing possibilities* are one of the most important ones. MMORPGs should provide these product features.

MMORPGs provide a relatively efficient channel to communicate with people with the same interests. *Socializing* in games can occur in a multitude of different ways. For example, people gather to play games at homes, dedicated public places and nowadays virtually connected over the Internet. *Grouping*, chatting, team work, helping others and making friends are components of enjoyment such as any other game features [12, 35]. Friends and community have an important impact to the motivation to play games, possible also an influence to the digital game choice, too [13].

**4.1.4. Outcomes of the game.** The game *character* and its development is one of the most important objectives in MMORPGs. According to Kujanpää et al. [35] it expresses what the game player wants to be, how the player is interconnected with the others and how game character adapts to the game environment.

Yee [53] explains advancement in MMORPGs as progress, power, accumulation and status. It is "*the desire to gain power, progress rapidly, and accumulate in-game symbols of wealth or status.*". Game players may use a significant amount of time (thousands of hours) in developing their character to accomplish quests and tasks and gaining the respect of the others. The result of considerable gaming effort is often expressed as character *experience level*. It is considered an important component of the perceived achievement which is

also an important motivational factor for playing games [35, 53].

When gaining higher experience level and becoming "legendary" via playing together with others, the player receives social status that increases the *fame* of the player in the community [35]. In many games, the level of character reputation is also measured. The better game character is known in the community, the more feeling of achievement the player perceives [35, 53].

#### 4.1.5. Availability, ease of use and usefulness.

A product cannot be chosen if it is not available in one way or another. Srinivasan et al. [47] categorizes *availability* in two levels. Firstly, pull-based availability, in which company continuously intends to improve the brand awareness among the consumers. Secondly, to the push-based availability in which the company delivers the product as efficiently to the delivery channels as possible.

People differ from technology optimists and innovators to people feeling technology anxiety in the way they perceive different computer systems [39]. Digital games should be *easily accessible, easy to learn and easy to use* to reach mass markets. Actually, MMORPGs are assumed to be rather easy to play and with enough time, almost anybody can reach high levels [35]. However, it can be very difficult to master all the game details and different ways of playing.

Furthermore, measuring user acceptance has been found important aspect for better prediction of system design ideas that users are willing to use and find *useful* [16].

## 5. Empirical study

The method of experimenting was selected to study the brand image effect to the consumer's beliefs and attitudes [52]. In an experiment, the independent variables are biased by experimental stimulus which are present or absent [4].

A questionnaire, which is a part of a wider study about consumer beliefs and attitudes, was designed with two different versions. The constructs were operationalized into questionnaire items by using the ideas derived from earlier consumer behavior literature and theories [3, 4, 8].

The questionnaire was evaluated and tested by the researchers and colleagues several times, and a pilot study with 30 students was conducted before the actual experiment. Three questions were modified after the pilot study, but most of the pilot study responses remained usable also in the final study. Seven step scales (1-7) with only the extremes labeled were used to measure the questionnaire items.

For the lack of available space, the full questionnaire is omitted from this paper, but can be acquired from the authors.

The questionnaire included 42 questions, with 81 items in total. Students from Helsinki School of Economics (Helsinki, Finland) were asked to fill in the questionnaire either in one of three class sessions or in the lobby of a university building. The respondents rated the questionnaire relatively easy-to-fill with an mean rate of 5,12 in a scale 1-7.

The unit of analysis is an individual which is considered as an appropriate level in consumer related quantitative research in which brand image related differences are compared [47]. Students fit well into the target group, since their high activity in participating MMORPGs, and considerably amount of time spent with these games [13].

Two groups of subjects approximately equal in characteristics were compared. The experimental group, "branded", filled in a form which included a game description with brand information (World of Warcraft, probably the best known MMORPG played with more than 10 million players world-wide [9]), including brand name and an image of the game package for creating stimulus. The control group, "non-branded", filled in a form with the same game description but without any references to a brand.

Each respondent was randomly given the questionnaire form either "branded" or "non-branded". The questionnaire form started with a description of a MMORPG played on personal computer (PC). The game description was as neutral as possible referring to an imaginative game of the MMORPG genre. The game description was invented using the most common type of ideas from existing games. The game description included the sixteen selected salient attributes of a digital game, excluding price. The price was left out from the description due to our interest in understanding beliefs and attitudes towards expected quality and the game price.

## 6. Results

The experiment was conducted between February and April in 2008. The empirical set of data was processed in several ways by using a statistical application SAS Enterprise Guide, version 4.1. Means procedure and t-tests were used to provide answers to the preliminary assumptions about the difference between the groups of respondents [4]. The data between the groups was analyzed in two ways. Firstly, the beliefs about the salient product attributes were analyzed. Secondly, the level of importance of the criteria to the respondent was ranked.

There were 154 usable responses out of 157 in total (3 uncompleted forms). Fifty-six percent of the respondents were female, and 44% percent were male. The respondents were between 18-54 years, 24.6 years being the average and 23.5 years median. Eighty-four percent of the respondents reported being from Finland and the 16% were from other countries. The average age of starting playing digital games was 9,2 years.

In our randomly selected sample, most respondents knew what a MMORPG is, and most also recognized the name World of Warcraft (WoW). However, only 12 % of the respondents had some kind of experience of this type of games from the past three months. Furthermore, only 9 % reported having experience with WoW.

Many earlier studies have focused on general population or experienced digital game players which could be considered as experts [12, 13, 27, 30, 53]. According to Bettman and Park [7], experienced consumers do brand processing in a different way than the inexperienced consumers. By focusing on inexperienced players we can analyze the beliefs of people who are novice with these types of games and probably considered as a future target group to the game publishers. Thus, we took a subsample from the data considered as inexperienced users, who 1) had no experience on this kind of game from at least last three months; or/and 2) had no experience explicitly with World of Warcraft (WoW) which was used as a reference digital game in this study (See Table 1 for descriptive statistics on the selected subsample of respondents).

**Table 1. Descriptive statistics (inexperienced)**

	Total (N)	Non-Branded (N)	Branded (N)	M * (N)
Respondents (#)	127	60 47%	67 53%	0
Men / Women (#, %)	69/58 127	32 / 28 53 % / 47 %	37 / 30 55 % / 45 %	0
Average age (years)	24.4	24.7	24	0
Median age(years)	23.0	23.0	23.0	0
Min-Max age (years)	19-54	19-54	19-36	0
Age when first time played digital games (years, min-max)	9.18 5-21	9.21 5-20	9.14 5-21	7

\* missing values

The subsample of those inexperienced with MMORPGs in general or WoW in particular is by and large very similar to the whole sample. Only notable difference is, that the youngest subjects (a few who were 18 years old) were those that had played MMORPGs before, and were now excluded from the final sample.

### 6.1. Evaluation criteria

Ajzen and Fishbein [3] suggest that only the salient beliefs should be included in the analysis of attitude formation. The number of salient beliefs is limited by the short term memory capacity. People can simultaneously handle five to nine salient beliefs towards product attributes in a choice situation. However, even as few as two or three beliefs can be used. Moreover, every consumer uses a different set of beliefs for each choice situation.

As expected, the importance of the respondents' evaluation criteria did not differ significantly between the groups ( $p < 0.0001$ ). The combined and rank ordered importance of the evaluation criteria can be seen in the table 2.

**Table 2. Statistics of evaluation criteria**

Variable	Mean	SD	SE	N
Fun	6.36	0.96	0.08	127
A lot to discover and play	5.51	1.33	0.12	127
Easy to start to play	5.37	1.22	0.11	127
Availability	5.34	1.45	0.13	127
Story telling	5.20	1.38	0.12	127
Price	5.12	1.66	0.15	126
Graphics and audio	4.98	1.49	0.13	127
Easy to play	4.48	1.58	0.14	127
Easy to learn to play	4.37	1.76	0.16	127
Experience level	3.75	1.41	0.14	106
Groups	3.55	1.68	0.15	127
Character development	3.52	1.57	0.15	106
Socializing	3.43	1.76	0.16	127
Usefulness	3.40	1.83	0.18	107
Fame	1.94	1.31	0.12	127
Real money usage for success	1.74	1.21	0.11	127

These respondents rank *fun*, *discovery and play* and *easy to start to play* as the three most important salient beliefs criteria for a MMORPG type of game

followed by the *availability*. In contrast, *real money usage* and *fame* are not ranked important as the other beliefs. In contrast to the results of the study by Cole and Griffiths [13], *socializing* component of MMORPG is not valued very high in this sample of relatively inexperienced users. Especially, *fun* as a salient belief is seen important. The relatively low standard deviation of 0.96 (SD), standard error of 0.08 (SE) may indicate quite coherent opinion. All variables were below the commonly accepted statistically significant level of  $p < 0.05$  in social sciences ( $p < 0.0001$ ) [4].

## 6.2. Attribute beliefs

The perceived quality in this study is based on the respondents' beliefs that the digital game contains features that have been described in a game description.

The results of t-test indicate that the only variable to have statistically significant difference between the groups is *fun*, but surprisingly, in favor of non-branded games (see Appendix 1 for full statistical analysis details). This result was unexpected, as the brand image was predicted to create strong positive bias in comparison to non-branded games. Fun is an important factor for game selection; however, in both groups the belief of perceived fun is not highly ranked for this game. The reasons may vary, one being that the brand image enhance the perception that the game is not of a type of game that respondent's would consider in their set of product alternatives.

The features such as *discovery and play*, *easy availability* and *graphics and audio* are ranked high among the respondents. They can be depicted as relatively common features in commercially successful MMORPGs of the past few years. In contrast, *fame* and *usefulness* have been remarkably low ranked features. Probably, inexperienced game players do not value being known in MMORPGs as a motive for choice. In accordance to the purpose of a digital game to entertain the user, usefulness is not considerable important in this kind of software applications.

## 7. Summary and conclusions

The main purpose of this study was to test the influence of brand image on the perceived quality and overall evaluation in the context of digital games in an experimental research setting. The second purpose was to investigate and gather up the relevant attributes of a digital game for further, more detailed investigation.

One of the most important roles of marketing is to influence positively consumer beliefs and attitudes towards brands. The results did not confirm the widely accepted positive effect of brand image to the consumer beliefs towards brands. In this research study, the brand did not significantly bias respondents' cognitive decision making process. This may give some indication that the positive effect of branding is ambiguous in a digital game evaluation processing.

In many cases, consumers may be aware of a brand – as our respondents were mostly aware of WoW – but they have no any information about the brand's salient attributes. It may be complicated for inexperienced consumers to create the salient criteria as an underlying base for the evaluation. The inexperienced players probably had difficulties in evaluating digital game on the attribute level. Without any prior experience, it was probably especially challenging to process new information signaled by the brand image.

As could be expected in the case of a game, the results indicate that perceived *fun* is considered as one of the most important salient beliefs. Moreover, brand image influenced evaluation, but in favor of the non-branded game. The brand image, an official image of game package cover, was not probably perceived as providing “a lot of fun” as the image expressed a rather negative and serious mood. This raises a question for marketing practitioners on how the perceived fun could be achieved accurately by the information provided by the brand image.

In contrast, even while the practice of using real money to equip virtual goods (such as a character, ship or virtual space) as part of the company revenue model is becoming more common (for instance, in games like EVE online and WoW, or virtual worlds, such as Habbo Hotel), it seems that these inexperienced respondents do not value this opportunity. One reason for MMORPGs can be that it is considered as playing against socially constructed rules of game playing. However, customer segmentation and target groups differ greatly between different digital games, like for most other the consumer goods, as well.

The results of this study are a preliminary attempt to understand the factors that influence the brand image of a digital product. The results may, give some indication of what kind of criteria inexperienced game players would use in selecting digital games.

Furthermore, the game type of MMORPG is rather specialized and complex as compared to more simple, highly popular games like solitaires and Tetris. Inexperienced game players are likely to feel

that MMORPG is for “serious gamers” only, and does not fit to their entertainment needs. Then again, as Ajzen and Fishbein [3] depict, the positive or negative beliefs or attitudes towards a product do not necessarily translate into actual behavior. Many times, the decisions depend on the context of choice situation, which is difficult to predict in a general research setting.

We believe, that our study should be of interest to those academics who are interested in the relationship between branding and digital information goods choice. For practitioners, our study may provide new ideas on the kind of salient attributes consumers perceive important for a MMORPG, when reaching for new customer segments. Furthermore, our results encourage a careful evaluation of the brand investments. There are many factors influence consumer decision making, awareness being one of them. If the consumers do not know that the brand exists, it will not be part of the set of product alternatives, either [47].

Future research is needed in order determine the relationship between the brand related information, and the choice of a digital game in more detail. In the next phase of our research, we are looking into brand image effect on differences between game types, as well as experienced game players.

## 8. References

- [1] D. A. Aaker, *Managing Brand Equity*, The Free Press, New York, 1991.
- [2] I. Ajzen, *Attitudes, Personality, and Behavior*, The Dorsey Press, Chicago, Illinois 2005.
- [3] I. Ajzen and M. Fishbein, *Understanding Attitudes and Predicting Social Behavior*, Prentice-Hall, NJ, 1980.
- [4] E. Babbie, *The Practice of Social Research*, Wadsworth Publishing Company, 1998.
- [5] S. B. Bacharach, "Organizational Theories: Some Criteria for Evaluation", *Academy of Management Review*, 14:4 (1989), 496-515.
- [6] J. R. Bettman, *An Information Processing Theory of Consumer Choice*, Addison-Wesley Publishing Company, 1979.
- [7] J. R. Bettman and C. W. Park, "Effects of Prior Knowledge and Experience and Phase of the Choice Process on Consumer Decision Processes: A Protocol Analysis", *Journal of Consumer Research*, 7:3 (1980), 234-248.
- [8] R. D. Blackwell, P. W. Miniard, and J. F. Engel, *Consumer Behavior* Vol. 10, Thomson, South-Western Mason, Ohio, 2006.
- [9] Blizzard, "World of Warcraft Reaches New Milestone: 10 million subscribers", 26th March, 2008, <<http://www.blizzard.com/us/press/080122.html>>.
- [10] J. Bragge and J. Storgårds, "Profiling Academic Research on Digital Games Using Text Mining tools", DiGRA 2007 Conference, Situated Play, Tokyo, 2007.
- [11] J. Chen, "Flow in Games (and everything else)", *Communications of the ACM*, 50:4 (2007), 4.
- [12] D. Choi and J. Kim, "Why People Continue to Play Online Games: In Search of Critical Design Factors to Increase Customer Loyalty to Online Contents", *CyberPsychology & Behavior*, 7:1 (2004), 11-24.
- [13] H. Cole and M. D. Griffiths, "Social Interactions in Massively Multiplayer Online Role-Playing Gamers", *CyberPsychology & Behavior*, 10:4 (2007), 575-583.
- [14] R. W. Crandall and G. J. Sidak, "Video Games, Serious Business for America's Economy.", *Entertainment Software Association*, 2006.
- [15] M. Csikszentmihalyi, *Beyond Boredom and Anxiety*, Jossey-Bassa, San Francisco, 1975.
- [16] F. D. Davis, "Perceived Usefulness, Perceived Ease of use, and User Acceptance of Information", *MIS Quarterly*, 13:3 (1989), 319-340.
- [17] T. Erdem and J. Swait, "Brand Credibility, Brand Consideration, and Choice", *Journal of Consumer Research*, 31:1 (2004), 191-198.
- [18] T. Erdem and J. Swait, "Brand Equity as a Signaling Phenomenon", *Journal of Consumer Psychology*, 7:2 (1998), 131-157.
- [19] T. Erdem, J. Swait, and A. Valenzuela, "Brands as Signals: A Cross-Country Validation Study", *Journal of Marketing*, 70:January (2006), 34-49.
- [20] ESA, "Essential Facts About the Computer and Video Games Industry 2007", *Entertainment Software Association*, 2007.
- [21] P. H. Farquhar, "Managing Brand Equity", *Marketing Research*, 1:September (1989), 24-33.
- [22] M. Fishbein and I. Ajzen, *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*, Addison-Wesley, 1975.
- [23] G. R. Foxall, *Understanding Consumer Choice*, Palgrave Macmillan, New York, 2005.

- [24] F. Hansen, "Psychological Theories of Consumer Choice", *Journal of Consumer Research*, 3:December (1976), 117-142.
- [25] M. B. Holbrook and E. C. Hirschman, "The Experiential Aspects of Consumption: Consumer Fantasies, Feelings, and Fun", *The Journal of Consumer Research*, 9:2 (1982), 132-140.
- [26] J. A. Howard and J. N. Sheth, *The Theory of Buyer Behavior*, John Wiley & Sons, Inc., New York, 1969.
- [27] C.-L. Hsu and H.-P. Lu, "Consumer Behavior in Online Game Communities: a Motivational Factor Perspective", *Computers in Human Behavior*, 23:2007 (2005), 1642-1659.
- [28] C.-L. Hsu and H.-P. Lu, "Why Do People Play On-line Games? An Extended TAM with Social Influences and Flow Experiences", *Information & Management*:41 (2004), 853-868.
- [29] J. Juul, "Games Telling Stories?," *Handbook of Computer Games* (J. Raessens and J. Goldstein, eds.), The MIT Press, Cambridge, Massachusetts, 2005.
- [30] K. P. Kallio, K. Kaipainen, and F. Mäyrä, "Gaming Nation? The Pilot Case Finland: International Study of Games Cultures", vol. *Hypermedia Laboratory Net Series 14*, University of Tampere, Hypermedia Laboratory, Tampere, 2007.
- [31] J.-N. Kapferer, *The New Strategic Brand Management*, Kogan Page, 2004.
- [32] K. L. Keller, "Conceptualizing, Measuring, and Managing Customer-Based Brand Equity", *Journal of Marketing*, 57:January (1993), 1-22.
- [33] K. L. Keller and D. R. Lehmann, "Brands and Branding: Research Findings and Priorities", *Marketing Science*, 25:6 (2006), 740-759.
- [34] O. Koppius, "Dimensions of Intangible Goods", *Proc. 32nd Hawaii International Conference on Systems Sciences* (Hawaii, USA, 1999).
- [35] T. Kujanpää, T. Manninen, and L. Vallius, "What's My Game Character Worth - The Value Components of MMOG Characters", *DiGRA 2007 Conference*, Situated Play, Tokyo, Japan, 2007.
- [36] Z. V. Lambert, "Price and Choice Behavior", *Journal of Marketing Research*, 9:February (1972), 35-40.
- [37] F. Land, "The Information Systems Domain", *Information Systems Research* (R. Galliers, ed., Alfred Waller Ltd., Warwick, 1992).
- [38] R. P. Leone, V. R. Rao, K. L. Keller, A. M. Luo, L. McAlister, and R. Srivastava, "Linking Brand Equity to Customer Equity", *Journal of Service Research*, 9:November (2006), 125-138.
- [39] A. Parasuraman, "Technology readiness Index (TRI)", *Journal of Service Research*, 2:4 (2000), 307-320.
- [40] J. Raessens and J. Goldstein, *Handbook of Computer Game Studies*, The MIT Press Cambridge, Massachusetts, 2005.
- [41] E. M. Rogers, "New product adoption and diffusion", *Journal of Consumer Research*, 2:March (1976).
- [42] J. Rossiter and L. Percy, *Advertising and Promotion Management*, McGraw, New York, 1987.
- [43] J. Rutter and J. Bryce (eds.), *Understanding Digital Games*, Sage Publications, London, UK, 2006.
- [44] B. H. Schmitt, "Experiential Marketing", *Journal of Marketing Management*, 15 (1999), 53-67.
- [45] C. Shapiro and H. R. Varian, *Information Rules: A Strategic Guide to the Network Economy*, Harvard Business School Press, Boston, Massachusetts, 1999.
- [46] S. E. Siwek, "Video Games in the 21st Century", *Entertainment Software Association*, 2007, p. 36.
- [47] V. Srinivasan, C. S. Park, and D. R. Chang, "An approach to the measurement, analysis, and prediction of brand equity and its sources", *Management Science*, 51:9 (2005), 1433-1448.
- [48] J. Sweeney and J. Swait, "The Effects of Brand Credibility on Customer Loyalty", *Journal of Retailing and Consumer Services*, 15 (2008), 179-193.
- [49] H. Van der Heijden, "User Acceptance of Hedonic Information Systems", *MIS Quarterly*, 28:4 (2004), 695-704.
- [50] H. R. Varian, "Markets for Information Goods", <http://people.ischool.berkeley.edu/~hal/Papers/japan> (1998).
- [51] A. Venkatesh, "Computers and Other Interactive Technologies for the Home", *Communications of the ACM*, 39:12 (1996), 47-54.
- [52] K. Weick, "Theoretical Assumptions and Research Methodology Selection", *Research Issues in IS Research* (McFarlan et al., ed., 1986).
- [53] N. Yee, "Motivations of Play in Online Games", *Journal of CyberPsychology and Behavior*, 6 (2006), 772-775.
- [54] V. A. Zeithaml, M. J. Bitner, and D. D. Gremler, *Services Marketing Vol. 4*, McGraw Hill, Singapore, 2006.

**Appendix 1. Beliefs on the digital game's perceived quality on attribute level (t-test, rank ordered by mean)**

Variable		N	Mean	SD	SE	t Value	Pr >  t	Direction *	Statistically significant difference
A lot to discover and play	Branded	67	5.99	0.93	0.11	52.72	<.0001	NEGATIVE	NO
	Non Branded	60	6.13	0.95	0.12	50.16	<.0001		
	Difference		-0.15	0.94	0.17	0.89	0.3754		
Availability	Branded	67	5.72	1.14	0.14	41.08	<.0001	SLIGHTLY NEGATIVE	NO
	Non Branded	60	5.75	0.91	0.12	48.75	<.0001		
	Difference		-0.03	1.04	0.18	0.18	0.856		
Graphics and audio	Branded	67	5.13	1.10	0.13	38.22	<.0001	POSITIVE	NO
	Non Branded	60	4.87	1.27	0.16	29.72	<.0001		
	Difference		0.27	1.18	0.21	-1.27	0.2051		
Groups	Branded	67	4.76	1.05	0.13	37.27	<.0001	SLIGHTLY NEGATIVE	NO
	Non Branded	60	4.82	1.08	0.14	34.50	<.0001		
	Difference		-0.06	1.06	0.19	0.29	0.7695		
Character development	Branded	54	4.74	1.53	0.21	23.89	<.0001	POSITIVE	NO
	Non Branded	52	4.50	1.64	0.23	19.80	<.0001		
	Difference		0.24	1.59	0.31	-0.78	0.4362		
Socializing	Branded	67	4.64	1.56	0.19	31.04	<.0001	NEGATIVE	NO
	Non Branded	60	4.98	1.08	0.14	35.70	<.0001		
	Difference		-0.34	1.36	0.24	1.42	0.1594		
Easy to start to play	Branded	67	4.55	1.47	0.18	25.35	<.0001	SLIGHTLY NEGATIVE	NO
	Non Branded	60	4.63	1.18	0.15	30.46	<.0001		
	Difference		-0.08	1.34	0.24	0.34	0.7341		
Real money usage for success	Branded	55	4.42	1.62	0.22	20.25	<.0001	SLIGHTLY POSITIVE	NO
	Non Branded	52	4.38	1.78	0.25	17.72	<.0001		
	Difference		0.04	1.70	0.33	-0.10	0.9189		
Easy to learn	Branded	67	4.30	1.38	0.17	25.46	<.0001	NEGATIVE	NO
	Non Branded	60	4.47	1.42	0.18	24.37	<.0001		
	Difference		-0.17	1.40	0.25	0.68	0.5004		
Easy to play	Branded	67	4.30	1.21	0.15	29.17	<.0001	SLIGHTLY NEGATIVE	NO
	Non Branded	60	4.38	1.38	0.18	24.62	<.0001		
	Difference		-0.08	1.29	0.23	0.37	0.7122		
Experience level	Branded	54	4.30	1.45	0.20	21.79	<.0001	POSITIVE	NO
	Non Branded	52	4.06	1.47	0.20	19.85	<.0001		
	Difference		0.24	1.46	0.28	-0.84	0.4026		
Price	Branded	67	4.04	1.67	0.20	19.78	<.0001	NEGATIVE	NO
	Non Branded	60	4.17	1.60	0.21	20.22	<.0001		
	Difference		-0.13	1.64	0.29	0.42	0.6761		
Story telling	Branded	67	4.01	1.55	0.19	21.17	<.0001	NEGATIVE	NO
	Non Branded	60	4.43	1.33	0.17	25.77	<.0001		
	Difference		-0.42	1.45	0.26	1.62	0.1076		
Fun	Branded	67	3.91	1.69	0.21	18.99	<.0001	NEGATIVE	YES
	Non Branded	60	4.58	1.49	0.19	23.86	<.0001		
	Difference		-0.67	1.60	0.28	2.37	0.0192		
Usefulness	Branded	55	2.71	1.34	0.18	14.96	<.0001	NEGATIVE	NO
	Non Branded	52	3.13	1.46	0.20	15.53	<.0001		
	Difference		-0.43	1.40	0.27	1.57	0.1187		
Fame	Branded	67	2.63	1.32	0.16	23.74	<.0001	NEGATIVE	NO
	Non Branded	60	2.77	1.67	0.22	12.83	<.0001		
	Difference		-0.14	1.50	0.27	0.53	0.6004		

\*Lower or equal than 0.10 difference in mean is considered as slightly negative or slightly positive.

## Essay IV

Storgårds, J.H., Tuunainen, V.K., and Öörni, A. (2010) "Influence of the Brand Image on Product Evaluation in the Context of Digital Games"  
"Unpublished manuscript"

## **Influence of the Brand Image on Product Evaluation in the Context of Digital Games**

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### **Abstract**

*Software industry is in the habit of strong branding, for software lacks physical shape that would enable customers to observe its characteristics to form attitudes towards purchasing the product. It is widely held that brand is the tool to influence consumer attitude towards the product, for brands can favorably bias the perceived quality of products. This mechanism suggests that brands may covertly influence consumer choice, without the consumer being aware of such influence. Contemporary consumer psychology suggests that brands may also influence behavior through framing, and that a surprisingly wide array of behaviors can be influenced. In this study, we test covert brand influences on digital game evaluation in an experimental research setting. We found no attribute bias effect on perceived product quality. However, game brand exerted a strong framing effect. Contrary to conventional wisdom game brands may instruct consumers more about how to choose than what to choose, even though, these aspects of choice may often be closely related. The results of our study indicate that in addition to innovative product development, brands and brand management are of great importance also in the context of digital products.*

# 1 Introduction

Branding of digital goods and services is a topic of great practical as well as academic interest, for digital goods and services do not have either physical form or packaging that would give them visibility on the market, and enable consumers to deduce product characteristics by observation. Also, the software market is special in the sense that a growing share of products available to the consumer is either weakly branded under some umbrella category, such as Open Source Software (OSS) or altogether non-branded freeware not included in the OSS. Thus, the influence of brand image in branded versus unbranded product comparison is very relevant in the case of digital products.

The American Marketing Association (see e.g. AMA 2008) defines a brand as “a name, term, sign, symbol or design or a combination of them, which identifies the goods and services of one seller or a group of sellers and differentiates them from those of competitors.” Brand building is a process in which the producer takes different marketing related actions that are expected to generate positive perceptions, beliefs, attitudes, and willingness to purchase. Brands should, thus, create financial value through increased sales (Keller et al. 2006). Furthermore, brands are expected to have primarily overt influence on consumers.

Digital game production has grown to a significant software business (Crandall and Sidak 2006; Siwek 2007) and brands are widely utilized in the digital games industry. Branding is an essential part of well-known and commercially successful digital games, such as, World of Warcraft (henceforth WoW). WoW is one of the most successful MMORPG (Massively Multiplayer Online Role Playing Game) PC games with more than 11.5 million subscribing customers. Such a success has required massive investments in both product development and brand building.

Massively multiplayer online role playing games, such as WoW, serve as good example of digital games, which are rich in technical features and social interaction. MMORPG is a type of digital role-playing game in which a large number of players interact with one another in a virtual world. In these

games, thousands and even millions of people gather together online to accomplish tasks or “quests” and to socialize. MMORPGs typically incorporate relatively novel revenue models, for example, monthly paid subscription fees or sales of virtual goods.

Despite the massive investments in branding in the games industry, the influence of a brand on consumers’ choice of digital games is still not fully understood. In particular, brand influence on attribute importance in digital games evaluation remains a white spot on the map. In this study, we seek to chart the influence of a brand on digital games evaluation. Our research question is as follows: how do brands influence consumer evaluation of digital games?

We adopt the information processing perspective, and test the capacity of a brand to influence digital game evaluations through two established mechanisms of attitude change: changing beliefs and changing attribute importance (Blackwell, Miniard et al. 2006, p. 407). We test these influences in a laboratory setting in which the participants evaluate games while brand information is either present or absent. Our findings suggest that brand may influence game evaluation more by changing the consumer’s attribute importance, that is, by changing the framing of the decision, rather than by biasing the user’s beliefs or quality perceptions.

## **1. Theoretical background**

Brand is a *“bundle of meanings - both rational and emotional - in the mind.”* (Rutherford and Knowles 2008, p. 12). The central idea of creating a brand is to try to add value to a product (Farquhar 1989). Sources of brand value has been of great interest to the academia and the practitioners alike (see e.g. Villanueva and Hanssens 2007, Keller and Lehmann 2006, Leone, Rao et al. 2006). Brand has, according to the contemporary literature, three main mechanisms of value creation, which have been connected to consumer purchase decisions (Srinivasan, Park et al. 2005): A brand may 1) increase product awareness, 2) bias attribute perceptions favorably, and 3) create intrinsic value for the customer, as is the case with many luxury products.

A brand uniquely identifies the product and is a central tool for creating product awareness. Consumers can choose only between those products they know to exist, and the brands that are easily accessed in one's memory are more likely to be included in the consideration set than brands with little awareness. Nedungadi (1990) suggests that brand awareness is a strong driver of brand purchase. High brand awareness may also increase brand choice probability through encouraging the trade to stock the brand, which increases its availability (Srinivasan, Park et al. 2005).

Park and Srinivasan (1994) suggest two mechanisms through which brands may influence the incremental choice probability of the product: incremental preference due to enhanced attribute perceptions and incremental non-attribute preference. Enhanced attribute perceptions are created by brand associations related to product attributes, which operate by favorably biasing attribute perceptions. Consumers most susceptible to such influence are the ones with modest experience. They have a degree of brand knowledge, implied by the brand associations, yet their limited product category knowledge cannot shield them from product attribute associations and the resulting biasing effect of the brand (see e.g. Fiske, Luebbehusen et al. 1994). Non-attribute preference refers to the intrinsic value a brand brings to the consumer. It is created by brand associations unrelated to product attributes. Such associations are often related to brand personality (Aaker 1991), the consumer's self-conception, and the usage situation (Srinivasan, Park et al. 2005). Out of the three brand influences discussed so far only enhanced attribute perceptions covertly modify consumers' preference structures, hence, this is the brand influence found in contemporary brand literature that falls in our focus. In addition, we have found in consumer psychology literature another brand related phenomenon, which is likely to covertly influence consumer preferences as well: brands have been found to frame many behaviors. We will next discuss the phenomenon and its likely impact on consumer choice.

Recent reports in consumer psychology have documented covert brand influences on several human behaviors. Fitzsimons et al. (2008) report that in controlled experiments participants exposed to Apple logos behaved more creatively than IBM primed and controls. They also found that Disney primed

participants behaved more honestly than E! (an entertainment news tv channel) primed participants and controls. Chen-Bo and DeVoe (2010) document how unconscious exposure to fast-food symbols influences behavior outside the eating context. They found that non-conscious exposure to fast-food symbols automatically increased participants' reading speed, thinking about fast food increased their preferences for time-saving products, and mere exposure to fast-food symbols increased their willingness to save time and led them to prefer immediate gain over greater future return. These observations imply that a brand may also have other value creation mechanisms, in addition to those listed by Srinivasan et al. (2005). These covert influences are based on the ability of brand imagery to signal about the expected behavior in the given context. The consumer associates the brand imagery with certain behaviors without being aware of it. Hence, we hypothesize that brand imagery may signal how to choose, rather than what to choose. In other words, we believe that a brand may influence consumers' decision framing by tacitly influencing the relative weights given to the product attributes in product evaluation. Consumers must have some previous exposure to the brand, for the brand associations to develop. Therefore, well-known brands are the most likely ones to influence behavior.

As previously discussed, there are two covert mechanisms through which brand image may influence digital games evaluation. Which mechanism influences digital games evaluation the most is an empirical question. We will thus test the capacity of brand to affect product attitudes through two established mechanisms of product evaluation: changing beliefs and changing attribute importance (Blackwell, Miniard et al. 2006, p. 407). Next, we will first look at these mechanisms of product attitude change mechanisms in the frame of ideal-point multi-attribute attitude model, after which we will discuss the role of brand in these changes.

## **2 Modeling Brand Influences on Digital Games Evaluation**

Several authors (see e.g. Howard and Sheth 1969; Fishbein and Ajzen 1975; Hansen 1976; Bettman 1979; Ajzen and Fishbein 1980; Bettman and Park 1980; Ajzen 2005; Foxall 2005; Blackwell, Miniard et al.

2006) have captured the consumer's decision making behavior as cognitive information processing. Hansen (1976) characterizes the cognitive information process as an intellectual sequence of thinking, evaluating, and deciding. These processes serve as tools for describing and understanding the complex phenomenon of consumer choice (Ballantyne, Warren et al. 2006). The consumer choice process is largely modeled in terms of intentional behavior. Ajzen and Fishbein (1980) suggest that the essence of choice lies with the concept of attitude, which is the weighted sum of consumer perceptions about how favorable the outcomes of an act are. The lucrative promise of the attitude concept is that consumer behavior can be altered through changing perceptions, through persuasion. Information drives change in one's behavior.

Whereas most modern attitude models of social behavior, such as the Theory of Reasoned Action (TRA) (Ajzen and Fishbein 1980) and the Theory of Planned Behavior (TPB) (Ajzen 2005) seek to predict overt behavior through measuring beliefs about the outcomes of an action, Ideal-Point Multiattribute Attitude Model seeks to position product attitudes in relation to an "ideal product", which perfectly matches the consumer preferences. It has become a central tool of understanding consumer attitudes towards products (Blackwell, Miniard et al. 2006, pp. 404-405). Under the ideal-point model, consumers report where they believe the "ideal" product and the products of interest are located in the salient attribute space (Holbrook 1999). The closer a product's actual rating is to the ideal rating, the more favorable the attitude. Published digital games evaluations exemplify the idea of using ideal product as the yardstick: A game that scores full 100 out of 100 points matches perfectly with the "ideal" product. While the ideal-point model, as such, is not in focus of our study, it suggests a concise set of mechanisms through which consumer choice can be influenced. We will next review these mechanisms and reason how the covert brand influences relate to them.

## **2.1 Changing Attitude towards a Product**

There are three basic ways to influence consumer attitudes towards products: 1) changing beliefs, 2) changing attribute importance, and 3) changing ideal points (Blackwell, Miniard et al. 2006, p. 407).

Changing beliefs and attribute importance are effects that can be realistically achieved with branding while brands are unlikely to influence the ideal points. Changing the ideal point means, in effect, that people change their minds about the desirability of certain outcomes of using the product. Arguments to the effect that violent video games cause aggression, for example, may influence the perceived desirability of violence in video games. In terms of the multiattribute model, such arguments may change the image of the “ideal product”, which is used as a reference against which actual choice alternatives are evaluated. Changing the ideal point lies typically in the domain of verbal communication, outside the influence of brand images. Changing beliefs, on the other hand, is in the core of brand management.

### **2.1.1 Changing beliefs**

Any belief change in the direction of the ideal point should make the product more attractive to the consumer (Blackwell, Miniard et al. 2006, p. 407). While verbal communication is often used to such effect, beliefs can be influenced with a brand as well. Srinivasan et al. (2005) argue that the attribute-based component of a brand is created by brand associations related to product attributes resulting in favorably biased attribute perceptions. Thus, positive brand image, also one related to a digital game, may result in more favorable product beliefs than “objective” attribute values would warrant. Accordingly, we can formulate our first research hypothesis as follows:

*H1: A positive brand image biases beliefs about a digital game favorably.*

Brand does not influence all consumers equally. People mostly use different types of information and decision rules, such as heuristics, to compare products or services at different stages of their choice process. People with little prior knowledge tend to simplify their product evaluation and decision making processes due to their lack of experience. While they acknowledge the benefits of additional product information, the perceived high cost of information processing (e.g. in terms of time spent) discourages search for and processing of additional information. In contrast, people with high levels of prior knowledge face low search costs, yet they tend to shortcut the search process as they rely on previously

acquired information. Those with some prior knowledge are expected to have both better ability and motivation to process new information available to them. (Bettman and Park 1980)

Attribute and brand related information is processed differently, and both experience with the product class and brands within it influence decision making. Brands are more often used to create preferences for products whereas attribute-based information is used to make evaluations on certain attributes (Johnson and Russo 1981). Those consumers higher on expertise are better disposed to acquire and judge external information. Selnes and Howell (Selnes and Howell 1999) suggest that product expertise reduces reliance on written cues and increases the amount of inference drawn from sensory cues (e.g. visual or auditory cues). Spence and Brucks (Spence and Brucks 1997) report that the experienced consumers select fewer, but more diagnostic, information inputs and are more consistent when evaluating non-quantified inputs. Expertise has also been related to the content and organization of knowledge (Mitchell and Dacin 1996) so that the experienced consumers are expected to have better organized and more densely populated knowledge structures.

To summarize, brand image is unlikely to influence all consumers equally. We can distinguish experienced consumers from inexperienced ones in three ways. Firstly, the experienced consumers possess superior knowledge, which decreases the need for search. Secondly, the experienced consumers have superior ability to process and encode new product or service related information, which may in turn increase the need to search for and learn about new alternatives. Thirdly, the experienced consumers are better able to pay attention to relevant information and ignore irrelevant information by using their knowledge on the product class (Johnson and Russo 1981). Even though consumers with experience with a given product or service tend to engage in brand comparisons rather than product attribute level comparisons (Bettman 1979), their superior knowledge provides them some immunization against the brand bias effect. We hence hypothesize that expertise moderates the belief biasing capacity of a brand, and that novice consumers are likelier to succumb to it.

*H2: The brand bias effect is modified by the game playing experience.*

## **2.1.2 Changing attribute importance**

Changing attribute importance is another means to influence product attitudes. While Blackwell et al. (2006) posit that, as a general rule, changing an attribute's importance is more difficult to accomplish than changing beliefs about a product or a service, MacKenzie (1986) demonstrates the potential to enhance the salience of an attribute by influencing an individual's attention. The more time a consumer has to think about an advertisement's predominant attribute, the more attention is given to that attribute, in this way influencing its importance (MacKenzie, 1986).

The power of visuals, such as, brand images in printed advertisements, to change consumer attitudes without changing initial beliefs has been conventionally attributed to affective influences. Sujan (1985) suggested that seeing a pictorial stimulus may cause spontaneous generation of an affect, or an emotion, that is associated with the particular cognitive category employed during stimulus categorization. Mitchell (1986) reported that positive and negative affect-laden pictures can alter subjects' brand attitudes without affecting their product attribute beliefs. Accordingly, Stuart, Shimp, and Engle (1987) interpreted their findings to indicate that such effects involve a direct transfer of affect from the picture to the product, as suggested by classical conditioning principles. For example, using music or images as an unconscious and automatic affect generator can bias consumers towards positive or negative attitudes in a product evaluation situation (Allen and Madden 1985; Stuart, Shimp et al. 1990). Furthermore, Grossman and Till (1998) reported that attitudes formulated through classical conditioning are quite enduring.

More recent research shows that well-known brands can influence not only our emotions but also overt behaviors without us noticing such effects (Chen-Bo and DeVoe 2010), as we described earlier with examples of fast-food symbols (Chen-Bo and DeVoe, 2010) and Apple logos (Fitzsimons et al., (2008). In terms of rational behavior it makes little sense that seeing a logo would influence preferences for digital games. Preferences are assumed to be fairly stable personal properties. Due to logos being an unlikely source of influence, hence, consumers are disposed to misattribute their influence to product characteristics. Subconscious influences of a brand on product choice are not limited to logos. Minute

variations in the coloring of a soda can, for example, have been reported to influence the perceived flavor of its content (Gladwell 2005, p. 163). Such misattribution of product information, or confusion about the source of influence, is a known anomaly related to verbal reports on mental processes (Nisbett and Wilson 1977). The allure of using a brand to communicate attribute importance is that consumers may find it difficult to shield from such influence, for decision framing is particularly susceptible to biases caused by non-conscious influences (see e.g. Huber 1982).

Tversky and Kahneman (1973) documented a psychological mechanism people frequently use for judging probability or frequency. People tend to reduce the difficult task of judging by using a limited number of heuristics. Availability heuristic refers to people using subconsciously ease of recall as an indication of the probability or frequency of an event. Probability and frequency judgments can, thus, be biased by the availability of their instances for construction and retrieval. A vast literature on availability heuristic has demonstrated the heuristic affecting judgments at large, not only judgments of frequency and probability (see e.g. Hensher, 2010, Drolet 2009). The bias tends to stick, for once the idea has invaded the mind it primes information compatible with it, thus causing what is known as confirmation bias (Wason 1960). Confirmation bias refers to ways in which people avoid rejecting their initial beliefs. Availability heuristic plays the part in confirmation bias through priming, by providing biased early estimates for beliefs.

Priming refers to the capacity of our past sensations to influence subsequent behaviors even if the stimuli and the behaviors are unrelated. Priming happens, for example, when a person reads a list of words including the word apple, which increases the probability that she will subsequently answer “apple” when asked to name a fruit. In priming, the sheer availability of things in mind influences subsequent behavior. Priming operates through learned associations. While studying semantic priming and retrieval from lexical memory, Neely (1977) found support for fast automatic inhibitionless spreading-activation process that controls our cognitions in alongside the slow limited-capacity conscious-attention mechanism as theorized by Posner and Snyder (1975). Priming effects have been

found both strong and long lasting (Tulving, Schacter et al. 1982). Even though priming effects are stronger when the stimuli are in the same modality - visual priming works best with visual cues for example - priming also occurs between modalities. Brand exposure, for example, is not limited to brand recognition. It has been reported to influence a wide array of subsequent behaviors, including decision making, as noted before (Fitzsimons, Chartrand et al. 2008; Chen-Bo and DeVoe 2010). Thus, we hypothesize that brand images may frame game evaluation through priming the criteria to be used in evaluation.

*H3: A brand influences attribute importance in digital games evaluation.*

As priming operates through associations, its effect is modified by past exposure to the brand image and the product. Previous reports on brand related subliminal priming effects have focused on brands that have become household names. Yet, brand images may operate through more general association as well. This is known to the brand designers. Color related associations, for example, that dark red is often associated with aggression or passion, remain an active topic among the design practitioners. Thus, brand images may carry universal, cultural, and direct product experience related associations. In this study, we focus on product experience related associations. Some exposure to the brand image is necessary to develop such associations and, thus we will test the influence of brand imagery on consumers who have been exposed to the brand in the past. Once exposed to brand imagery, the degree of exposure does not modify the attribute importance bias effect. While the experienced consumers are better able to pay attention to relevant information and ignore irrelevant information by using their knowledge on the product class (Johnson and Russo 1981), the influence of brand imagery is based on subliminal associations rather than on brand imagery informing the consumer. Hence, we hypothesize that expertise does not block the influence of brand imagery and, the experienced and the moderately experienced consumers are being influenced alike.

*H4: Consumer experience does not modify the influence of a brand on attribute importance.*

### **3 Empirical study**

Earlier studies on digital games have focused either on the general population (Kallio, Kaipainen et al. 2007) or on experienced digital game players (Choi and Kim 2004; Hsu and Lu 2005; Yee 2006; Cole and Griffiths 2007). However, as discussed in the previous section, the experienced consumers have been found to do brand processing in a different way than the inexperienced consumers (Bettman and Park, (1980).

Hence, the objective of our empirical study is to test the mechanisms that relate and connect product information, brand image, experience and beliefs by influencing consumer stimuli in an experimental research setting.

#### **3.1 Instrument development**

Game evaluation is largely thought of as a cognitive process, which results in a judgment about the product quality (Gardial, Clemons et al. 1994) of the game. A common way to measure and evaluate a game's quality in the digital game industry is to rate it with a score between 0 and 100. There are a number of internet sites in which industry experts as well as consumers can review and evaluate different games (e.g. [www.metacritic.com](http://www.metacritic.com)). For instance, in a sample of 4078 game reviews published in a Finnish game magazine in the past 15 years, the average score for game reviews was 79 and the median was 82. Further, 80 per cent of the reviews were between 65 and 91 points. Three available reviews on WoW display an average of 91.7 points, which tells us that WoW is considered to be a rather high quality game by the game industry professionals.

Ajzen and Fishbein (Ajzen and Fishbein 1980) suggest that only the salient beliefs should be included in the analysis of attitude formation, as the number of salient beliefs is limited by the short term memory capacity of an individual. Moreover, every consumer uses a different set of beliefs for each choice situation (Ajzen 2005). To investigate the effects of brand image and earlier experience of the users on game evaluations, it is necessary to identify the salient attributes that affect the consumer decision. Based

on different sources, including earlier research, game magazine reviews and internet discussions, we identified sixteen different attributes. These attributes can be grouped into 1) perceived price of the game, 2) characteristics of the game, 3) motives to play to the game, 4) outcomes of playing, 5) availability of the game, and 6) ease of playing. These groups, as well as the attributes within each group, are conceptually partly overlapping, but yet, clearly identifiable as separate constructs.

The constructs were operationalized into questionnaire items by using the ideas derived from earlier consumer behavior literature and theories (Ajzen and Fishbein 1980; Babbie 1998; Blackwell, Miniard et al. 2006). The questionnaire form included questions about beliefs, self-confidence about the response, and the importance of the criteria for the selected game attributes (see Appendix 1 for more details)

The questionnaire form started with a description of a MMORPG played on personal computer (PC). The game description was as neutral as possible, referring to a fictitious game on the MMORPG genre. The game description was created by using the most common ideas from existing games and included the sixteen selected salient attributes for digital games, excluding the real market price.

**Prior experience or product knowledge** can be classified into three distinct sources; *product experience*, *objective knowledge* and *subjective knowledge* (Bettman and Park 1980; Brucks 1985). Product experience was measured with a question on respondents' earlier experience with WoW or similar kinds of games. Objective knowledge refers to what an individual actually knows and was measured by asking the respondents about the specific attributes of the product. Subjective knowledge was measured by asking the respondents how confident they were about their answer on beliefs about the product attributes.

For the selected game attributes (see Table 1.), we used Likert scale from 1 to 7 with only the extremes labeled (Totally disagree – Totally Agree). For the overall evaluation of the game we adapted the game industry norm of score between 0 and 100.

Table 1. Summary of the game attributes used in this study.

<i>Attribute</i>	<i>Variables</i>
Price	Perceived price
Game characteristics	Story telling Graphic style and audio Use of real money Discovery
Motives to play	Fun Usefulness Socializing Group forming
Outcomes of the play	Character development Experience Fame
Distribution	Availability
Ease of playing	Ease of starting to play Ease of learning to play Ease of playing

**Perceived price of the game.** Objective price, *perceived price*, brand, perceived quality, and choice are interrelated (Lambert 1972; Blackwell, Miniard et al. 2006). Consumers have often trouble remembering the actual price of a product and rather encode it as “cheap” or “expensive” (Zeithaml 1988, p. 10). Accordingly, one of the main objectives of a strong brand is to increase the consumers’ willingness to pay a higher *price* (price premium), as compared to other brands or non-branded products (Srinivasan, Park et al. 2005).

**Characteristics of the game.** Games typically have similar story telling style as movies do (Juul 2005). One purpose of many games is to tell a good *story*, in which the game player takes the role of an actor.

Aesthetics, visual layout, *graphic style and audiovisual effects* are fundamental features of a digital game. Originally, some decades ago, digital games were text-based, but as computer technology has advanced, the game designers have been able to utilize the state-of-the-art tools for creating appealing 2D

and 3D graphics and audio effects, and providing an engaging audiovisual experience (Choi and Kim 2004).

There are individual players and companies that buy and sell digital products needed in different games (e.g. game characters, weapons, tools and gold) for real currency. A service in which somebody else improves your game character to a desired level is called “leveling”. Some gamers use these to advance faster and succeed more easily in the game play. Some of the services related to a virtual world are based on consumers’ desire to equip and develop their character by *using real money* (possible e.g. in Eve Online and WoW). Nonetheless, using real money in MMORPGs is often considered as cheating and playing against socially constructed game rules by the most experienced game players (Kujanpää, Manninen et al. 2007).

*Discovery* in MMORPGs is about finding and knowing things that most other players don’t know about (Yee 2006). It is about exploration, lore and finding hidden things within the game and gives the player an estimate about the potential amount of time that can be spent with the game. Discovery through extensive game playing is among the motives for playing online games, and it is deemed to be an important game characteristic specifically in MMORPGs (Tychsen, Hitchens et al. 2008).

**Motives to play.** From motivational perspective of consumption, hedonic goods entail intrinsic value (e.g. *enjoyment* and *fun*), whereas utilitarian entail more extrinsic values (e.g. *usefulness*). Intrinsic motivation is inherently about performing an activity for the satisfaction of the activity itself (Ryan and Deci 2000, p. 70).

The level of enjoyment and *fun* in games can be expressed as a flow experience (Csikszentmihalyi 1975; Chen 2007). Flow experience of online games has been defined as an extremely enjoyable experience, where an individual engages in an on-line game activity with total involvement, enjoyment, control, concentration and intrinsic interest. (Hsu and Lu 2005)

Extrinsic motivation, in turn, is expected to lead to performance of an activity, in order to attain some separable outcome (Ryan and Deci 2000). Perceived *usefulness* is defined as the degree to which a

person believes that using a particular system would enhance his or her performance. (Davis 1989, p. 320). MMORPGs provide a way for the players to socialize with each other. *Socializing* in games can occur in a multitude of different ways. For example, people are connected over the internet from homes, or play games in dedicated public places. *Forming groups*, chatting, team work, helping others and making friends are significant components of enjoyment among other game features (Choi and Kim 2004; Kujanpää, Manninen et al. 2007). A possibility to form groups or teams is crucial for accomplishing some of the game objectives which could not be possible playing alone. Friends and community have an important impact on the motivation to play games, possibly also an influence on the digital game choice, too (Cole and Griffiths 2007).

**Outcomes of the game.** The *game character* and its development is one of the most important objectives in MMORPGs. A game character can express what the game player wishes to be, how the player is interconnected with the others, and how the game character adapts to the game environment (Kujanpää, Manninen et al. 2007).

Advancement in a MMORPG has been described as progress, accumulation of in-game symbols of wealth and gaining power and status (Yee 2006). Game players may use a significant amount of time (even thousands of hours) in developing their character to accomplish “quests” and tasks and gaining the respect of the other players. The result of successful gaming effort is often expressed as increased game character *experience level*. It is considered an important component of the perceived achievement which is also an important motivational factor for playing games (Yee 2006; Kujanpää, Manninen et al. 2007). With higher experience level, the player gains social status that increases the *fame* of the player in the community (Kujanpää, Manninen et al. 2007). The better the game character is known in the community, the more feeling of achievement its player perceives in his game playing (Yee 2006; Kujanpää, Manninen et al. 2007).

**Availability.** A product cannot be chosen if it is not available in one way or another. *Availability* has been categorized into pull-based and push-based availability (Srinivasan, Park et al. 2005). With pull-

based availability, a company continuously intends to improve the brand awareness of its product among consumers, for instance, by advertising it. With push-based availability, the company delivers the product as efficiently as possible to the delivery channels, such as, retail stores or digital distribution channels.

**Ease of playing.** People differ in the way they perceive different computer systems, the attitudes and feelings ranging from technology optimism and innovativeness to technology anxiety (Parasuraman 2000). Digital games, such as any consumer oriented software products, should be *easy to start to play*, *easy to learn to play*, and *easy to play* in order to reach critical mass of customers. MMORPGs are generally considered to be rather easy to play, and with enough time, almost anybody can play one successfully (Kujanpää, Manninen et al. 2007). However, it can be very difficult to master all the game details and different ways of playing.

The questionnaire was evaluated and tested by a group of information systems science researchers at Helsinki School of Economics for several times, and a pilot study with 30 university level students was conducted before the actual rounds of experiment. Three questions were modified after the pilot study, but most of the pilot study responses remained usable also in the final study. The final paper based questionnaire included 42 questions, with 81 items in total.

### **3.2 Data collection**

The method of experimenting (Weick 1986) was selected to study the effects of brand image and experience on consumers' beliefs. The experiment was conducted between February and June in 2008. Students from three European Universities (Helsinki School of Economics, Finland; University of Iasi, Romania; and, University of La Coruña, Spain) were asked to fill in the questionnaire in class sessions.

In an experiment, the independent variables are biased by experimental stimulus that is present or absent (Babbie 1998). To accomplish this, we designed a questionnaire with two different versions. Each respondent was randomly given a questionnaire form, either the "branded" or the "non-branded" version. This procedure was used to ensure that the two groups of subjects are approximately equal in descriptive characteristics. The treatment group filled in a form which included a game description with brand

information (World of Warcraft), including the brand name and an image of the game package for creating stimulus and game recall (see Figure 1.). In non-branded product evaluation, consumer does not recognize the specific product name, the maker of product or the user demographics of the product while being exposed to its' attributes (Biel 1993). Accordingly, the control group in our study filled in a form with the same game description but without any references to any brand.

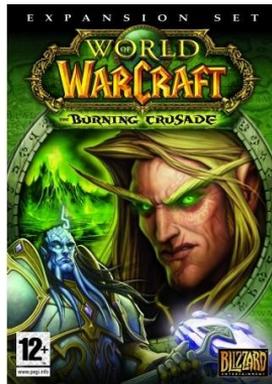


Figure 1. The image used for game recall (Group “Branded”).

### 3.3 Data considerations

From the class sessions in the three universities, we collected 520 responses in total, out of which 7 uncompleted responses were deleted. Further 33 responses were deleted after the studentized residuals analysis within each group. Residual analysis objective was to detect particular outliers in game evaluation scores in points (0-100) that could bias the results of the regression to particular direction, improve the statistical validity of the sample and better fit the data to the model (Hair, Anderson et al. 1984-2004). The critical value used was  $\pm 1.96$  with  $\alpha$ -risk controlled at 0.05 level. The final number of responses used in the analyses was 475. The key demographics of the participants are displayed in Table 2.

Table 2: Demographics.

4	Treatment group			Control group			Total
	Experienced ( $T_{exp}$ )	Aware ( $T_{aware}$ )	Inexperienced ( $T_{inexp}$ )	Experienced ( $C_{exp}$ )	Aware ( $C_{aware}$ )	Inexperienced ( $C_{inexp}$ )	
N	65	94	82	83	88	63	475
Gender							
Female	33 (50%)	34 (36%)	61 (74%)	46 (55%)	42 (48%)	52 (83%)	268 (56%)
Male	33 (50%)	60 (64%)	21 (26%)	38 (45%)	45 (52%)	11 (17%)	208 (44%)
Average age (years)	21.5	22.3	22.4	22.0	22.4	21.6	22.1
Median age (years)	21	22	22	22	22	21	22
Age range (min - max)	17-31	18-34	17-36	18-36	18-33	18-28	17-36

Fifty-six percent of the respondents were female, and 44 percent were male. The respondents were between 17-36 years, 22.1 years being the average and 22.0 years median. In addition to having divided the sample randomly into the treatment group (those evaluating a branded game) and the control group (those evaluating a non-branded game), we further divided both groups on the respondents' MMORPG category related experience. Those who reported having 1) not played this kind of games for at least the last three months; and/or 2) had no experience explicitly with WoW, were considered to be inexperienced users. The statistics suggest that only minor demographic differences exist in the treatment and control groups.

Thirty-one percent of the respondents had some kind of experience with MMORPG type of games in the past three months (the *experienced* in both the Treatment and the Control groups:  $T_{exp} + C_{exp}$ ). Furthermore, 17 percent reported explicit experience playing WoW in the past three months. Thirty-eight percent of the respondents ( $T_{aware} + C_{aware}$ ) were aware of WoW, yet, had no experience of the game. Further, 31% ( $T_{inexp} + C_{inexp}$ ) had no explicit experience neither did they recognize WoW.

## 5 Findings

In this chapter we report how brand exposure influences, together with past experience, game evaluation. The data was analyzed with SAS Enterprise Guide, version 4.1. Table 3. **Error! Reference source not found.** presents the descriptive statistics for the game evaluation scores in points (0-100) for the treatment (T) and the control (C) groups, divided further into participants experienced with (*exp*), aware of (*aware*) and inexperienced (*inexp*) with the MMORPG category.

Table 3: Descriptive statistics for the variable *Evaluation score* (0 – 100).

<i>Group</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>	<i>Median</i>
T <sub>exp</sub>	73.52	16.42	30	98	78
T <sub>aware</sub>	65.75	19.22	10	95	70
T <sub>inexp</sub>	59.93	21.34	10	90	70
C <sub>exp</sub>	69.54	16.78	20	100	70
C <sub>aware</sub>	66.97	19.01	30	98	71
C <sub>inexp</sub>	58.95	19.48	0	90	70

Judging by the group mean evaluation scores and standard deviation, the descriptive statistics tell us that consumer experience had a stronger influence on individual overall game evaluations. Good judgment comes from experience, as the saying goes. This finding strengthens our belief in that experience should be taken into account in the further tests, which seek to uncover how brand influences games evaluation.

### 5.1 Effects of a positive brand image on beliefs about a digital game

We first test our hypothesis about positive brand image biasing product attribute related beliefs favorably (H1). To verify the attribute bias effect, we test, whether individual beliefs about games attributes are independent from the membership of treatment or control groups. The means of the game attribute beliefs are the same for both treatment and control groups. We used *t-test* for the comparisons. We scrutinized the data to ensure that the tested variables were normally distributed or did not depart too markedly from normality. The  $\alpha$ -risk was controlled at 0.05 when  $\mu_T = \mu_C$ . We formulate hypothesis 1 as follows:

$$H_0 : \mu_T = \mu_C$$

$$H_1 : \mu_T \neq \mu_C$$

The results of the t-tests for all attributes between the respondents filling in the branded (treatment) and the non-branded (control group) questionnaire indicate that there are significant differences in the means between the branded and non-branded groups only for one attribute: *usefulness* ( $df = 459$ ,  $t\text{-value} = -2.00$ ,  $p\text{-value} = 0.046$ ). Further, a significant difference was found for *graphic style and audiovisual* at risk level  $\alpha\text{-risk} = 0.10$  ( $df = 466$ ,  $t\text{-value} = 1.78$ ,  $p\text{-value} = 0.08$ ). The treatment group evaluated game's graphic style and audiovisual effects higher and usefulness, surprisingly, lower than the control group. For none of the other attributes were such differences found. Our test provides qualified support for the first hypothesis (H1). Brand can, indeed, bias some product attribute beliefs. Another question, to which we will return shortly, is if the affected attributes are among those that influence product evaluation.

## 5.2 Relationship between a brand and game playing experience

We next test whether the brand bias effect is modified by the game playing experience of the players (H2). We use Duncan's Multiple Range Test (Duncan 1955), a widely used multiple comparison procedure developed for the analysis, which tests for all pairs of groups whether an observed difference in the means is greater than the corresponding least significant range. The alternative testable hypotheses can be expressed as:

$$H_0 : \mu_i = \mu_j$$

$$H_1 : \mu_i \neq \mu_j$$

for  $i = 1, \dots, j - 1$

The  $\alpha\text{-risk}$  is controlled at 0.05 when  $\mu_i = \mu_j$ . The results of the Duncan's Multiple Range Test for evaluation measures (degrees of freedom (d.f.) = 470, error means square 355.04) indicate that the experienced players evaluate this type of a game more favorably than the inexperienced (see Table 4, Groups A and B).

Table 4: Duncan's Multiple Range Test for overall evaluation (0-100) and group means.

<i>Duncan Grouping<sup>a</sup></i>		<i>Evaluation Mean</i>	<i>N</i>	<i>Sample</i>
	Group A	73.52	66	T <sub>exp</sub>
Group B	Group A	69.54	83	C <sub>exp</sub>
Group B		66.97	87	C <sub>aware</sub>
Group B	Group C	65.75	95	T <sub>aware</sub>
Group D	Group C	59.93	82	T <sub>inexp</sub>
Group D		58.95	63	C <sub>inexp</sub>

<sup>a</sup> Means with the same letter (A, B, C, D) are not significantly different.

Product category experience and awareness seems to enhance the overall judgment (the score on a scale of 0 - 100) of the product while brand exposure has no effect. The treatment and control groups of experienced participants evaluated the game equally regardless of the presence of the brand stimulus, and the same applies to the groups of inexperienced participants. Therefore, our test does not support hypothesis H2. This test also further qualifies the test results for hypothesis H1. No statistically significant difference in overall product evaluation suggests that the attributes *usefulness* and *graphics style and audiovisual effects* may not be members of the group of salient attributes influencing product evaluation.

### 5.3 Relationship between brand and evaluation criteria

We hypothesized that brand influences the importance of different attributes in evaluation of digital games (H3). We use t-tests to compare the importance rankings given by the treatment and control groups. The alternative testable hypotheses can be expressed as:

$$H_0 : \mu_T = \mu_C$$

$$H_1 : \mu_T \neq \mu_C$$

The  $\alpha$ -risk is controlled at 0.05 when  $\mu_T = \mu_C$ . Table 5 presents the digital game evaluation criteria in order of importance. *Fun*, *Discovery*, *Availability*, *Graphics & audio*, and *Story* are the most important evaluation criteria for digital games, while *Use of real money*, *Fame*, and *Group forming* seem to be the least important ones. Respondents assess criteria importance similarly across the groups regardless of the brand stimulus exposure except for the variable *Easy to start to play* ( $t$ -value = 2.38,  $df$  = 474,  $p$ -value =

0.02). There is little difference between the treatment and the control groups' evaluation criteria. Hence, we conclude that hypothesis H3 is not supported at this point. Brand exposure does not influence the overt evaluation criteria for a digital game.

Table 5. Absolute means of importance of digital game evaluation criteria.

<i>Attribute</i>	<i>Mean importance ranking</i>		<i>t-value</i>	<i>p-value</i>
	<i>Treatment</i>	<i>Control</i>		
Fun	6.27	6.08	1.67	0.10
Discovery	5.99	5.94	0.41	0.68
Availability	5.86	5.80	0.49	0.62
Graphics & audio	5.70	5.62	0.58	0.58
Story	5.59	5.61	-0.18	0.86
Perceived price	5.54	5.41	0.79	0.43
Ease of starting to play	5.36	5.03	2.38	<b>0.02</b>
Usefulness	4.69	4.84	-0.88	0.38
Socializing	4.65	4.63	0.11	0.91
Ease of learning to play	4.39	4.31	0.48	0.63
Ease of play	4.35	4.24	0.73	0.47
Character	4.32	4.36	-0.19	0.85
Experience	4.27	4.00	1.79	0.07
Group forming	4.27	4.16	0.66	0.51
Fame	2.77	2.81	-0.20	0.84
Use of real money	2.33	2.61	-1.61	0.11

\* statistically significant difference at alpha 0.05 –level.

This result indicates that should brand affect attribute importance, such influence is based on experience related associations rather than cognitive processes that underlie the weighting of the attributes towards game selection criteria. We need to test next whether the experienced members of the treatment group framed their game evaluation differently from the other groups. Should such an influence emerge, it would, together with the importance ranking result, point to brand influence on attribute importance being real but covert as it is not being reflected in the overt attribute importance rankings.

#### **5.4 Relationship between brand, attribute importance and game playing experience**

Finally, our last hypothesis was that the consumer experience modifies the influence of a brand on attribute importance in digital game evaluation (H4). To test for the effects of brand image on evaluation structure, we use multiple regression models. We create a separate regression model for each brand-experience group. The models are of the following form:

$$Y = \beta_0 + \beta_1 FUN + \beta_2 DISCOVERY + \beta_3 GROUP + \beta_4 STORY + \beta_5 PRICE + \beta_6 CHARACTER + \varepsilon$$

We present the hypotheses 4 formally for the tests as follows:

$$H_0 : \beta_{ij} = \beta_{i+1,j}, i = 1...5, j = 1...4$$

$$H_1 : \beta_{ij} \neq \beta_{i+1,j}, i = 1...5, j = 1...4 \quad \text{for at least some } j$$

The  $\alpha$ -risk for including a term in the model is controlled at 0.05 when  $\beta_i = \beta_{i+1}, i=1...5$ .

Over the six groups, only two criteria are present in all evaluation structures: *fun* and *discovery*. There were other significant variables, such as *storytelling*, *perceived price*, *usefulness*, *fame*, *experience level* but none of these criteria were present in more than one group, and were excluded from the analysis. In particular, those participants who had no experience with MMORPGs, had diverse evaluation structures. Since we feel that such dispersion of evaluation criteria reflects the fact that evaluating games in this particular category is not a very relevant decision to this group, we will concentrate to evaluations of those participants who had at least some prior experience with MMORPGs (i.e., the *experienced* and the *aware*). Summarized results of the game evaluations are presented in the table 7.

Table 5. Summary of the group-wise regression models for overall evaluation (0-100).

<i>Attribute</i>	<i>Treatment</i>		<i>Control</i>	
	<i>experienced</i>	<i>aware</i>	<i>experienced</i>	<i>aware</i>
	<i>Standardized coefficient</i>			
Fun	<b>0.44</b>	<b>0.38</b>	0.37	0.33
Discovery	0.41	0.34	<b>0.39</b>	<b>0.40</b>
R-square	0.48	0.35	0.37	0.38
Adj. R Square	0.46	0.34	0.35	0.37

All terms included in the regression models are significant at the 0.05 level. The most important evaluation criterion for every group is displayed in bold.

We observe the hypothesized influence (H3) of brand exposure in that the evaluation making structure changes from game characteristic based (*discovery*) evaluation to motivation based (*fun*) evaluation when brand information is available. Those participants being exposed to the brand image used *fun* as the most important evaluation criterion while the participants in the control group based their evaluation more on *discovery* than on *fun*. We can also see from the table that expertise did not shield the treatment group members from the attribute importance bias effects as we hypothesized (H4). Both the experienced and the moderately experienced (aware) participants were equally subject to brand image influence. We can conclude that brand exposure does not change the game evaluation criteria entirely, yet, can flag the most important evaluation criterion to the consumer. In summary, we conclude that brand influences the game selection criteria formation rather than the attribute beliefs. While such an influence is counterintuitive, it is in line with the regular observation of advertising having limited success, at best, in changing overt consumer attitudes and behavior (Foxall 2005).

## **5.5 Reliability and validity of the results**

We next tested the reliability and validity of the results. One way of validating the results is to split the original sample in, for example, two separate samples and then conduct the statistical analyses (Hair, Anderson et al. 1984-2004). This post-hoc analysis confirmed that variables were selected in the model *not* because of their randomness but due to their real influence to the dependent variable. Further, we conducted a post-hoc statistical power analysis for our multiple regression models. In all subsamples the power of the models were higher than 0.98 (given alpha 0.05, subsample size, observed adjusted R-Square and the number of variables), when 0.8 statistical power is the requirement for reliable modeling. Even though stepwise selection model of variables has higher restrictions on the sample sizes to provide sufficient level of power (0.8), in the post-hoc analysis with our adjusted R-Square the explanatory power resulted in acceptable level of power with these sample sizes.

## 6 Summary and conclusions

The objective of this research was to study from the information processing perspective the capacity of a brand to influence digital games related attitudes through two established mechanisms of attitude change: changing beliefs and changing attribute importance (Blackwell, Miniard et al. 2006). We tested these influences in a laboratory setting in which the participants read a verbal description of a digital game. The treatment group was additionally exposed to a brand image. Both treatment and control group gave an overall evaluation as well as attribute level evaluation for the game.

Changing consumers' beliefs about a product or a service and its attributes has been stated to be a central motivation for using brands in product marketing (Keller and Lehmann 2006). In our study on digital games, only two of the product attributes (*fun* and *discovery*) out of sixteen resulted in significant influence to the overall evaluation. Moreover, *discovery* was ranked as the most important digital game selection criteria by the respondents.

Our empirical evidence suggests that even if a brand does bias some beliefs for product evaluation at the attribute level, it *does not* bias favorably the most important beliefs for product evaluation at the attribute level, when it comes to the most important game selection criteria for a digital game (H1). Furthermore, brand *does not* bias the overall judgment about the game towards more positive evaluation, although, evaluation is biased by the product experience (H2).

Both experience (H4) and brand (H3) influence product evaluation formation structure. Most interestingly, the presence of brand information has contradictory effect on the experienced and the aware respondents. The evaluation making structure of both experienced and aware consumers changes from game characteristic (*discovery*) based evaluation to motivation (*fun*) based evaluation when brand information is available. In summary, we propose that, contrary to conventional wisdom, brand influences the game selection criteria formation rather than the attribute beliefs. In other words, game brands may instruct consumers more about how to choose than what to choose, even though, these aspects of choice may often be closely related.

We believe that our study should be of interest to those academics who are interested in the relationship between product evaluation, branding and digital game development. For practitioners, our study may provide ideas on the game selection formation of the consumers, and a better picture of what can be achieved through investing in brands. Our results indicate that in addition to innovative product development, brands and brand management are of great importance also in the context of digital products.

There are some limitations related to the methodology used in this study. Multiattribute attitude models and ANOVA have been widely used in research on cognitive information processing and attitude formation and change (Bettman, Capon et al. 1975; Ajzen 2005). Selecting the correct product attributes and using only one question for each attribute rather than multiple questions and factors may have affected to the reliability of the results. In that case, however, the number of questionnaire items would have been overwhelming. Further, in a real product evaluation and choice situation issues such as the consumer information overload (Bettman, Capon et al. 1975) and other contextual factors, such as, price and conditioning usually adjust the beliefs and attitudes (Meyers-Levy and Tybout 1997).

Further research is required in order to determine the relationship between the brand-related information, and the evaluation of digital games in more detail. In the next phase of our research, we will consider the effect of brand image effect on the perceived product involvement (Zaichkowsky 1985; Michaelidou and Dibb 2006), affect (Mano et al. 1993) and attachment (Thomson, MacInnis et al. 2005). This work could provide valuable insights into the roles of brand and emotions in changing beliefs and attribute importance of digital games.

## References

- Aaker, D. (1991). "Dimensions of brand personality." Journal of Marketing Research **34**: 347-356.
- Ajzen, I. (2005). Attitudes, Personality, and Behavior. Chicago, Illinois, The Dorsey Press.
- Ajzen, I. and M. Fishbein (1980). Understanding Attitudes and Predicting Social Behavior. NJ, Prentice-Hall.
- Allen, C. T. and T. J. Madden (1985). "A Closer Look at Classical Conditioning." Journal of Consumer Research **12** (December): 301-315.
- AMA. (2008). "Dictionary of Marketing Terms." Retrieved 5th February, 2008.
- Babbie, E. (1998). The Practice of Social Research, Wadsworth Publishing Company.
- Ballantyne, R., A. Warren, et al. (2006). "The Evolution of Brand Choice." Brand Management **13**(June 4/5): 339-352.
- Bettman, J. R. (1979). An Information Processing Theory of Consumer Choice. Reading, Massachusetts, Addison-Wesley Publishing Company.
- Bettman, J. R., N. Capon, et al. (1975). "Multiattribute Measurement Models and Multiattribute Attitude Theory: A Test of Construct Validity." Journal of Consumer Research **1**(March): 1-15.
- Bettman, J. R. and C. W. Park (1980). "Effects of Prior Knowledge and Experience and Phase of the Choice Process on Consumer Decision Processes: A Protocol Analysis." Journal of Consumer Research **7**(3): 234-248.
- Biel, A. L. (1993). Converting Image into Equity. Brand Equity and Advertising: Advertising's Role in Building Strong Brands. D. A. Aaker and A. L. Biel. Hillsdale, New Jersey, Lawrence Erlbaum Associates, Publishers.
- Blackwell, R. D., P. W. Miniard, et al. (2006). Consumer Behavior. Mason, Ohio, Thomson, South-Western.
- Brucks, M. (1985). "The Effects of Product Class Knowledge on Information Search Behavior." Journal of Consumer Research **12**(1): 1-16.

- Chen-Bo, Z. and S. E. DeVoe (2010). "You Are How You Eat: Fast Food and Impatience." Psychological Science.
- Chen, J. (2007). "Flow in Games (and everything else)." Communications of the ACM **50**(4): 4.
- Choi, D. and J. Kim (2004). "Why People Continue to Play Online Games: In Search of Critical Design Factors to Increase Customer Loyalty to Online Contents." CyberPsychology & Behavior **7**(1): 11-24.
- Cole, H. and M. D. Griffiths (2007). "Social Interactions in Massively Multiplayer Online Role-Playing Gamers." CyberPsychology & Behavior **10**(4): 575-583.
- Crandall, R. W. and G. J. Sidak (2006). Video Games, Serious Business for America's Economy, Entertainment Software Association.
- Csikszentmihalyi, M. (1975). Beyond Boredom and Anxiety. San Francisco, Jossey-Bassa.
- Davis, F. D. (1989). "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information." MIS Quarterly **13**(3): 319-340.
- Duncan, D. B. (1955). "Multiple range and multiple F tests." Biometrics **11**: 1-42.
- Farquhar, P. H. (1989). "Managing Brand Equity." Marketing Research **1**(September): 24-33.
- Fiske, C. A., L. A. Luebbehusen, et al. (1994). The Relationship between Knowledge and Search - It Depends. Advances in Consumer Research, Vol Xxi. **21**: 43-50.
- Fitzsimons, G., T. Chartrand, et al. (2008). "Automatic Effects of Brand Exposure on Motivated Behavior: How Apple Makes You "Think Different"." Journal of Consumer Research **35**(1): 21.
- Foxall, G. (2005). Understanding Consumer Choice. Basingstoke, Palgrave McMillan.
- Gardial, S. F., D. S. Clemons, et al. (1994). "Comparing Consumers' Recall of Prepurchase and Postpurchase Product Evaluation Experiences." Journal of Consumer Research **20**(March).
- Gladwell, M. (2005). Blink. London, Penguing Books.
- Grossman, R. P. and B. D. Till (1998). "The Persistence of Classically Conditioned Brand Attitudes." Journal of Advertising **27**(1): 23-31.

- Hair, Anderson, et al. (1984-2004). Multivariate Data Analysis. Upper Saddle River, New Jersey, Prentice Hall Inc.
- Hansen, F. (1976). "Psychological Theories of Consumer Choice." Journal of Consumer Research **3**(December): 117-142.
- Holbrook, M. B. (1999). Consumer Value: A Framework for Analysis and Research, Routledge.
- Hsu, C.-L. and H.-P. Lu (2005). "Consumer Behavior in Online Game Communities: a Motivational Factor Perspective." Computers in Human Behavior **23**(2007): 1642-1659.
- Huber, J. (1982). "Adding Asymmetrically Dominated Alternatives: Violations of Regularity and the Similarity Hypothesis." Journal of Consumer Research **9**(1): 90-98.
- Johnson, E. J. and E. J. Russo (1981). "Product Familiarity and Learning New Information." Advances in Consumer Research **8**.
- Juul, J. (2005). Games Telling Stories? Handbook of Computer Games. J. Raessens and J. Goldstein. Cambridge, Massachusetts, The MIT Press.
- Kallio, K. P., K. Kaipainen, et al. (2007). Gaming Nation? The Pilot Case Finland: International Study of Games Cultures. Tampere, University of Tampere, Hypermedia Laboratory. **Hypermedia Laboratory Net Series 14**.
- Keller, K. L. and D. R. Lehmann (2006). "Brands and Branding: Research Findings and Priorities." Marketing Science **25**(6): 740-759.
- Kujanpää, T., T. Manninen, et al. (2007). What's My Game Character Worth - The Value Components of MMOG Characters. DiGRA 2007 Conference, Situated Play. Tokyo, Japan.
- Lambert, Z. V. (1972). "Price and Choice Behavior." Journal of Marketing Research **9**(February): 35-40.
- Leone, R. P., V. R. Rao, et al. (2006). "Linking Brand Equity to Customer Equity." Journal of Service Research **9**(November): 125-138.
- MacKenzie, S. B. (1986). "The Role of Attention in Mediating the Effect of Advertising on Attribute Importance." Journal of Consumer Research **13**(2): 174-195.

- Meyers-Levy, J. and A. M. Tybout (1997). "Context Effects at Encoding and Judgment in Consumption Settings: The Role of Cognitive Resources." Journal of Consumer Research **24**(1): 1-14.
- Mitchell, A. A. (1986). "The Effect of Verbal and Visual Components of Advertisements on Brand Attitudes and Attitude Toward the Advertisement." Journal of Consumer Research **13**(1): 12-24.
- Mitchell, A. A. and P. A. Dacin (1996). "The Assessment of Alternative Measures of Consumer Expertise." Journal of Consumer Research **23:3**(December): 219.
- Nedungadi, P. (1990). "Recall and consumer consideration sets: Influencing choice without altering brand evaluations." Journal of Consumer Research **17**(263-276).
- Neely, J. H. (1977). "Semantic priming and retrieval from lexical memory: Roles of inhibitionless spreading activation and limited-capacity attention." Journal of Experimental Psychology: General **106**(3): 226-254.
- Nisbett, R. E. and T. D. Wilson (1977). "Telling More Than We Can Know: Verbal Reports on Mental Processes." Psychological Review **84**(March): 231-259.
- Parasuraman, A. (2000). "Technology readiness Index (TRI)." Journal of Service Research **2**(4): 307-320.
- Posner, M. I. and C. R. R. Snyder (1975). Attention and cognitive control. Information processing and cognition: The Loyola symposium. R. L. Solso. Hillsdale, NJ, Lawrence Erlbaum Associates, Inc.: 55-85.
- Rutherford, D. and J. Knowles (2008). Vulcans, earthlings and marketing ROI: getting finance, marketing and advertising onto the same planet, Wilfried Laurier University Press.
- Ryan, R. M. and E. L. Deci (2000). "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being." American Psychologist **55**(1): 68-78.
- Selnes, F. and R. Howell (1999). "The Effect of Product Expertise on Decision Making and Search for Written and Sensory Information." Advances in Consumer Research **26**(1999): 80-89.
- Shanteau, J., C. M. Troutman, et al. (1975). "Commentaries on Bettman, Capon, and Lutz." Journal of Consumer Research **1**(4): 16-19.

- Siwek, S. E. (2007). Video Games in the 21st Century, Entertainment Software Association: 36.
- Spence, M. T. and M. L. Brucks (1997). "The Moderating Effects of Problem Characteristics on Experts' and Novices' Judgments." Journal of Marketing Research **34:2**: 233-247.
- Srinivasan, V., C. s. Park, et al. (2005). "An Approach to the Measurement, Analysis, and Prediction of Brand Equity and Its Sources." Management Science **51(9)**: 1433-1448.
- Stuart, E. W., T. A. Shimp, et al. (1987). "Classical Conditioning of Consumer Attitudes: Four Experiments in an Advertising Context." Journal of Consumer Research **14(3)**: 334-349.
- Stuart, E. W., T. A. Shimp, et al. (1990). "Classical Conditioning of Negative Attitudes." Advances in Consumer Research **17**: 536-540.
- Sujan, M. (1985). "Consumer Knowledge: Effects on Evaluation Strategies Mediating Consumer Judgments." Journal of Consumer Research **12(1)**: 13-46.
- Thomson, M., D. J. MacInnis, et al. (2005). "The Ties That Bind: Measuring the Strength of Consumers's Emotional Attachments to Brands." Journal of Consumer Psychology **15(1)**: 77-91.
- Tulving, E., D. L. Schacter, et al. (1982). "Priming Effects in Word Fragment Completion are independent of Recognition Memory." Journal of Experimental Psychology: Learning, Memory and Cognition **8(4)**.
- Tversky, A. and D. Kahnemann (1973). "Availability: a heuristic for judging frequency and probability." Cognitive Psychology **5**: 207-232.
- Tychsen, A., M. Hitchens, et al. (2008). Motivations for play in computer role-playing games. Future Play: Proceedings of the 2008 Conference on Future Play: Research, Play, Share, Toronto, Ontario, Canada, ACM.
- Wason, P. C. (1960). "On the failure to eliminate hypotheses in a conceptual task." Quarterly Journal of Experimental Psychology **12**: 129-140.
- Weick, K. (1986). Theoretical Assumptions and Research Methodology Selection. Research Issues in IS Research. M. e. al.

Villanueva, J. and D. M. Hanssens (2007). Customer Equity: Measurement, Management and Research Opportunities: Volume 1 of Foundations and Trends in Marketing. Now Publishers Inc.

Yee, N. (2006). "Motivations of Play in Online Games." Journal of CyberPsychology and Behavior **6**: 772-775.

Zeithaml, V. A. (1988). "Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence." Journal of Marketing **52**(July): 2-22.

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**Appendix 1. Questionnaire items for overall evaluation, beliefs, self-confidence and evaluation criteria.**

Overall evaluation: How good would you estimate this game to be on a scale from 0-100? (0=very bad, 100=perfect)

**Product attributes:**

Beliefs: (1 (I totally disagree) – 7 (I totally agree), in order of appearance in the questionnaire).

1. It is *easy* to learn to play this game.
2. This game is *fun*!
3. The ways to personalize my *character* are limitless in this game.
4. It is easy to be *famous* in this game community.
5. It is easy to increase and level up my character's *experience level* in this game.
6. The *story* telling of this game is very exciting.
7. The ways to *socialize* with others are great in this game.
8. It is easy to join *groups* in this game.
9. It is *easy to play* this game.
10. *Graphics and audio* are great in this game.
11. It is *easy to start* playing this game.
12. This game is very *cheap* to play.
13. There is lot to *discover and play* in this game.
14. This game is easily *available*.
15. In this game, using *real money* increases the chance of success.
16. This game is *useful*.

Additional questions for each attribute:

Self-confidence about the judgment: I am confident about my previous judgment (I totally disagree 1 – 7 I totally agree).

Criteria: It is important that the games I choose to play are *attribute 'easy to learn to play'* (I totally disagree 1 – 7 I totally agree).

The respondents rated the questionnaire relatively easy-to-fill with an mean rate of 5,40 in a scale of 1-7.

**Appendix 2.** One-way ANOVA statistics and results of the stepwise variable selection process.

**Treatment groups (Branded)**

Group 1: Experienced		Analysis of Variance					Root MSE	
N Read	67	Source	DF	Sum of Squares	Mean Square	F Value	Dependent Mean	12.08
N Used	66	Model	2	8342.617	4171.308	28.61		73.52
N Missing	1	Error	63	9185.868	145.8074			
R-Square	0.46	Corrected Total	65	17528				
Adj R-Sq	0.47							16.43

Group 2: Aware		Analysis of Variance					Root MSE	
N Read	95	Source	DF	Sum of Squares	Mean Square	F Value	Dependent Mean	15.67
N Used	95	Model	2	12124	6061.86	24.68		65.75
N Missing	0	Error	92	22596	245.6111			23.84
R-Square	0.35	Corrected Total	94	34720				
Adj R-Sq	0.34							

Group 3: Inexperienced		Analysis of Variance					Root MSE	
N Read	83	Source	DF	Sum of Squares	Mean Square	F Value	Dependent Mean	18.16
N Used	82	Model	2	10837	5418.385	16.43		59.93
N Missing	81	Error	79	26061	329.8834			30.31
R-Square	0.2937	Corrected Total	81	36898				
Adj R-Sq	0.2758							

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N Used	82	Model	2	10837	5418.385	16.43		59.93
N Missing	81	Error	79	26061	329.8834			30.31
R-Square	0.2937	Corrected Total	81	36898				
Adj R-Sq	0.2758							

### Control groups (Non-branded):

#### Group 4: Experienced

N Read		84										
N Used		82										
N Missing		2										
R-Square		0.37										
Adj R-Sq		0.35										
Analysis of Variance												
Source	DF	Sum of Squares	Pr > F									
Model	2	8513.749	<.0001									
Error	79	14555										
Corrected Total	81	23066										
Parameter Estimates												
Variable	DF	Parameter estimate	Standard error	t Value	Pr >  t	Standardized estimate	Variance inflation	Partial R-Square	Model R-Square	C(p)	F Value	Pr > F
Intercept	1	29.38	6.35	4.63	<.0001	0						
Fun	1	0.51	0.13	3.99	0.0001	0.37	1.08	0.13	0.24	3	15.93	0.0001
Discovery	1	0.66	0.16	4.16	<.0001	0.39	1.08	0.24	0.24	16.9308	25.52	<.0001

Summary of Stepwise Selection		
Root MSE		13.57
Dependent Mean		69.48
Coeff Var		19.54

#### Group 5: Aware

N Read		88										
N Used		86										
N Missing		2										
R-Square		0.38										
Adj R-Sq		0.37										
Analysis of Variance												
Source	DF	Sum of Squares	Pr > F									
Model	2	11772	<.0001									
Error	83	19147										
Corrected Total	85	30919										
Parameter Estimates												
Variable	DF	Parameter estimate	Standard error	t Value	Pr >  t	Standardized estimate	Variance inflation	Partial R-Square	Model R-Square	C(p)	F Value	Pr > F
Intercept	1	28.77	5.63	5.11	<.0001	0.00						
Fun	1	0.56	0.16	3.48	0.0008	0.33	0.09	0.09	0.38	3.00	12.09	0.0008
Discovery	1	0.63	0.15	4.23	<.0001	0.40	0.29	0.29	0.29	13.09	34.4	<.0001

Summary of Stepwise Selection		
Root MSE		15.19
Dependent Mean		66.81
Coeff Var		22.73

#### Group 6: Inexperienced

N Read		63										
N Used		63										
N Missing		0.00										
R-Square		0.28										
Adj R-Sq		0.25										
Analysis of Variance												
Source	DF	Sum of Squares	Pr > F									
Model	2	6539.399	<.0001									
Error	60	16997										
Corrected Total	62	23537										
Parameter Estimates												
Variable	DF	Parameter estimate	Standard error	t Value	Pr >  t	Standardized estimate	Variance inflation	Partial R-Square	Model R-Square	C(p)	F Value	Pr > F
Intercept	1	30.47	6.37	4.78	<.0001	0.00						
Fun	1	0.68	0.22	3.07	0.0032	0.36	1.21	0.21	0.21	6.41	16.48	0.0001
Discovery	1	0.40	0.17	2.33	0.0234	0.27	1.21	0.07	0.28	3.00	5.41	0.0234

Summary of Stepwise Selection		
Root MSE		16.83
Dependent Mean		58.95
Coeff Var		28.55

## Essay V

Nandhakumar, J., Panourgias, N., Storgårds J.H. (2010) “Any good ideas? Developers’ insight into the development process of game ideas in digital game studios.” “Unpublished manuscript”

# Any good ideas? Developers' insights into the development process of game ideas in digital game studios.

## Abstract

In this paper we present how invariably dynamic game ideas travel through an organization and are transformed into shareable and credible ideas, which lead to an improved understanding of a product's expected quality and outcomes.

In order to understand how good ideas are developed in digital game studios and address how added value is embedded in games with different knowledge domains, we investigated how the transformation process of a game idea, from fragmented mental images to a credible marketing message for a game occurs.

We used the theoretical lenses of boundary objects and value creation practices in organizations to develop a model of idea transformation and ground this model in an interpretive case study to analyze this process. The paper offers a theoretical conceptualization of the main stages of idea processing practices and their contribution to the idea transformation process based on an investigation of 13 organizations and 26 professionals working in the game industry.

This paper argues that game idea processing is a core value creation practice in a game developer's knowledge management process, where the game value is enhanced by transforming ideas before making decisions about new product development and marketing actions. Good game ideas result from the sum of complex knowledge transformation processes and practices that signal credibility to those responding to a game and ideas behind a game. Nevertheless, if participants don't go through the process of knowledge transformation, a good idea cannot really emerge from different knowledge disciplines such as design, programming, marketing and management.

Game developers are responsible for the management of the relationships between different participants involved in a game idea transformation process. They need to be aware of how to build, restructure break and move knowledge boundaries and find the optimal way of balancing these relationships for building better games.

This paper advances the understanding the importance of multidisciplinary series of acts combining different practices with an objective to develop better games. The findings of this study are usable to improve idea processing practices in other software development contexts.

**Keywords:** Ideas, digital games, boundary objects, value creation.

## 1. INTRODUCTION

Digital games are a good example of information technology (IT) which shapes people's everyday lives (Kallio et al. 2007;Mäyrä 2008;Raessens and Goldstein 2005;Rutter and Bryce 2006). Despite the growing significance of digital games as entertainment applications (ESA 2010;Neogames 2009) the prior literature in games development and information systems lack studies about game *ideas* which initiate the game development process. By an *idea* we mean images in our minds which we aim for but are difficult to grasp and express because of the abstract concept and nature of an idea (Oxford English Dictionary).

Digital game studios do not suffer from a lack of ideas. In fact, studios are often overwhelmed by too many ideas, most of which are not necessarily good (Roberto and Carioggia 2004). In order to understand how good ideas are circulated and developed in digital game studios and address how added value is embedded in games with different knowledge domains, we need to investigate how the transformation process of a game idea, from fragmented mental images to a credible marketing message for a game occurs. Therefore, the main research question addressed in this research study is *how salient qualities of digital games are embedded in games and communicated to important stakeholders*. By salient qualities we mean the limited set of unique game characteristics that positively differentiate a game from other similar games and which influence a consumer's game preferences over other choices (Rutherford and Knowles 2008). Our conceptualization of the process of idea transformation within an organization is based on this research question.

The challenge of the transformation process, is to create common interests to facilitate sharing and assessing of knowledge, which requires significant practical effort (Carlile 2004). Of particular reference to new product development, the skill of know how to repeatedly enact and portray competence at "knowing how and what to do" is an ongoing social accomplishment constituted in practices with which people engage, is in crucial role (Orlikowski 2002). Organizational knowing is collective practice in which various types of entities such as ideas are circulated for practical accomplishment (Nicolini and Gherardi 2000) such as selecting the salient qualities of a game that make the game stand out from the mass. The capability of an organization to follow practices that utilize different types of knowledge forms a core part of organizational success in which different types of artifacts become boundary objects which used to overcome obstacles associated with knowledge embeddedness and tacitness (Levina and Vaasta 2005).

During the idea circulation process, different actors portray their interests and dependencies between themselves. In particular, novelty in ideas can be a problem as only transferring knowledge is not enough to represent all aspects of the information available because semantic connections between people make some meanings ambiguous. New knowledge such as contemporary game ideas may have negative consequences because when opening one game sphere another may be damaged. Therefore, translating knowledge in communities of practice is used to create shared interpretations, meanings and learning has to take place and this is often managed by people with organizational power (Carlile 2004). For instance, in the context of games developers continuously fluctuate between two roles of knowing how to develop good games; between routinized and improvised ways of use of knowledge (Stacey and Nandhakumar 2009).

The practice of value creation through idea processing can be referred to as dis-embedding, implying an uncovering or taking out of, and then re-embedding, implying the process of putting back or replacing idea fragments as a “whole” idea (Star and Griesemer 1989). These practices bring to mind the writings of Callon et al. (2002) on the qualification of products as goods and processes and how consumers, in our context *developers*, are *attached* and then *detached* from the goods that they are intending to exchange. Individuals share and combine thoughts concerning an idea through product entanglement and contribute to idea development both in their professional roles and as game players (Slater 2002).

This research paper aims to fill the existing gap on idea processing in the information systems (IS) literature. We closely examine an idea’s transformation by analyzing a group of video game studios’ idea processing practices. Our intention is to understand how practices and meanings are formed and shared by the individuals working towards the same objective – a good game idea.

We report the findings of an interpretive case study into idea processing practices in the digital game studios. The results of this in-depth analysis have been derived from the digital games industry in order to address the research question. An empirical study of 26 digital game studios was carried out. We emphasize that this paper is based on digital game *developers’* perspectives of value creation through the use of ideas. Developers are also game players and a rich source of information as it is finally their responsibility to develop good games for game players.

The conceptual model we developed addresses the following aspects of the idea transformation process. Firstly, it demonstrates the various ways of value building practices that are used in the processing of ideas within an organization. Secondly, it explains how different stakeholders such as

game developers, publishers and game players contribute value to the different elements of the game idea.

This paper advances the understanding the importance of multidisciplinary series of acts combining different practices with an objective to develop better games. Digital games are premium examples of social systems which have embedded in them information technology (Land 1992). In practice, they are software applications the purpose of which is to entertain their users (Hsu and Lu 2004). Further, the findings of this study are usable to improve idea processing practices in other software development contexts. In addition we add to the discussion about the collaboration between different organizational functions and knowledge domains such as product development and marketing.

The paper is structured as follows. The first section introduces the theoretical background, after which we describe the research setting, methodology and findings. We discuss the findings and present our model of idea transformation and its implications to theory and practice. Finally we conclude by identifying the study's limitations and proposing implications and directions for future research.

## 2. THEORETICAL BACKGROUND

### 2.1. BOUNDARY OBJECTS IN ORGANIZATIONS

The use of boundary object theory originated from Star and Griesemer's (1989) prominent ideas and have recently been adapted to information systems (IS) related research studies (see e.g. Gal et al. 2008; see e.g. Gasson 2006; Karsten et al. 2001). Star & Griesemer (1989) define boundary objects as "*both plastic enough to adapt to local needs and constraints of the several parties employing them, yet robust enough to maintain a common identity across sites....these objects may be abstract or concrete*" (p. 393) or as "*conceptual or physical artifacts that reside in the interfaces among organization*" (Gal et al. 2008). A valuable boundary object "*...establishes a shared syntax or language for individuals to represent their knowledge*" and "*facilitates a process where individuals can jointly transform their knowledge*" (Carlile 2002).

The majority of previous research on the use of boundary objects and practices has dealt mostly with boundary objects as translation devices embedded with knowledge (Carlile, 2004, Levina 2005), their uses in practice (Schatzki et al. 2001, Orlikowski 2002), the ways they are formed and shared (Star et al., 1989) and how they are used in organizations as functional boundaries (Carlile, 2002, Gal, 2008) to exchange knowledge by information brokerage (Wenger, 1999, Pawlowski, 2004). Such studies have validated the importance of boundary objects within organizations in different contexts, such as new product development (Carlile, 2002).

Boundary objects provide a concrete means from which individuals are able to specify and learn about differences and dependencies across given organizational boundaries. Both boundary objects and brokering are utilized in cooperation and creation of common understanding and how outcomes of certain practices are constructed. Boundary objects are artifacts, documents, terms, concepts, and other forms of reification around which communities of practice can organize their interconnections (Wenger 1999 p. 105). Brokering refers to the connections provided by people who can introduce elements of one practice into another (Hargadon and Sutton 2000; Wenger 1999 p. 105). Such an example would be a manager with a responsibility to link the knowledge of the programmer and graphics designer using a facilitating shared information system (Pawlowski and Robey 2004).

According to Star and Griesemer (1989) boundary objects are organized repositories of different items. In the context of game ideas these repositories are the database of existing design documentation, written and oral descriptions, demonstration applications and experiences in

people's minds. Repositories form a part of an organizational memory including people and technology which can be used at a later stage as a source of developing ideas (Ackerman and Halverson 2000). At first, the repository is empty of descriptions but when the organization decides to engage seriously with an idea each and every role in the organization will add objects to be shared to the repository. These objects are used as a means of communication and cooperation often used in problem solving contexts. The repository represents the vision of the game idea, a good enough road map that people can share. Shared and modifiable boundary objects are necessary in knowledge production and integration (Karsten et al. 2001).

Second, boundary objects represent viewpoints from different sources to build better overviews. They function in organizations because they contain sufficient detail to be understood by all parties involved (Star and Griesemer 1989). These characteristics are, for instance, the best possible customer segmentation, a unique gameplay idea, the storytelling and a special game controlling method or other important elements of a digital game. Each of these parts of the idea is individually not valuable but together they form a greater product that includes knowledge from the entire organization. Each element solves parts of the problems hindering the progress of an idea to the final decision making stages that lead to the eventual development of a game.

Third, standardized methods of processing ideas are essential to communicate effectively among working groups with varying organizational structures. In handling ideas, often the method of communication does not merely imply standardized documentations or practices but also the process of how ideas are developed in an organization. The standardized processing of an idea lowers the level of potential uncertainty involved in the development of the idea and allows for greater clarity. People not only expand but also break boundaries by modifying, removing and adding elements to the repository created for developing the idea and in this way contribute further to the idea. A good game idea is not merely a result of processing more knowledge but a result of transforming knowledge, where knowledge is both a barrier and source of innovation (Carlile 2002).

## **2.2 VALUE CREATION PRACTICES**

The value of products and services is a topic of great practical as well as academic interest (Holbrook 1999; Sánchez-Fernández et al. 2007; Zeithaml 1988; Zeithaml et al. 2006). Value is the source which leads towards exchanges and transactions between two parties in which each party trades something of value in return for something of greater value (Callon et al. 2002; Kotler 1997).

Value creation practices of many types exist in many knowledge domains within organizations, such as in new product development (Carlile, 2002) and marketing (Araujo et al. 2008) (Araujo 2007), in form of knowledge management (Levina et al. 2005, Orlikowski 2000, Gal 2008). The digital game industry is one of the creative industries in which valuable products are the result of a series of actions; multidisciplinary innovations wherein technology, sociology, economics and design meet (Callon et al. 2002).

People act through social forces where *“they construct their actions (contribute) while envisaging a social system of joint actions (represent), and interrelate that constructed action with the system that is envisaged”* (Weick and Roberts 1993). People perform and focus their actions to compose a practice. Schatzki et al. (2001) define practices as collection of human activity of embodied, shared practical understanding between people. They are recurrent, materially bound, situated in contexts and action and engaged in by members of community (Orlikowski 2002). People’s contribution, within the context of choosing the best idea, toward the development of a game within a system of interrelated activities in which individuals can work either together with, for, or against, are essential elements of the idea transformation process. When individuals within an organization attentively interact, converge actions, supplement and assist one another and together form an emergent pattern the organization is functioning as a *“collective mind”* (Weick and Roberts 1993). The knowledge transfer within organizations is not a trivial process and is often unstable and dynamic because of the tacit nature of knowledge (Carlile 2002). Therefore, collaboration is necessary to lower the barriers and allow an *idea* to build up value and communicate this value using design, development and marketing practices. Integrating individually held tacit and explicit knowledge about the problem domain and technology at group level improves the possibility of achieving team creativity (Tiwana et. al. 2005). Creativity is the sum of knowledge that individuals contribute and creativity at a team level emerges from integrating individually held expertise at the project level (Tiwana et. al. 2005).

The digital game studios and individuals working within this industry are part of a community of practice in which people share knowledge of similar concepts and ideas, as well as tacit knowledge, with a goal to create successful digital games (Brown and Duguid 2001). Organizations possess a reflexive capacity to exploit and tolerate ambiguity within their idea processing stages. These “heterarchies” as Stark (1999) refers to as, involve relation of interdependence - minimal hierarchy and organizational heterogeneity wherein ideas circulate freely between individuals regardless of organizational boundaries.

Organizations use their practices to weight and appreciate other people's knowledge (Hargadon and Sutton 2000). Weighting practices develop the initial idea into a more valuable idea, for which iterative collaboration between parties is needed and ensures that this occurs. The information vital to the transformation of an idea is located in different places and needs to be collected. Without collecting vital information, the integrated messages are left half-way and the transformation process fails (Czarniawska-Joerges and Sevón 1996). Individuals, from different roles such as management members, programmers, game designers, level editors and so forth, take this abstraction to their individual minds and using their knowledge adapt and modify elements from it. The idea-bearing individuals carry the information and intent to make the idea tangible and convincing enough when challenged by other individuals in the organization (Weick and Roberts 1993).

These value creation practices lead to stickiness and leakiness of knowledge into and out from an organization, however, the transfer of knowledge contributes to the innovation in which complementary knowledge in addition to traditional knowledge boundaries is often needed to form of feedback. The organizational borders leak knowledge in and out from organization when participants of the community of practice meet and exchange knowledge, such as in internal brainstorming sessions or visiting trade fairs meeting people outside the organization Carlile (2002).

### **3. RESEARCH APPROACH**

We adopted an interpretivist approach (Walsham 1995;Walsham 2006) which assumes that *“the knowledge about the reality is gained through social constructions such as a language, consciousness, shared meanings, documents, tools, and other artifacts”* (Klein and Myers 1999). This choice of interpretivist approach was made to facilitate our intention to gain an understanding of such reality within organizational contexts (Galliers 1992), such as the digital games studios. Interpretive perspective helps to understand how people participate and interact in social processes from their particular realities through beliefs, meanings and intentions (Orlikowski and Baroudi 1991).

Further, this research is based on case studies of games development conducted in multiple game studios. A case represents the topic of the study empirically such as idea development practices in game studios in this paper and the unit of analysis is the actual source of information such as the individuals in an organization (Yin 2008). In an interpretive sense, case studies involve development rich description of the research phenomenon through an examination a phenomenon in its natural setting, employing multiple methods of data collection, one or few entities in which no experimental controls or manipulation are involved (Walsham 1993).

#### **3.1 EMPIRICAL CONTEXT**

Game playing has a long and established role in the Finnish consumption of software applications (Mäyrä, 2008). Based on the analysis by Neogames (Neogames and Suomen pelinkehittäjät r.y. 2010), the gaming industry is a fast growing entertainment industry and very important software export product of Finland. The overall turnover of the Finnish game industry is approximately 75 million Euros in 2008 of which 87% is exports. In Finland there are approximately 70 digital games studios that employ 1150 people. Finland maintains a good entrepreneurial infrastructure for game development. Finnish games developers characterize Finnish games industry professionals as having a high level of technological knowledge. (Neogames 2009)

We interviewed 26 individuals from 13 game studios, one game research entity, leaders of three game development associations and two informants were working as consultants in the game industry. Informants were working in different roles such as general managers (e.g. CEO, 12), business development and marketing (2), producers (2), product development (5), research (1), consultancy (2) and design (1), see Table 1. Many informants were active participants of game

related associations and research activities, too. The reason for this selection was to acquire an interdisciplinary overview of the contribution of each role to the idea processing. The study required certain working roles within the game industry to be included in the study sample, however, the selection criteria had to be slightly adapted to accommodate the availability of participants during the research period (November, 2009 – January 2010).

Our informants covered 91% of the Finnish game industry by turnover. The size of case companies varied from 2 employees to 299, median size being 20. The smallest company in 2009 had a turnover of 13 thousands Euros and the largest company 49 million. Both recently founded start-ups after less than two years and established companies, the oldest being established in 1995.

Table 1. Company descriptive statistics (2009).

<b>Employees</b>	<b>Turnover (thousands)</b>	<b>Informants roles</b>
299	49000	Director of development
123	8400	CEO, Senior Designer
56	3800	CEO, Marketing Coordinator
50	3260	CEO, Producer
39	2800	Business development manager, Producer
30	1500	CEO
20	1268	CEO
20	1200	CEO
10	731	CEO
20	634	Chairman of the board, CEO, Lead programmer, leader designer, lead artist, lead animator
10	22	CEO
2	13	CEO
5	N/A	CEO
684	79207	Total sample
1150	87000	Total Finland
<b>59%</b>	<b>91%</b>	<b>Sample proportion of total</b>
Other		Director, Consultant, Consultant, Game researcher

### 3.2 DATA COLLECTION

We formulated a semi-structured interview design, in which pre-conceived, open-ended questions covering general topics were raised while providing the interviewee with the opportunity to direct the discussion and comment freely (Nandhakumar and Jones 1997). In our research context,

interviews were an efficient means to form interpretations from the views, actions and events regarding idea processing (Walsham 1995).

In order to gain research access, an invitation letter was designed and distributed to thirty individuals working in the game industry according to advice from industry experts such as executives of national game industry, related associations and individuals working in the industry (IGDA, DiGRA, Neogames, PlayFinland). In addition, a snowball sampling strategy was applied to identify appropriate individuals through networks of people who were aware of which cases would be information rich (Miles and Huberman 1994). Prior personal contacts were also used to gain access to game studios. Contacts are often necessary to facilitate a trusting interaction between participant and researcher (Walsham 2006).

Before each interview, the researcher conducted a brief background investigation of the company and the individuals working within the organization by using publicly available information such as company web -sites providing publically available general information describing current games and projects.

All interviews were digitally recorded and transcribed to digital text documents. Additional notes were taken during the interviews to complement the recordings. Often, the discussion continued until after the official interview had ended. The researcher had the opportunity to spend additional time with the subjects in a less formal atmosphere (playing games or having a cup of coffee). Many additional narratives, stories and comments were collected from these specific informal contexts. Often, discussion was more relaxed and open and during game-playing, focused on actual game playing ideas and experiences.

The majority of interviews were conducted on the company premises - this was a conscious decision with the intention to talk face-to-face and engage with the participants in their natural physical setting. During all interviews, the researcher explicitly discussed the confidentiality principles surrounding the research (no names of companies or individuals would be disclosed). When referring to game studios and informants we use pseudonyms to respect the confidentiality principles. All interviews were conducted in Finnish language except one which was conducted in English. Used quotes have been translated from Finnish to English.

Interviews were planned to last 45-60 minutes, however, interviews lasted between 25 to 115 minutes and even longer including the informal contexts. Twenty-six hours of interview data and 167.000 words of text in total were collected (Interview specifications – See table 2).

After initial processing of data in April 2010, follow-up visits to some of the companies was took place at which public presentations were delivered to digital game developers and further feedback regarding several preliminary findings was collected. We reached approximately 20% of all Finnish developers with our material collections with feedback (26 interviews, 50 persons in company presentations, 150 developers in formal setting and informal discussions).

Table 2. Data collection summary.

<b>Data collection event</b>	<b>Details</b>	<b>Objective</b>
Interviews	26 * 30-120 minutes Semi-structured interviews, 167.000 words	Collection of the initial raw data.
Formal presentations	Four companies, approximately 50 employees, 8 hours.  Game developer event (IGDA) approx. 150 persons attended.	Feedback, follow-up discussion.  Modifications to subject categories.
Discussions	Approximately 20 individuals.	Ad-hoc feedback from game developers

The conceptual ideas of boundary objects and value creation practices are used as theoretical lenses in the coding process (Orlikowski and Baroudi 2002). Coding technique was based on Miles and Huberman (Miles and Huberman 1994) in which different transcripts, field observations, documents, and other materials processed using open, axial and selective coding and data is dimensionalized mechanistically linking them to identified subject categories. Open coding was initially performed manually, line-by-line, with a purpose of linking the researcher’s interpretive act to the theoretical concepts. After the initial manual coding, Nvivo (version 8.0) was used for data categorization.

The data categorization process was conducted by first assessing the interview data by collecting the answers related to game ideas. Then, texts were classified in subject categories by the context game ideas were described. Finally, arising significant concepts were derived by citing to informants’ descriptions. During the open coding process, some axial coding was performed by

linking sub-categories to categories. Categories were revisited several times from details to general and from general to details which helped to outline the most important knowledge patterns in the interviews. A second researcher audited the analysis, made suggestions and corrections to the interpretation in an iterative manner. We applied the Dubé and Paré (2003) check-list of items, known to be important in conducting case study research.

## 4. FINDINGS

In the following section we describe the practice of idea transformation from the conception of an idea to a marketing message. The cases illustrate the various steps of idea transformation depicting descriptions of idea selection and value building practices used in case companies.

In the companies studied developers want to focus on building convincing paragraph of text, a picture, or a short “elevator speech”. After ideas are shared within the organization, which is aware of the ideas circulating the organization, and by make use of internal processes the idea becomes a full description of a gameplay, platform, used distribution channels and project scope (e.g. time, money, knowledge, and amount of content). It’s limited with a specific scope such as one sheet of paper about what kind of characteristics of a good game company wants to emphasize in the product and in the marketing of it. A good idea is a vision of a game that fits the market demand for enjoyable games: “*This could be a good game!*” (CEO1). CEO1 highlights characteristics of an idea:

”Everything begins from the game idea. It can be something to do with technological opportunities combined with a certain type of game mechanics and a specific theme. It comes from these three things....For instance, it would be nice to kill a hell of a lot of zombies. This kind of basic idea, and that something that has never been seen in another game before. There can be many zombies hunting a piece of player’s meat. That is where we start. We can develop that in a way that has probably never been done before.”

### 4.1 IDEA SHARING PRACTICES

#### 4.1.1. SOURCES OF IDEAS

First, ideas are *developer* driven. In our cases developers were shown to be the most important source of ideas as they generate the creative starting point for their projects as CEO 1 explained. Second, CEO3 emphasized the importance of the publishers in the process. Ideas are *publisher* driven, collected from the markets by analyzing available games and convincing publishers with new ideas in various environments such as game conferences. Third, ideas can be *consumer* driven. In most cases, consumers are not actively involved during the initial phase of idea development but game players’ feedback is taken into account at a later stage when a game is tested or further content updates and developments are planned (CEO5).

We didn't have to ask consumers because we have a creative foundation for our game concepts from the people that work here....For example, we assume that we partly represent the audience which we want to reach, that is basic players who are game hobbyist and enjoy them. We assume that we are also part of that audience. Partly, we develop games for ourselves, too.” (CEO1)

Most of the ideas that have been developed into a game have a background story. For instance BattleStar Ltd's idea was to combine realistic sea battles and trading in a historical setting during the time when sailing ships were used to trade between Europe and India. While gaining historical experience of sail ships and sea battles as well as 3D modeling techniques, the studio developed the idea of building a video game. The organizational boundaries leak knowledge from outside and is used to rationalize the chosen decisions.

Collections of game ideas are often collected into a repository. During years of operations study, participating studios have collected many initial game ideas of which only very few are developed into games. In the case of SweetSoft, the studios director had collected and documented more than 3.000 initial game ideas of which approximately 100 have been developed into a game and published. These idea repositories generate development knowledge and requirement boundaries in the organization which are used to choose initial ideas that are worth processing further.

#### **4.1.2 WEIGHTING AN IDEA**

Important knowledge holders weight the idea and try to fit it with the company's game development capabilities. Many of the participant studios in our study had predefined weighting decision principles to identify the most important features of the game. These principles are based on earlier experiences and are used to define a product's essential and desired features. Principles are not usually measured explicitly in order of importance but are used to search for the elements that make a game differ positively from other games.

LightMoon Ltd. has three main idea categorizing principles. Firstly, they think of technological opportunities that for instance new game platforms offers for game developers such as High Definition (HD) quality visual experience. Secondly, game mechanics is considered. They evaluate the possibilities for innovative ways of control methods for games. Thirdly, they assess the game genre by its theme. A popular theme would attract game players by a game's familiar associations.

In the case of BattleStar there is a strong relationship between the organizational capabilities and the choice of game idea. The game ideas are limited during the initial phases by the developers' skills in building games on certain platforms. CEO3 illustrates this concept:

” When we did the Bay of Gustav multimedia we had many facts about historical sea battles and had knowledge on strategic elements of games and how to build models of sailing ships and water. So, it would have been stupid to do space arcade games when we already had so much knowledge.”

#### **4.2 VALUE CREATION PRACTICES**

A game's basic gameplay idea gets reviewed several times internally before being taken outside the organization. Depending on the organization size the decision making is focused on the management teams. In small studios where organization is flat, decision making is performed by owners and founders who have a vision for a company but also often hold the technical knowledge of game building. In bigger companies, such as in our case studies (10<), a management team which usually contains representatives from various organizational roles, such as lead designer, R&D director and CEO are present.

In smaller studios, games are often built according to the needs of the studio and interests of the game developers, rather than analytically searching for the correct segments for their games, claiming that they also play games. Developers search for information and characteristics of their game to positively influence stakeholders and make them believe that the game has potential and will be able to compete in a market, rather than building a game from purely analyzing market data and possible consumer needs.

Studios have to show that they have the capability to build a game within a limited scope (time, knowledge, money, and amount of content) yet at the same time add something different and positive in comparison to other games. Some companies have established such impressive reputations that even a very short description suffice to convince publishers to accept the project; this however does not happen very often. A studio has to usually build a gameplay demonstration of the idea and show that the idea is interesting. CEO3 describes:

”After [conceptualizing] we visit 2-3 times year a happening called Game Connection in which we present our concepts to our customer, publisher. Those 3-5 concepts that get the most positive feedback we develop them into a trailer in which we want

demonstrate the atmosphere of the game and playable demo. Often we use our own money or financial support from the government... We need to convince the publisher of the a) game idea and b) technology and how the game could be and of course the team's capability of developing the game."

Many other stakeholders such as publishers can contribute to the idea. In the case studies, most of the studios used a publisher to finance and distribute the game through different channels. Publishers are important interfaces to end consumers. They are informed and aware of what kinds of games have a potential in the market at different times. Publishers are often used to acquire feedback and possible funding. Idea evaluation process can take surprising directions, CEO 3 explains:

"The idea can radically change in the process. Like if we say that our game is very violent and with an age restriction of 18, publishers may say 'here you have 3,5 million but make this game a family game'. So, we make a family game then."

In all our cases consumers are not used directly during the initial idea processing phase but are often asked for feedback on the gameplay idea and mechanics later during informal (playing sessions in-house) and official (trade fairs) sessions when there is already something ready such as a demonstration version of the game. CEO 1 explains the reason for a successful demonstration of a game:

"It had all the elements in place. The game mechanics are usually the issue. It is that it had something new but something recycled old in a new way and the gameplay was just there. Then we had to think of the story, characters and the full set..." (CEO1)

#### **4.3 VALUE COMMUNICATION PRACTICES**

Developers intend to positively influence publishers and consumers associations of the game idea. They have to show publishers a good game idea that they use to persuade publishers to give positive feedback, funding and their business networks. Further, often developers are involved and needed to ensure that consumers perceive games as a source of enjoyment and create positive word-of-mouth among consumers. For instance, in the case of SpaceBox Ltd. as the Marketing Coordinator 1 explained game players are used to collect ideas by using a web application in which they can discuss and vote for game elements to be embedded in the next releases. Developers intend to select

those core benefits that they find the most appealing towards different stakeholders. At the project start, the organizational capabilities are emphasized whereas in the publishing phase, features are emphasized.

”Of course my wish is that they [consumers] would notice or would consider a game as a good one of a high quality, it would have something valuable, it is a good product that they can appreciate, are willing to pay for it, they would remember who has built the game, they would be loyal to our brand and trust that we produce good games, recognize our name, think our games are good looking, they work well, are fun and they have something new and entertaining, that I want to play more games from this producer”. (CEO7)

### **4.3.1 PUBLISHERS**

Publishers are knowledge gate keepers - they often have developed optimal access to consumers through their distribution channels. Publishers offer a superior source of information in comparison to consumers because they possess market understanding regarding “*what kind of game could sell well*” (Business Development Manager1). Publishers utilize many existing elements from the studio to build marketing campaigns. These elements originate from the idea weighting process but publishers often want to modify and also contribute feedback to the already once processed idea. They may want to take a more significant role as a supervising stakeholder especially in cases where they finance game development. They often propose changes surrounding the game idea and plan the marketing related actions together with the video game studio. As was the case of one participant studio LightMoon Ltd., the publisher was responsible for all marketing actions. Marketing actions are reviewed continuously from the initial idea up until the launch and throughout the whole life-cycle of the game.

BattleStar Ltd. was new on the market and they had not published any games before. In principle, they had no direct contact with end consumers. Processing the initial idea was based mainly on the fact that the project had to be sold to publishers for funding or the project would be cancelled. Therefore, building convincing sales materials about the game ideas was essential. It was a challenge for them to convince the publishers to trust their capabilities of producing high quality games. Talking about familiar, well-known games of a similar type can provide a possibility for publishers to easily catch-up and relate to a unique story. Concept documentation included slide presentations, one page flyers, software programs and demo’s about the gameplay. The emphasis

was on the gameplay idea and technological experience from previous projects. BattleStar Ltd. provided later a considerable amount of marketing materials, posters, flyers, video trailers, developer diaries, trade fair booth materials and the developer was active in the discussion forums. CEO 3 emphasized that marketing materials have to support the selected core elements that make the game superior or different to other games.

In all of our cases the studio did not have a marketing director but the CEO was in responsible of marketing practices and handling contacts with the publisher. Since the publisher takes care of most of the marketing actions towards end consumers developer's main task is to build a good quality game. They do however attend trade fairs and give press interviews to talk about their latest game projects:

“...as principle publishers are responsible for marketing. It can even be in the agreement that we are not allowed to do any of our own marketing without the publishers permission. Why would we want to mess up their fine marketing plans?”  
(CEO 1)

#### **4.3.2 CONSUMERS**

The marketing message towards consumers differs from messages used towards publishers. When communicating the game's value to consumers, facts and associations related to visual experiences and outcomes such as fun, are used in combination. Developers usually do not emphasize their organizational capabilities of producing games but rather what could be interesting in the game for possible buyers.

“Well, it [value] is about if they get something new from the game. Has it got something cool that they want to talk about to their friends? I am thinking about how I would define a good game myself. In fact, a good game is something that I want to talk about with my friends and it has something new and cool and I am just saying wow, look at this, this is such cool stuff.” (CEO 6)

In the case of BattleStar Ltd. many original gameplay ideas were used as a basis for end consumer marketing: a) most visually appealing sea battles b) combining battles and trading c) unique theme of managing 17-19<sup>th</sup> Century sail fleets. However, when end consumers start playing the game the focus is more on usability issues such as how easy it is to learn the game play. BattleStar is not explicitly responsible for marketing the game for end consumers but were strongly involved, by

providing marketing materials and deciding which strong arguments would be used, to create positive associations in their consumers' minds. Chief software architect 1 explains:

“When we sell the game to the player we use different focus areas. In practice we use things such as how many sailing ships we are going to have, we sell using the visual experience and the differentiating element of trading and fighting games. Those are the issues we use to try to get players' attention, before the game is even installed onto the computer. ...Once the game is on computer we go into details. The selling points lose their importance and then we emphasize the usability. The game has to be easy to learn how to play, so simple that the user does not even notice learning.”

Although LightMoon has little to do with direct marketing towards consumers, they rely on the fact that consumers will recognize their products and the studio. Various marketing related practices and actions build awareness about the games among the consumers. For instance, they have recognized that game reviews have an important influence on consumer decision making through positive praising of products. A good positive reference about the game and high game ratings are signs of good product quality.

”What we wish, and what game reviews often confirm, is that we have good craftsmanship skills. We have good quality products and the reviews have been in the top 20% of all games which is good....Consumers should have good feeling that we have put in effort and love to develop this and this is cool and the cool feeling is developed there and it is worth the money.”

#### **4.4 THE OUTCOME OF PROCESSING IDEAS**

The main objective of idea processing is to scan initial ideas and collect a selection of those ideas that could be valuable and considered to be built into a game. Developers use their own specific knowledge to process their ideas. After the first game development experiences and published game title, as CEO4 explained, BattleStar Lrd. has developed a rather analytical process for idea processing. First, the team evaluates all game ideas internally, after which they select the most prominent ideas and build concept document materials to present to publishers. CEO2 explains how initial ideas are processed among game developers:

”We have our own brainstorming sessions. The idea is that all workers sit in the same

room for an hour or two just giving crazy ideas. Everybody is writing them down when we are thinking of a game. Quite quickly we want to fix the genre and the visual layout. We want to limit the game and consider if it is difficult to make. Then we think game mechanics and whether the setting if it is science fiction or a fantasy game, is it set in current times or not. Then, how many players can play it, like if it's a single player game. Is it a completely story-driven game, or is there a story behind there. If the story is supposed to be interesting we think what kind of characters we put into it and the story elements and all that kind of stuff. Then when we have come to the result that these gameplay elements would be good, we start fixing genre, gameplay and amount of players. Then we build a game play demo or prototype. We select the game engine which gives us a head start and prototyping stuff.”

For management, the outcome of the idea transformation process is a business case that explains the reasons why to invest resources in an idea. The outcome of the process is often a business plan that contains an argumentation of the idea's fit to the market. It explains how strong, intangible, valuable assets such as the brand and intellectual property (IP) for long term use are created and maintained. CEO3 explains:

”...we think more of the business case. We use the idea to build a concept and then build a business proposal as to why we should do this game. We think how much it would cost and how much time it takes, who could make the game, what are the features, how much content it will have, what the gameplay is, what the visual appeal is, what the potential competition is, which game category it fits into and why somebody would like to buy it. Then we also think how well the idea can be duplicated in the form of sequels....and how well the idea applies to different platforms such as web, Facebook, consoles. We also think of the horizontal extensions. We try to find ideas in the product family...Then we have built a business case and we can give it back to the product development team. We give them the production limitations such as how many persons, this amount of time and there you have the framework in which we as a company want to do this. They then think in practice how many features, how many levels and how it really looks and how much it has to play. They also do the preproduction and make a project plan and feature specifications.

## 5. ANALYSIS

The selected description from the cases illustrated the various stages relating to the development of a good game idea. We define a good game idea as a vision of a game that fits the market demand for enjoyable games. Some similarities were observed in the idea processing practices in game studios related to the selection of core benefits used in decision making. For instance, the elements of a good game idea description were in most cases the same; a combination of game category (What type of game it is?), gameplay (What is the main content and how the game is played?), game platform (What kind of technology is needed to play the game?) and with a brief description about the target segment (Who would play the game?).

Yet, game studios weighted elements differently according to their prior game development knowledge. Three main themes emerged from our analysis; idea sharing practices value communication practices and value communication practices. We discuss these significant practices in idea processing in this section.

### 5.1 IDEA SHARING PRACTICES

We observed that for developers the outcome of idea processing was a technical documentation of a game's different features and for management, it was the business case or documentation that could be used to make decisions as to whether the game idea was worth developing, from the perspective of sales. Business cases outline the financial reasons why a game should be developed and should also contained software requirements as, without a general idea of the game development software requirements, there would be no business case.

Documentation can also based on real-life contexts such as in the case of BattleStar in which game ideas were closely related to historic events. These events enabled the studio to develop an initial idea and develop it further in their idea processing practice. These documentations served as important boundary objects that helped to share and elaborate the ideas.

In summary, game ideas were unfolded from the thoughts of the individual they originated from, brought into the organization, and put into repositories. Then *initial* idea was processed using different practices. There were multiple roles and relationships that built towards an organization's goals. Individuals used their prior, accumulated knowledge about games while at the same time collected new ideas. Individuals such as developers, managers, publishers involved in the analysis of other games were used as sources to derive pieces of information that contributed to idea

processing. Further, different sources of information such as the internet, trade fairs and other games (e.g. by playing them) are used to evaluate ideas. These external boundary objects were used as a reference point to share and develop the idea further.

The main difference observed was the way different stakeholders were given access to idea processing. Conceptually two opposite extremes, with regard to accessing idea processing ideas using consumers, exist; from those that restrict access from any externals completely to those that allow consumers to have direct access to the game development.

An initial idea in isolation was not enough to sell a game to those who made decisions to invest resources in the game's development. A game idea may be an example of a "yet, not plastic enough" boundary object, difficult to maintain alive and share (Hargadon and Sutton 2000) in its early phase of development, like an ambiguous thought that needs to be transformed into something more concrete.

Without the leakiness of knowledge outside an organization, a game idea would not be shared and utilized, and the "collective mind" would not be able to function optimally. This concept was highlighted in many of the case studies, in which participants emphasized an important aspect that they appreciated, which was that game players shared idea handling, thus producing more games suited to the likes of those playing the games. The individualistic perspective, even at organizational level, has not been shown to be very functional.

## **5.2 VALUE CREATION PRACTICES**

Individuals holding vital knowledge discovered elements of improvement and dis-embedded and modified elements by adding value to them and afterwards, re-embedded these elements back into to the process. By elements we mean characteristics that the community of practice - games industry - consider important for a good game, such as an appealing visual layout, perceived fun and ease of use. The added value to an idea in process, as an *evolving* idea, originated from internals such as employees, or externals such as publishers and game players that broke the knowledge boundaries as participants of the transformation process. Or particular importance is the openness of the process to employees, even though the majority of the elements collected were not used in the eventual decision making. Nevertheless, without collecting them, organizations would have no chance of choosing the game characteristics that best fit their vision of the game.

Decision makers collected the vital information about the ideas from different people. Individuals, often game developers and managers who were involved in the decision making process and had access to the idea repositories, seemed to add the most important contributions to initial ideas. One would expect ideas to originate from consumers but developers did not trust the feedback from those less informed than them. They were often under the impression that a consumer does not have enough knowledge and understanding of the game building process to be accurate and realistic about a game's good qualities and therefore make a positive contribution to the process. Professionals are aware of technological components and limitations, whereas consumers often use their playing experiences to assess games. The various roles impose a weight onto individuals' comments of an idea because it is assumed that experts have the capability to express a thought better than those with less experience. When the vital information has been collected and added to an initial idea, it transforms into *valuable* idea.

The gained experience in game development increased the confidence towards developing games. For instance, a studio experienced in developing racing games would consider ideas related to racing games as a priority. The valuable idea was based strongly on prior knowledge of a game's thematical knowledge. This knowledge helped studio's to scope the organizations capabilities to process an idea.

### **5.3 COMMUNICATING VALUE**

Individuals working in the studio, such as programmers or graphics designer's, were in actual fact responsible for conveying an organizations capabilities to others. They were important gate keepers of knowledge who had the responsibility to present the collective mind representing all individuals contributing to the game idea.

Developers were idea carriers and they used different sources to collect knowledge to improve the ideas in order to convince those that tried to build higher barriers against them. The barrier between people and organizational boundaries was evident when knowledge collided with the building of credible messages needed for the marketing experience, which was often distributed across different participants and which relied on partial and often conflicting representations of the same entities necessary to build a good game. Good ideas were often deeply thought ideas that the organization itself and other stakeholders supported. The processed idea was used as a convincing signal of information about the game's value to the important stakeholders as a *credible* idea.

## 6. DISCUSSION

### 6.1 CONCEPTUALIZING IDEA TRANSFORMATION

The transformation process cannot occur with an idea that is wholly unrecognizable (Czarniawska-Joerges and Sevón 1996). Ideas for new games come from many places and contexts and travel through organizations and individual minds, translated into an object and into action (Czarniawska-Joerges and Sevón 1996). This series of actions can be described as a knowledge transformation process, which is a pragmatic capability of creating a common meanings and associations among people (Carlile, 2004). The transformation process from idea to adoption of the idea is a collaborative act and product of multiple processes of organizational practices from different individuals sharing knowledge from which the idea is dis-embedded and re-embedded by various knowledge roles increasingly contributing to the value of the idea (Burt 2004;Perry-Smith 2006;Perry-Smith and Shalley 2003;Star and Griesemer 1989). During the transformation process, decision makers search for those elements that render a game positively unique in comparison to other games and products (Hargadon and Sutton 2000).

Game ideas are abstract boundary objects that originate from multiple sources and are modifiable by organizational practices (Star and Griesemer 1989). During the transformation process, developers act through their roles as idea modifiers by adding value to the idea (Star and Griesemer 1989). They carry the idea, or suitable parts of the idea, that aligns with their knowledge and experience within and outside the organization (Weick and Roberts 1993). Then, the idea transforms from an abstract intangible object towards a more tangible shareable idea, of which the most important parts are used to create a game idea positively unique from similar games.

Figure 1 depicts our conceptualization of the process of idea transformation within an organization. It corresponds to the research question addressed in this study; how salient qualities of digital games are embedded into games and communicated to important stakeholders? The salient qualities of digital games are embedded into games using three observed organizational practices; idea sharing, value creation and value communication.

The model in Figure 1 displays the process of how a *good* game idea is developed in an organization. The organization is limited by two organizational boundary levels. The first factual organizational boundary covers the employees working in the studio. The second limiting boundary

is more abstract and changing; the knowledge boundary which is the sum of the knowledge that the organization holds within functional domains without exchanging any through organizational boundaries.

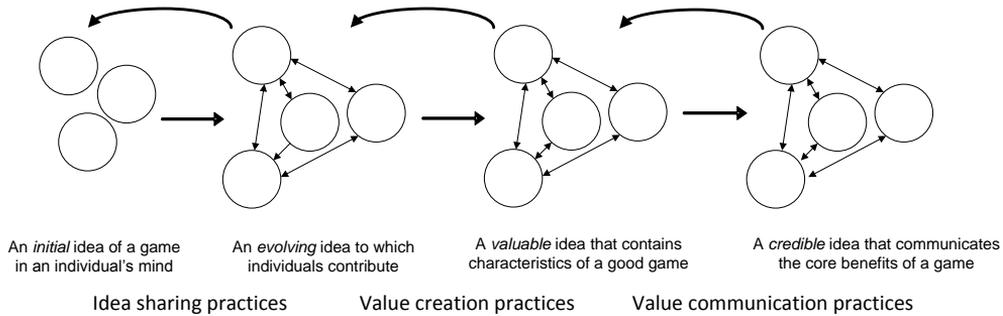


Figure 1. A process model for idea transformation.

An idea is transformed from inspired, fragmented mental images and unstable mass of meanings in an individual's thoughts into a clear marketing message utilizing different practices. The *initial* idea for a game in an individual's mind is often brought to the organization as a collection of thoughts, not yet contested and untouched, via idea sharing practices. The resulting *evolving* idea moves through organizational knowledge boundaries to which individuals contribute by adding value. In this phase the idea is in a changing and dynamic form. A *valuable* idea contains a set of characteristics that are required to make a good game. It is a structured set of prior related knowledge at a stage suitably changed, evolved and ready for specific decisions regarding the idea. Then, management knowledge is used to build an understandable boundary object with a *credible* marketing message that promotes the game and distinguishes it from the mass of similar products through marketing practices. The marketing message has to be relevant to its listeners because only then can it exert an impact. To accomplish these objectives, ideas are used to differentiate the product from other similar products. Features are common syntactic language in the community of video games studios, brands are semantic with common meanings and associations that vary and modify where pragmatic knowledge is used to test the idea among the people of the community of practice (Carlile 2004).

The cases illustrate the significant moments of transformation which are summarized in Table 3. Idea transformation is an iterative process in which significant moments can be repeated and overlap with other steps during the transformation process.

Table 3. Significant steps of idea transformation.

		<b>Transformation step</b>	<b>Practices</b>	<b>Action</b>	<b>Result</b>
1	Sharing ideas	Conception of an idea	An individual's thoughts in a form of a vision of the game.	An initial idea is brought into an organization.	Important individuals within the organization define the requirements for the market fit.
2		Sources	Idea collection and sharing practices.	All individuals who have access to communicate with the game developers may influence the idea transformation process.	A repository is the tool used to organize circulation of ideas.
3	Value creation	Weighting	Using a set of principles.	Organizational capabilities are put to the test.	Forming knowledge and organizational boundaries of the idea.
4		Modifying an idea	Value adding practices.	Individuals use their special knowledge and role in the organization to dis-embed and re-embed elements from the initial idea.	Limited number of elements to emphasize in the game.
5		Evaluation	Organizational boundary breaking practices.	Initial ideas are put to the test in many places and contexts by different individuals.	Using social force in persuasion of others.
6	Communicating value	Message building	Selection of game idea's core elements.	Selecting game elements that make it unique from other similar games.	A presentation of the game idea.
7		Marketing	Brand building practices.	A simplified overview of the game qualities and main outcomes.	An initial idea becomes a product of the collective mind.
8		Associations	Creation of credible associations.	The simplified overview is used to build and praise positive associations about features and feelings.	Make people react to the game idea by giving feedback and through word-of-mouth.

## 6.2 MANAGING KNOWLEDGE BOUNDARIES

Game ideas will be forgotten if they are not processed in some way and if there a deficiency in a certain knowledge domain such as design, programming, marketing and other important functional practices. An idea cannot be transformed in a tangible shareable object without knowledge brokering, which is an important part of the process (Hargadon et al. 2000). The digital games industry has become such a technologically complex environment that hardly any good game ideas are solely in the hands of selected individuals; it requires various kinds of knowledge from product design, development and marketing to be merged from various sources of knowledge such as end-users and product developers for value creation (Prahalad and Ramaswamy 2004) (Hippel von 2005).

The observed significant participants in the idea transformation process were developers, publishers and game players who hold different knowledge about games and game development (See Figure 2). The strategic management of ideas contains various that represent added value to ideas from different knowledge domains (Schwartz and Nandhakumar 2002). Developers intend to work for the best possible outcome and favor a company’s strategic goals by selecting the best possible knowledge available from different knowledge domains (design, programming, marketing etc.) across individuals, functions and within and outside the organizational boundaries.

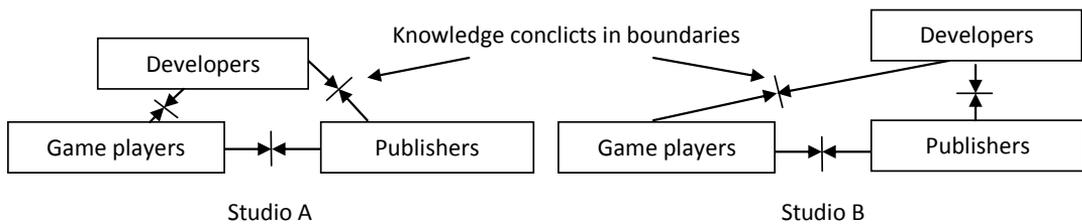


Figure 2. Knowledge conflicts and organizational distance.

While developers have the right to make decisions, and most often possess the knowledge to build the game, publishers and game players can influence the assessing of an idea by providing additional knowledge. A good game idea is not merely a result of processing more knowledge but a result of transforming knowledge, where knowledge is both a barrier and source of innovation (Carlile 2002). A barrier due to different knowledge use preferences that create conflicts between different actors is also a source of innovation because new game ideas can evolve from the transformation process. For instance, our cases also demonstrated that many of the studios are dependent on spotting “old ideas” that can be used in new places, in new ways and in new combinations (Hargadon et. al. 2000) – to build something new but familiar simultaneously.

Ideas should evolve from a non-redundant, heterogeneous structure with many different weak and strong social ties with decision making involvement that help the idea to evolve into a final form and adapt the idea to company requirements (Kijkuit and Ende van den 2007). Yet, something that needs to be adapted must first be challenged by the organization that adapts to the new information. With no challenging taking place in an organization the ability to identify which are the elements that constitute a good idea, and will produce better games suited to the company’s objectives, is diminished.

The issue is not that knowledge is embedded, but that brokering mechanisms work efficiently, using boundary objects and idea processing to perform this. Organizations need open minded people and managers that are willing to undertake the role of transferring knowledge between domains because otherwise, different kinds of knowledge never meet to collide and create conflicts that are necessary to uncover where the value and ability to produce elements of game ideas lies. Those that are aware of the existing social structures of an organization, in the form of knowing those who are responsible and are holding important knowledge of different domains, are exposed to and have the opportunity of producing good ideas where debate play's a significant role (Schwartz and Nandhakumar 2002). Yet a good idea broadly, will be understood and recognized by many as such and praised and valued as a good idea (Burt 2004). Yet, any individual needs methods to influence decision makers and enough support, which cannot be provided without knowledge conflicts, or the tension in which knowledge preferences are used to select the core elements of a good idea that is worthy of building a game, is essential.

The stickiness of the information within individuals' minds in an organization is the inertia that prevents the free circulation of thoughts (Hippel von 1994). Many of the studios used methods of idea processing of which external participants could not access. Further, organizations were full of unwritten rules of behavior that build up contextual knowledge which made it is almost impossible to access the idea processing and add value to an idea by external participants. For instance, managers used a preference structure in decision making which can occur as a result of site ontology and the social life within the organization is tied to the context of the knowledge of the decision makers (Shatzki, 2005). Knowledge was often situated in an isolated physical context such as the office space, a room within organizations which lead to more inertia and distance between internal and external participants (Tyre&Hippel, 1997). Some of the developers displayed less inertia between themselves and other stakeholders, allowing an influx of knowledge and ideas from other sources, whereas others were confident and used predominantly their own organization's ideas, knowing precisely which ideas could be built into valuable ideas using internal processing.

Companies can and should manage their stakeholders by excluding, including, moving them farther or bringing them closer. This relationship and collaboration is often subject to distance: If the studio brings external participants, such as game players (Studio A), too close they can be assimilated into part of the development process within the organization and the nature of the knowledge changes and adopts a more subjective slant. In contrast, if important stakeholders are kept at a far distance (Studio B), they are unaware of what the organization is doing and the meaning and relevance of the

feedback vanishes and credibility is lost. Distance is related to the knowledge stakeholders have about their game domains but managed by the game development organization where learning has to take place. The conflicts arising in response to elements of ideas vary and are often determined by the knowledge preferences and the individual's expectations, trust in and experience of knowledge from the domain in question, causing distance between the developers and individuals outside the knowledge boundaries.

There is a tension between the external and internal sources as a need for external resources to complement internal resources exists (Yang et al. 2007). As our findings indicate, companies are often under social or economical pressure. Yet, boundary choices, allow for the management of different participants and the distance kept between them by forming different kinds of partnerships, which differ between organizations, and is dynamic, often dependent on the value that externals can credibly communicate to others within the business network. This may explain why consumers are not strongly involved in idea processing - because they lack the technological and business knowledge necessary to actively contribute. Where tension is a covert undertone, underlying and not public in organizations, conflicts are overt actions of individuals where they challenge each other by using their specific knowledge. Organizations are often aware of existing conflicts. The perspective of where practices are results of ongoing social accomplishment, the "knowing how to do" and "learning by doing" (Orlikowski, 2002), are emphasized in the studied organizations in a manner that the trust towards those that give feedback is higher for those who have explicit experience in game development (publishers) rather than only in game playing (game players).

It is in the interest of the game developer to manage the distance between, and bring consumers and publishers closer, to the idea transformation process because in this way both groups can learn from the conflicts they face and positively gain from each side's knowledge and input. The management of the knowledge boundaries is a challenging task because the boundaries are dynamic and change place continuously as each new game brings new information to the market place.

### **6.3 IMPLICATIONS TO THEORY**

The insight that emerges from the above discussion is that good game ideas emerge from knowledge conflicts between game developers, publishers and game players through the process which is used to transform ideas into valuable boundary objects, which lead to an improved understanding of a product's expected quality and outcomes.

The use of a boundary object is described as a means of representing, learning about and transforming knowledge to resolve the consequences that exist at a given organizational boundary. Knowledge is structured differently across different functions localized, embedded in a function. (Carlile 2002). The nature of a boundary objects, however, is dynamic and continuous where the boundary object changes its form and is modified continuously by its users. Where Carlile (2002, 2004) highlighted the role of boundary objects as translation devices that enable collaboration and knowledge sharing across different organizational roles, we show *how* the transformation of an idea takes place in organizations. Our analysis helps to clarify how different organizational practices add value to an idea and game.

Prior studies claim the importance of processing ideas, in one way or another, as a part of innovation dependent on the existing social structures between people (Burt, 2004, Hargadon et al. 2000, Czarniawska-Joerges et al., 1996). These findings are also consistent with our observations. Yet, the social structures suffer from distance and inertia in individual's minds which result in an inaccessibility to the studio's idea processing practices. The digital games studios manage the development of game when evaluating digital games internally or together with stakeholders. Further, organizations are in continuous tension (Yang et al. 2007) between different stakeholders which, according to our observations, emerges from the knowledge conflicts, regarding the preferring and selecting domains of knowledge, which are thought to be best for the success of the game idea.

Our contribution to the IS literature is in demonstrating how different sources of knowledge are used to transform an intangible boundary object, a game idea, to something more tangible that can be shared and used to communicate product value using different practices. Further, our study illustrates that an idea is a shared and a modifiable boundary object contributed to by different participants with varying roles.

This research offers a theoretical conceptualization of the main stages of idea processing practices and their contribution to the idea transformation process based on an investigation of 13 organizations and 26 professionals working in the game industry. Our findings emphasize the importance of collecting, translating and transforming of knowledge across internal and external organizational and knowledge boundaries.

While digital games studios exhibited a wide range of methods used to processing ideas, they were often unable to portray the value of ideas to important stakeholders. The solution is first, to understand and adapt to the knowledge preference differences between different stakeholders. Second, to manage the ways in which access is granted to different contributors of the idea. Third, by effectively collecting the information that is considered as characteristics of a good game by the game industry.

Our research gives rich insights into how knowledge transformation occurs with important boundary objects, such as game ideas, which are intangible and are transformed into something concrete with which unique value is built into games.

A good idea functions as a source for discovering unique value characteristics which differentiate a game from other similar games and make it stand out from the mass. Only processing ideas, however, is not enough. Organizations need to know how and what to communicate about core, unique value elements to different stakeholders, such as publishers and potential game players.

The relationship between different forms of ideas is dependent on different practices of how ideas are modified. There is not only one way of creating ideas and following idea processing practices to build good ideas. The most suitable and optimal way ultimately requires a series of required actions; a) idea sharing, b) value creation and c) marketing practices to support development practices and the processing of ideas that leads to the creation and building of successful games.

We observed from our cases that each company had their own way of processing ideas, especially in the way they managed the distance between different stakeholders. There are many challenges that organizational managers have to handle. The distance between individuals and organizations is a core challenge. The distance between developers and other stakeholders is also inevitable and needs to be managed concurrently. Managers can succeed if they allow organizations to leak knowledge while simultaneously working within the organization and bridging knowledge gaps.

## **6.4 CONCLUSIONS**

Good product or service ideas, in the digital games industry, in particular, are often hard to come by as idea processing practices are at times unable to exhibit the value of ideas to important stakeholders. An organization may give an illusion of housing many good game ideas but if they are not challenged by different kinds of knowledge domains, which create conflicts between knowledge preferences, these ideas cannot evolve. Developers have to manage the relationship between

different participants of the idea transformation process. A relationship that is too close makes the processing more subjective and it is often difficult to introduce novel ideas due to the lack of stimulation. In contrast, the further the stakeholders are from developers, the more difficult signaling value of the idea becomes.

Distance could impact negatively on the influx of external knowledge into an organization, but it is a manager's task to manage both external and internal relationships optimally to counteract this. Management balances the distance between externals and the organization to ensure the organization's best interests and success. Managers need to decide how close they can bring external knowledge to provide a basis for whether ideas can transform into unique game elements that will make people believe in them. The distance and inertia from each individual's knowledge sharing are thus closely linked and interact through organizational practices. The effect of any practice is subject to a distance dilemma that may lead to either sluggishness or, well managed, to more flexibility between a series of actions from individuals within the organization.

Therefore, organizations have to learn how to build and modify boundaries and find the optimal way of handling these relationships. These knowledge conflicts are a source of innovation because ideas form messages, convincing or not convincing members about the knowledge gaps in the organization. It is the organization's responsibility to manage ideas in a way that fits to each organization's specific business strategy and ideology.

An idea first entering an organization is a random thought, from an organizational perspective, not yet contested and challenged by the "collective mind" which transforms it into something valuable as individuals within the organization contribute knowledge to the idea. In addition to contributions of knowledge which transform the idea, those working for the idea need to be convinced and believe in the unique value created. The inertia between people is the knowledge preference which defines a good game in the community of practice – the digital games industry. An example of inertia is often observed when a manager makes a decision based only on his own personal knowledge, regarding the elements of a good game and whether a game idea is worth investing in, during decision making.

Nevertheless, the idea processing practices can be insufficient to exhibit the value of the ideas to important stakeholders. The knowledge about the value of the game should not only be stored internally within the organization. The new innovative game ideas can be held at the borders of different knowledge areas that can allow access to them. Bringing ideas into the organizational and

knowledge boundaries of the organization does not however, automatically initiate the idea development process as specific, additional knowledge and steps are still required. Yet, if idea processing does not take place, determining what knowledge is actually unnecessary will not be possible.

In practical terms, a *good* game idea is more than random thoughts; it is the sum of complex knowledge transformation processes that signal credibility to those responding to the game and ideas behind the game. Good games are derived from good ideas, but if participants don't go through the process of knowledge transformation, a good idea cannot really emerge from different knowledge disciplines such as design, programming, marketing and management. If the pieces of knowledge from different disciplines are not collected appropriately the series of actions required for idea translation in a creative industry, such as the digital games industry, cannot occur. Therefore, innovation is a multidisciplinary series of acts combining different practices.

## **6.5 GENERALIZABILITY AND FUTURE RESEARCH**

This paper has concentrated on the digital games industry. Therefore, we aim at the generalizing the results of this current study mostly to the digital games industry. It generalizes the results from empirical descriptions to theory (ET) (Lee and Baskerville 2003). This paper is based on rich descriptions of multiple cases which are generalized to concepts and to specific implications. We documented our interpretations in conceptual form. Further, multiple game studios was used to document and interpret unique circumstances in organizations and intent to use the findings to build theoretical abstractions of the cases studied (Klein and Myers 1999). Concerning the generalizability of the proposed model, we believe it can be used beyond our context, by other software companies because it is likely all software companies struggle to choose those ideas that are worth investing in.

Many future research directions have been identified from the findings and materials used in this study. Firstly, digital game companies emphasized that seldom is the finished product what the idea initially represented. Idea transformation however, is only the beginning of the journey. From processing an idea there is much to be done that result in the development of a game and distribution to the market and game players. Second, when it comes to the study of organizational practices, ethnographical study over a period of time would probably reveal information and messages which this study could not uncover as only interviews were used as a source.

## REFERENCES

- Ackerman, M.S. and C.A. Halverson, "Reexamining Organizational Memory," *Communications of the ACM*, 2000, 43: 1, pp. 59-64.
- Araujo, L., "Markets, market-making and marketing," *Marketing Theory*, 2007, 7: 3, pp. 211-226.
- Araujo, L., H. Kjellberg and R. Spencer, "Market practices and forms: introduction to the special issue," *Marketing Theory*, 2008, 8: 5, pp. 5-14.
- Brown, J.S. and P. Duguid, "Knowledge and Organization: A Social-Practice Perspective," *Organization Science*, 2001, 12: 2, March-April, pp. 198-213.
- Burt, R.S., "Structural Holes and Good Ideas," *The American Journal of Sociology*, 2004, 110: 2, pp. 349-399.
- Callon, M., C. Méadel and V. Rabeharisoa, "The economy of qualities," *Economy and Society*, 2002, 31: 2, pp. 194-217.
- Carlile, P.R., "A Pragmatic View of Knowledge and Boundaries: Boundary Objects in New Product Development," *Organization Science*, 2002, 13: 4, July-August, pp. 442-455.
- Carlile, P.R., "Transferring, Translating, and Transforming: An Integrative Framework for Managing Knowledge Across Boundaries," *Organization Science*, 2004, 15: 5, pp. 555-568.
- Czarniawska-Joerges, B. and G. Sevón, "Travels of Ideas," In *Translating organizational change*, B. Czarniawska-Joerges and G. Sevón (Ed.), Walter de Gruyter, 1996, pp. 284.
- Dubé, L. and G. Paré, "Rigor in information systems positivist case research: current practices, trends, and recommendations," *MIS Quarterly*, 2003, 27: 4, pp. 597-635.
- ESA, "Essential Facts About the Computer and Video Games Industry 2009," Entertainment Software Association, 2010.
- Gal, U., K. Lyytinen and Y. Youngjin, "The dynamics of IT boundary objects, information infrastructures, and organisational identities: the introduction of 3D modelling technologies into the architecture, engineering, and construction industry.," *European Journal of Information Systems*, 2008, 17, pp. 290-304.
- Galliers, R.D., "Choosing Information Systems Research Approaches," In *Information Systems Research*, R. Galliers (Ed.), Alfred Waller Ltd., Warwick, 1992,
- Gasson, S., "A genealogical study of boundary-spanning IS design," *European Journal of Information Systems*, 2006, 15, pp. 26-41.
- Hargadon, A. and R.I. Sutton, "Building Innovation Factory," *Harvard Business Review*, 2000, 78: 3 May-June, pp. 157-166.

- Hippel von, E., "'Sticky Information" and the Locus of Problem Solving: Implications for Innovation," *Management Science*, 1994, 40: 4, pp. 429-439.
- Hippel von, E., *Democratizing innovation*, MIT Press, 2005.
- Hsu, C.-L. and H.-P. Lu, "Why Do People Play On-line Games? An Extended TAM with Social Influences and Flow Experiences," *Information & Management*, 2004: 41, pp. 853-868.
- Kallio, K.P., K. Kaipainen and F. Mäyrä, "Gaming Nation? The Pilot Case Finland: International Study of Games Cultures," Tampere, 2007, Hypermedia Laboratory Net Series 14,
- Karsten, H., K. Lyytinen, M. Hurskainen and T. Koskelainen, "Crossing boundaries and conscripting participation: representing and integrating knowledge in a paper machinery project," *European Journal of Information Systems*, 2001, 10, pp. 89-98.
- Kijkuit, B. and J. Ende van den, "The Organizational Life of an Idea: Integrating Social Network, Creativity and Decision-Making Perspectives," *Journal of Management Studies*, 2007, 44: 6, pp. 863-882.
- Klein, H.K. and M.D. Myers, "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems," *MIS Quarterly*, 1999, 23: 1, pp. 67-93.
- Kotler, P., *Marketing Management: Analysis, Planning, Implementation and Control*, Prentice Hall International Inc., New Jersey, 1997.
- Land, F., "The Information Systems Domain," In *Information Systems Research*, R. Galliers (Ed.), Alfred Waller Ltd., Warwick, 1992,
- Lee, A.S. and R.L. Baskerville, "Generalizing Generalizability in Information Systems Research," *Information Systems Research*, 2003, 14: 3, pp. 221-243.
- Levina, N. and E. Vaasta, "The Emergence of Boundary Spanning Competence in Practice: Implications for Implementation and Use of Information Systems," *MIS Quarterly*, 2005, 29: 2 June, pp. 335-363.
- Miles, M., B. and A.M. Huberman, *Qualitative data analysis: an expanded sourcebook*, SAGE, 1994.
- Mäyrä, F., *An Introduction to Game Studies*, SAGE Publications Ltd, London, 2008.
- Nandhakumar, J. and M. Jones, "Too Close for Comfort? Distance and Engagement in Interpretive Information Systems Research," *Information Systems Journal*, 1997, 7, pp. 109-131.
- Neogames, "The Finnish Games Industry," Centre of Game Business, Research and Development, 2009.
- Neogames and Suomen Pelinkehittäjät r.y., "Suomen pelitoimialan strategia 2010-2015," 2010.

- Nicolini, D. and S. Gherardi, "To Transfer is to Transform: The Circulation of Safety Knowledge," *Organization*, 2000, 7: 2, pp. 329-348.
- Orlikowski, W.J., "Knowing in Practice: Enacting a Collective Capability in Distributed Organizing," *Organization Science*, 2002, 13: 3, May-June, pp. 249-273.
- Orlikowski, W.J. and J.J. Baroudi, "Studying Information Technology in Organizations: Research Approaches and Assumptions," *Information Systems Research*, 1991, 2: 1,
- Orlikowski, W.J. and J.J. Baroudi, "Studying Information Technology in Organizations: Research Approaches and Assumptions," In *Qualitative Research in Information Systems*, M. D. Myers and D. E. Avison (Ed.), Sage Publications, 2002, pp. 312.
- Pawlowski, S. and D. Robey, "Bridging User Organizations: Knowledge Brokering and the Work of Information Technology Professionals," *MIS Quarterly*, 2004, 28: 4, pp. 645-672.
- Perry-Smith, J.E., "Social yet creative: the role of social relationships in facilitating individual creativity," *Academy of Management Journal*, 2006, 49: 1, pp. 85-101.
- Perry-Smith, J.E. and C.E. Shalley, "The social side of creativity: A static and dynamic social network perspective," *Academy of Management Review*, 2003, 28: 1, pp. 99-106.
- Prahalad, C.K. and V. Ramaswamy, "Co-creating unique value with customers," *Strategy and Leadership*, 2004, 32: 3, pp. 4-9.
- Raessens, J. and J. Goldstein, *Handbook of Computer Game Studies*, The MIT Press, Cambridge, Massachusetts, 2005.
- Roberto, M.A. and G.M. Carioggia, "Electronic Arts: The Blockbuster Strategy," *Harvard Business Review*, 2004, February,
- Rutherford, D. and J. Knowles, *Vulcans, earthlings and marketing ROI: getting finance, marketing and advertising onto the same planet*, Wilfried Laurier University Press, 2008.
- Rutter, J. and J. Bryce, "Understanding Digital Games," London, UK, 2006, pp. 272.
- Schatzki, T.R., K. Knorr-Cetina and E.v. Savigny, *The practice turn in contemporary theory*, Routledge, 2001.
- Schwartz, M. and J. Nandhakumar, "Conceptualizing the Development of Strategic Ideas: A Grounded Theory Analysis," *British Journal of Management*, 2002, 13, pp. 67-82.
- Slater, D., "From calculation to alienation: disentangling economic abstractions," *Economy and Society*, 2002, 31: 2, pp. 234-249.
- Stacey, P. and J. Nandhakumar, "A temporal perspective of the computer game development process," *Information Systems Journal*, 2009, 19: 5, pp. 479-497.

- Star, S.L. and J.R. Griesemer, "Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology," *Social Studies of Science*, 1989, 19, pp. 387-420.
- Walsham, G., *Interpreting Information Systems in Organizations*, Wiley, Chichester, 1993.
- Walsham, G., "Interpretive Case Studies in IS Research: Nature and Method," *European Journal of Information Systems*, 1995: 4, pp. 74-81.
- Walsham, G., "Doing interpretive research," *European Journal of Information Systems*, 2006, 15, pp. 320-330.
- Weick, K.E. and K.H. Roberts, "Collective Mind in Organizations: Heedful Interrelating on Flight Decks," *Administrative Science Quarterly*, 1993, 38: September, pp. 357-381.
- Wenger, E., *Communities of practice: learning, meaning, and identity*, Cambridge University Press, 1999.
- Yang, H., Z. Lin and Y. Lin, "A Multilevel Framework of Firm Boundaries: Firm Characteristics, Dyadic Differences, and Network Attributes," *Strategic Management Journal*, 2007, 31, pp. 237-261.
- Yin, R.K., *Case Study Research, Design and Methods*, Sage Publications, Beverly Hills, CA, 2008.

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# KUTSU TUTKIMUKSEEN VIDEOPELIENTÄ BRÄNDIN KEHITTÄMISKÄYTÄNNÖISTÄ

## KOLLABORATIIVINEN TIETOKONEPELIENTÄ BRÄNDIN KEHITTÄMINEN

Tietokonepeliteollisuus on teknologisesti ja kaupallisesti haastava ohjelmistoliiketoiminnan muoto, jossa monitieteellinen yhteistyö on tärkeä lähtökohta merkittävälle uusille innovaatioille. Ala tarjoaa erityisen hyvän mahdollisuuden tutkia kuinka taiteen, tekniikan ja kaupallisen osaamisen avulla voidaan luoda innovatiivisia pelituotteita ja -palveluita ja jopa uusia pelimarkkinakokonaisuuksia.

Peliin liittyvien mielikuvien ja yleistäen pelibrändin tarkoituksena on viestiä erilaisia siihen liittyviä tekijöitä kuten tuotekategoriaan liittyviä ominaisuuksia, laatua, ominaisuuksia sekä hauskanpitoa ja hyödyllisyyttä. Erityisesti positiivinen arvomieliokuva ja peleihin liittyvä kiintymys ovat tärkeitä pelibrändin menestysreseptin aineksia. Brändin kehittämiseen liittyvien käytäntöjen tutkiminen antaa mahdollisuuden parantaa peleihin liittyvää positiivista arvomieliokuvaa niin kuluttajille kuin tuottajille. Hyvin rakennettu pelibrändi tuottaa pitkällä tähtäimellä arvoa kaikille peleistä kiinnostuneille osapuolille.

Kutsumme mukaan peliliiketoiminnassa mukana olevia **henkilöitä** ja **yrityksiä** mukaan tähän tutkimushankkeeseen. Projektin tuloksina tarjoamme:

- *brändäämiseen liittyviä strategisia suosituksia ja käytännön työkaluja tuoteasemointiin raportin muodossa,*
- *kutsun tutkimustulosten esittelytilaisuuteen ja*
- *mahdollisuuden vaikuttaa alan käytäntöihin ja tämän teeman tulevaisuuden tutkimukseen.*

Tutkimukseen osallistuminen on *helppoa ja vaivatonta*. Pyydämme peliliiketoiminnassa toimivia henkilöitä haastateltavaksi heille sopivaan aikaan (45-60 minuuttia).

### **Yhteys- ja ilmoittautumistiedot:**

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Tämä tutkimus on Helsingin kauppakorkeakoulun Liiketoiminnan teknologian laitoksen ja Warwick Business Schoolin IKON tutkimusryhmän (Innovation, Knowledge and Organizational Networks) yhteistyöprojekti. Molemmilla tutkimuslaitoksilla on pitkä ja tunnustettu tutkimusjulkaisuhistoria tietojärjestelmätieteen tutkimuksessa ja ohjelmistoliiketoiminnassa.

### **Tutkimusprojektista**

Käytännössä projektissa tutkitaan pelibrändiin liittyvien mielikuvien kehitysprosessia. Selvitämme minkälaiset pelimieliukuviin liittyvät tekijät yhdistävät erityyppistä osaamista yhteiseksi koetuksi tuotteeksi ja lopulta vahvaksi pelibrändiksi. Käymme läpi myös viestintään liittyviä välineitä, haasteita ja ongelmia, joita tähän yhteistyöhön liittyy.

Tutkimuksen aikana toteutetaan useita haastatteluita. Haastattelemme henkilöitä eri osaamisalueilta (ylin johto, myynti, markkinointi, tuotekehitys, graafinen suunnittelu jne.). Haastattelut toteutetaan loka-joulukuun 2009 välisenä aikana.

Projektia vetää pelitutkija, tohtoriopiskelija **Jan Storgårds (HSE)** yhteistyössä professori **Virpi Tuunainen (HSE)**, professori **Joe Nandhakumar (WBS)** ja tohtori **Nikiforos Panourgias (WBS)** kanssa.

Osallistuvien organisaation niin toivoessa, yrityksen ja henkilöiden nimet pidetään anonyymeinä. Tutkimukseen osallistuminen on maksutonta.



# COLLABORATIVE COMPUTER GAME BRAND DEVELOPMENT

## INVITATION TO PARTICIPATE IN A PIONEERING STUDY OF COMPUTER GAME BRAND DEVELOPMENT PRACTICES

Collaboration across disciplinary divides in the computer games industry promotes innovation and creativity, making possible the development of ground breaking products and the opening up of new markets. One such area of collaboration is branding practices, the objective of which is to enhance positive *perceived value* of the games for the consumers and producers, alike.

As part of this project we are **searching individuals working in companies in the game industry** willing to take part in research we are conducting in this area. In practical terms, the research is about the collaboration between different organizational teams and individuals and how they develop the brand image to build shared product attachment.

Benefits from participation include:

- *Strategic recommendations and practical tools in a copy of the resulting report.*
- *Invitation to the presentation of the research findings.*
- *Influencing the future direction of research in this field.*

It is *easy* to participate in this research. We conduct interviews with individuals according to their personal time schedules.

***For further information on the study or to discuss participation contact:***

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This research is collaboration between department of Business Technology based at **Helsinki School of Economics (HSE)**, Finland and **IKON**, the research network based at **Warwick Business School (WBS)**, in the UK. Both entities have a long, recognized tradition in conducting and publishing research on information systems use and the software business.

### About the research

Positive perceived value is needed to build commercially successful games, with the objective being to maximize the brand *attachment* among different market makers such as consumers and producers' organizational units; top management, design, marketing, sales and R&D.

In practical terms the research is interested in exploring the *sources* of positive game brand image in the developing of computer games.

In particular the research will seek to examine how different organizational units collaborate and interact with other teams or team members, the tools used, and the challenges and problems encountered and the responses to them in this process.

Data collection will take place between October 2009 and December 2009 and will take the form of formal interviews. Each interview takes 45-60 minutes.

The project is led by PhD. Candidate **Jan Storgårds with collaboration from Prof. Virpi Tuunainen (HSE), Prof. Joe Nandhakumar (WBS) and Dr. Nikiforos Panourgias (WBS).**

*If required by participants, references to them or their organisations can be anonymised in the research.*





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