“CHILL WITH FRIENDS” – CONTINUOUS ENGAGEMENT IN SOCIAL VIRTUAL WORLDS AMONG DIGITAL NATIVES

Completed Research Paper

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Abstract

IS research on social virtual worlds (SVWs) has been contextually biased towards Second Life (SL). While young people constitute the largest SVW user group they do not normally use SL. We investigate the reasons for teenagers’ continuous engagement in Habbo Hotel with a multi-method approach. Grounded in the Uses & Gratifications approach and IT adoption literature, we develop a model examining the role of utilitarian, hedonic and social outcomes as well as normative influence in explaining continuous usage intention. The model is empirically tested with data collected from 1,770 Habbo users and analyzed using structural equation modeling. We triangulate our findings with a structured content analysis of user comments. The results demonstrate that perceived network effects exert the strongest influence on continuous use intention, followed by media and commercials. The qualitative analysis shows that the value of Habbo is essentially derived from the presence of other users and in-world experiences.

Keywords: Digital Natives, Virtual Worlds, Social Virtual Worlds, Continuous Use
Introduction

Engagement in virtual worlds (VWs) is increasing rapidly, particularly among young people. As of July 2011, VWs have had 1.4 billion registered users, 70% of which are between 5 and 15 years old (kZero 2012). In 2011 alone, Habbo Hotel — the largest social virtual world (SVW) for teenagers — had an influx of tens of millions of new users, with their total number of registered users exceeding 250 million\(^1\).

However, SVW operators know that significant work must be done to transform increasing interest into continuous engagement, which is argued to be a key factor in achieving sustainability and profitability (see Bhattacherjee 2001). Given the fierce competitive pressure among SVW operators, achieving such a goal is far from self-evident. Hence, understanding how to retain existing users has become an important area of VW research (Goel et al. 2011; Jung 2011; Mäntymäki and Salo 2011). For the SVW operators, reinforcing the stickiness of their services, i.e. the ability of websites to draw and retain customers (Lin 2007), has become a key business objective.

While increasing usage has made SVWs interesting from the perspective of business, societal and information systems (Messinger et al. 2009), relatively little is known about what drives users to engage and spend time in SVWs. Due to SVWs being designed to facilitate user-to-user interaction and build communities within the virtual world, expected social outcomes as well as social influences are likely to be key drivers of user participation. Hence, usage decisions and the value derived from them are need to be evaluated in relation to the presence and activities of other users. Compared to the hedonic and utilitarian outcomes (see e.g. Shin 2009, Verhagen et al. 2012), fewer studies have examined the social outcomes derived from VW participation. Second, current literature has examined the social influence of the VW context mostly by employing the subjective norm construct (Hua and Haughton 2009), largely leaving the actual sources of normative influence unnoticed. Third, from a contextual standpoint, prior research has largely focused on VWs such as Second Life (Animesh et al. 2011; Fetscherin and Lattemann 2008; Goel et al. 2011; Zhou et al. 2011) which are targeted at an adult audience, while VWs for younger users are the largest and fastest growing VW category (Wasko et al. 2011; Spence 2008). Today’s teenagers have been used to adopting various forms of IT since their early childhood and are hence referred to as digital natives (Prensky 2001; Jones et al. 2010).

Our objective is to investigate what drives teenagers to participate continuously in Habbo Hotel. To answer the research question we use a multi-method approach (Morse 2003). We develop a research model by incorporating the utilitarian, hedonic and social outcomes of Habbo usage with the role of normative beliefs in order to investigate user engagement. The research model is empirically tested with data collected from 1,770 Habbo users in Germany and analyzed using structural equation modeling. Thereafter, we triangulate our results with qualitative data, i.e. user statements, to complement our analysis and engage in a deeper interpretation of the factors driving continuous engagement.


\(^{1}\) Habbo Hotel - Check in to check it out! http://www.sulake.com/habbo
Social virtual worlds and Habbo Hotel

VWs are ICT-based platforms, typically hosted on the Internet, that facilitate the emergence of online communities through rich, immersive, and interactive multi-user experience. VWs can be divided into Gaming Virtual Worlds (GVWs) and Social Virtual Worlds (see e.g. Jung and Kang 2010). In contrast to GVWs, SVWs do not have explicit narratives or level-ups. Rather, they are open spaces in which the users define the purpose and content of usage. According to Bell (2008, 2) a SVW can be defined as “a synchronous, persistent network of people, represented as avatars, facilitated by networked computers.” As such, SVWs can be further characterized as “non-game spaces where games can be part of them but are not the defining characteristic of a virtual world” (Iqbal et al. 2010, 3191). Consequently, in this study, we define SVWs in the following way: SVWs are persistent, computer-mediated, networked environments, that are used for various user-determined purposes such as social interaction. Users are represented as avatars, and games can be part of the environment, but are not constitutive of the user experience.

Prior literature has found user engagement in SVWs to vary from taking classes to having cybersex (Zhou et al. 2011). It has been argued that, due to contextual characteristics, SVW usage is determined by factors related to the IT artifact, the user, and the social setting (Schwarz et al. 2011).

From a motivational standpoint, SVW usage has been viewed as a function of utilitarian and hedonic motives (Barnes 2011; Verhagen et al. 2012, Mäntymäki & Salo 2011; Shin 2009). SVWs offer value for users by offering a pleasant environment for social interaction with others as well as enhancing communication within their social circle (Schwarz et al. 2011; Shin 2009). Consequently, SVWs have been referred to as multi-purpose information systems (Verhagen et al. 2012). In addition to the value and motivational factors, perceived network externalities (Mäntymäki and Salo 2011) have been found to affect people’s decisions regarding SVW usage.

Habbo Hotel was founded in 2000 and has expanded to accommodate 10 million monthly unique visitors in 32 country-specific portals with local payment systems. In terms of the number of registered users, Habbo Hotel is ten times bigger than Second Life and globally the most popular SVW targeted at young people According to Sulake, the Finnish platform provider, 90 % of the users are aged between 13 and 18. As a result, the clientele of Habbo Hotel consists of teens and tweens (cf. Brito 2012), i.e. digital natives.

Habbo Hotel is a virtual environment that runs in a Web Browser environment. This space “resembles a giant contemporary Western indoor space, presented in isometric ‘retro style’ three-dimensional graphics and populated by blocky avatars, each controlled by a user” (Lehdonvirta et al. 2009, 1065). In other words, Habbo avatars do not resemble human beings but look more like cartoon figures.

Unlike in Second Life, Habbo users cannot manipulate their surroundings or buy new land; instead each avatar is provided with a virtual hotel room that they can decorate with various pieces of furniture (called Furni in Habbo) and invite other users into. If users are in a room together they can text-chat with each other via their avatars (called Habbos). In addition, Habbo Hotel accommodates various non-violent games that users are free to play. Events, such as celebrity visits are organized on a regular basis and visitors can participate in dress-up and decoration competitions.

Habbo Hotel does not facilitate an in-world economy with a currency that can be exchanged for real money. Using Habbo Hotel is free but users can use real money to purchase virtual items and premium memberships that provide exclusive features. Users remain anonymous inside Habbo, since revealing one’s real identity or contact information inside the platform is prohibited and is moderated by the operator. However, users are free to use Facebook, Twitter and Instant Messengers to inform their friends that they are involved in Habbo Hotel and reveal their Habbo identities. In addition, users often move between Habbo and instant messengers to have private conversations. Finally, as Habbo is targeted at minors it does not facilitate violence, gambling or cybersex – all of which are common activities in Second Life – but aims at providing a safe and friendly environment for young users.

In summary, the activities Habbo users can engage in relate to social interaction with other users, spending time in various ways, decorating and accessorizing their rooms and avatars and trading their virtual possessions with other users inside the platform. As a result, Habbo exhibits two key affordances that have been attributed to digital natives’ use of digital technologies, namely social interaction and gaming (Brito 2012).
Compared to the number of studies on Second Life (see e.g. Verhagen et al. 2012; Barnes 2011; Animesh et al. 2011; Goel et al. 2011), Habbo Hotel has not received a remotely similar level of attention within the academic community. Mäntymäki & Salo (2011) found perceived enjoyment to be the primary determinant of continuous engagement of Habbo users. Griffiths and Light (2008) have investigated the ethical implications of Habbo as a social platform for teenagers, while Lehdonvirta et al. (2009) used Habbo Hotel to investigate the purchase and use of virtual goods. Iqbal et al. (2010) undertook a small-scale study into how children in a Finnish school use VW platforms, one of which was Habbo.

Theoretical background

To explore the factors driving continuous engagement in Habbo Hotel, we employ the Uses and Gratifications (U & G) approach (Katz et al. 1974; Blumler 1979) as the overarching theoretical framework of the study. U & G has been widely used in communications research to explain why people choose and use new media (Stafford et al. 2004) such as SVWs (Eisenbeiss et al. 2012). In brief, U & G asserts that people use a new communication medium for process gratifications, i.e. the experience derived from the actual usage, and/or because of content gratifications (Katz et al. 1974).

According to U & G, the actual gratifications closely relate to the nature of the communication medium (Blumler 1979). Hence, rather than providing a predefined set of factors and constructs, U & G provides a framework for building the nomological net of the research. Compared to the wide range of theoretical approaches for examining the use of technologies (see e.g. Venkatesh et al. 2003), we assert that U & G is particularly suitable for investigating the factors underlying SVW usage due to the voluntariness of usage, the large variety of activities available to the user, and the freedom to customize and co-create (Kohler et al. 2011) the usage experience. In order to investigate user motivations for continuous engagement in Habbo Hotel, we draw on the existing IS adoption literature to identify auxiliary theories and constructs that inform the U & G approach.

Motivation theorists view human behavior as being driven by the desirable outcomes of that behavior (Lawler and Porter 1967). In prior technology adoption literature, factors such as increases in one's performance (Davis 1989), perceived enjoyment (Davis et al. 1992) or gains in one's status and image (Moore and Benbasat 1991) have been found to be desirable outcomes driving decisions to use technological innovations. Consequently, the benefits associated with the use of information technology innovations can broadly be divided into utilitarian, hedonic and social outcomes (Venkatesh and Brown 2001). The existence of these three types of gratifications has also been found to hold in the VW context (see Zhou et al. 2011). Hence, we assert that being engaged in Habbo Hotel can offer the user gratifications that are utilitarian, hedonic and social.

In addition to desirable social outcomes, decisions to adopt and use innovations are typically affected by social influences, such as normative beliefs (Venkatesh and Brown 2001). Furthermore, evidence from developmental psychology shows that social influence is particularly salient in shaping behavior during the socialization process (Erikson 1968; Brown 1990). Thus, we complement the U & G by examining the extent to which normative influence affects decisions to use Habbo. Table 1 provides an overview of the nomological net of the constructs and associated theories that form the basis of our quantitative study. In the next sections we will spell out our research model and introduce our hypotheses.

Development of the research model and hypotheses

Research on the adoption of technology has developed and tested numerous models in order to understand the factors driving usage decisions (Venkatesh et al. 2003). These models propose a number of predictor variables that presumably influence IT usage intention. For example, the Technology Acceptance Model (TAM) (Davis 1989) and the Theory of Planned Behavior (TPB) (Ajzen 1991) assert that IT usage is determined by the IT usage intention – due to the human tendency to behave in accordance with intentions, which, in turn, are predicted by other cognitive beliefs or perceptions of IT usage. The relationship between the IT usage intention and usage behavior has been empirically verified in numerous previous studies (Davis 1989; Taylor and Todd 1995), and has been frequently used as a surrogate for technology use (see e.g. Lin and Bhattacherjee 2008). In keeping with these prior studies, we employ the behavioral intention as our dependent variable. Since we focus on continuous SVW engagement, and our
study has been conducted among existing Habbo Hotel users, our dependent variable is the *continuous usage intention*, i.e. the intention to keep using Habbo Hotel. In the following we develop our hypotheses.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Theory</th>
<th>Construct</th>
<th>Definition</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social outcomes (gratifications)</td>
<td>Innovation Diffusion Theory</td>
<td>Status gains</td>
<td>The degree to which the status of an individual is conferred by using the SVW</td>
<td>(Moore and Benbasat 1991)</td>
</tr>
<tr>
<td></td>
<td>Theory of Network Externalities</td>
<td>Perceived network size</td>
<td>The perception of the degree to which important others are present in the SVW.</td>
<td>(Katz and Shapiro 1986)</td>
</tr>
<tr>
<td>Social Presence Theory</td>
<td>Social presence</td>
<td>Social presence</td>
<td>The degree of human warmth associated with the SVW.</td>
<td>(Yoo and Alavi 2001)</td>
</tr>
<tr>
<td>Utilitarian outcomes (gratifications)</td>
<td>Self-determination Theory</td>
<td>Utilitarian outcomes</td>
<td>The extent to which using the SVW will help to attain gains in social interaction and leisure time.</td>
<td>(Deci and Ryan 2000; Venkatesh and Brown 2001)</td>
</tr>
<tr>
<td>Hedonic outcomes (gratifications)</td>
<td>Self-determination Theory</td>
<td>Hedonic outcomes</td>
<td>The extent to which using the SVW is perceived enjoyable in its own right.</td>
<td>(Deci and Ryan 2000; Venkatesh and Brown 2001)</td>
</tr>
<tr>
<td>Normative beliefs</td>
<td>Theory of Reasoned Action</td>
<td>Interpersonal influence</td>
<td>The normative influence of the important referents using the SVW.</td>
<td>(Fishbein and Ajzen 1975)</td>
</tr>
<tr>
<td></td>
<td>Innovation Diffusion Theory</td>
<td>Secondary sources of information</td>
<td>The extent to which information from TV, newspapers and other secondary sources influence the use of the SVW.</td>
<td>(Brown and Venkatesh 2005; Rogers 2003)</td>
</tr>
</tbody>
</table>

U & G posits that media use is goal-directed behavior aimed at fulfilling individuals’ needs. SVWs, including Habbo, do not possess explicit goals or a storyline, instead they facilitate a wide range of user-created content. Therefore, similarly to Zhou et al. (2010), we view SVWs as multi-purpose information systems. Prior research has found utilitarian outcomes to influence the decision to engage in virtual worlds (Barnes 2011; Zhou et al. 2010; Fetscherin and Lattemann 2008; Hua and Haughton 2009). This is congruent with the abundant prior literature that has found that IT use decisions are influenced by the perceived utility derived from the usage of the IT artifact in question (Venkatesh et al. 2003). Given the nature of Habbo Hotel and its affordances, we reason that the potential utility is likely to be related to enhanced communication with other people (spending time inside the VW platform) as well as self-expression (decorating the virtual room or the avatar). We have operationalized the construct accordingly (see Appendix 1). Therefore, the first hypothesis reads as follows:

**H1: Utilitarian outcomes have a positive effect on the user's continuous use intention.**

In addition to utilitarian gratifications, U & G posits that the pleasure and enjoyment experienced *from and during* the usage drive the decision to choose and use a medium. In IS adoption literature, the usage of a range of IT applications and services has been found to be influenced by hedonic outcomes (van der Heijden 2004). While prior research offers inconclusive evidence regarding the role of hedonic outcomes in virtual world usage (Verhagen et al. 2012; Hua and Haughton 2009; Shin 2009), with regard to Habbo we see a likely influence in predicting user engagement because the platform is not used in business or education contexts such as e.g. Second Life.

**H2: Hedonic outcomes have a positive effect on the user's continuous use intention.**

To expand upon the utilitarian-hedonic dichotomy, we investigate the potential influence of social gratifications. Prior research into the role of social outcomes in VW usage decisions is scant. However,
prior research on the adoption of other forms of IT has found that status expectations drive the decision to use technological innovations (Moore and Benbasat 1991; Venkatesh and Davis 2000; Venkatesh and Brown 2001). Gaining status and social recognition can be assumed to be particularly important among Habbo users who are typically in the process of building their identity and supporting their self-image (Brown 1990). In addition to signaling status and building identity in one’s social network outside the VW, the social setting inside VWs often includes social hierarchies in the form of level-ups or owning virtual possessions. While acknowledging one’s position in the in-world social setting is an important facet of status, consistent with prior research we focus specifically on the potential status gains outside the VW to examine whether engagement in Habbo Hotel translates into gains in one’s offline social network. For this purpose, Habbo Hotel users can signal their activities to their Facebook friends with status updates or use the appearance of their avatars as a profile picture in other channels such as instant messengers.

H3: Status has a positive effect on the user’s continuous use intention.

In addition to status, the need to feel close to and accepted by other individuals has been found to drive participation in online communities (Bagozzi and Dholakia 2002; Rheingold 2000). The fulfillment of this need is influenced by the attributes of the communication medium, e.g. its ability to facilitate rich human contact (Short et al. 1976). Habbo Hotel employs a friendly-looking 3D environment as well as avatars that the users can customize with a selection of hairstyles, clothing and accessories. Thus, following previous research on VW usage (Animesh et al. 2011; Schwarz et al. 2011), we use the concept of social presence, i.e. the perception of sociability and human warmth associated with Habbo Hotel.

H4: Social presence has a positive effect on the user’s continuous use intention.

According to the theory of network externalities, a large number of users in one’s personal network is likely to increase the value of adopting a technological innovation that is used to interact and communicate with other users (Katz and Shapiro 1986). Iqbal et al. (2010) argue that connecting with real-life friends in Habbo is likely to motivate the usage. Hence, we suggest that the presence of other users is likely to increase the value of the SVW for an individual. Since evaluating the actual number of users in one’s network poses significant challenges (Li et al. 2010), we define perceived network size as the perceived degree to which the members of one’s social network are present in the SVW (Lin and Bhattacherjee 2008). We posit that perceived network size is a direct predictor of use intention (Van Slyke 2007).

H5: Perceived network size has a positive effect on the user’s continuous use intention.

To expand upon U & G we assert that, according to theories from social psychology, such as TRA and TPB, social influence plays a role in determining one’s behavior and that this also applies with regard to Habbo use. In prior IT adoption research, external influences affecting use intentions have typically been captured by the subjective norm construct (Venkatesh and Davis 2000). However, given the social nature of SVW as a technology, we propose a more holistic capturing of such normative influences and do so by investigating two sets of normative beliefs: interpersonal influence and external sources of information (Venkatesh and Brown 2001).

Interpersonal influence covers the opinions of one’s significant others regarding the use of the technology. Sources of interpersonal influence may include family, friends, relatives, and peers (Hsieh et al. 2008). Interpersonal influence has been found to impact on IT use decisions in household contexts (Brown and Venkatesh 2005) as well as the adoption of interactive digital technologies (Hsieh et al. 2008), both of which are relevant referent contextual domains for VWs.

H6: Interpersonal influence has a positive effect on the user’s continuous use intention.

External influence factors such as the mass media, expert opinions, and other forms of non-personal information have been shown to have an effect on adoption intentions (Rogers 2003). For example, Brown and Venkatesh (2005) found that secondary sources of information influence the intention to purchase PCs for domestic use. As Habbo is visibly present in the mass media outlets subscribed to by the teen audience, it seems reasonable to assume that mass media and commercials exert normative pressure on the target group.

H7: Secondary sources of information have a positive effect on the user’s continuous use intention.
Study Design

Our study is based on a multi-method design (Morse 2003), and uses quantitative hypotheses-testing inquiry as its main method. To gain a deeper understanding of the users’ perspective, we complement the quantitative inquiry with a structured content analysis (Jauch et al. 1980) of users’ free text comments. Thus, the role of qualitative analysis is to aid in the interpretation of our quantitative findings (Morse 2003, 192). Prior to the main data collection, discussions with Habbo’s management and developers, information available on the Sulake website, various Habbo fansites on the Internet, and the Habbo portal itself proved invaluable in gaining a rich initial understanding guiding study design and instrument development.

Any research into the private, personal use of a highly social technology among teenagers raises a multitude of ethical questions with regard to empirical access, which renders the application of rich inquiry methods (such as shadowing, observations or even interviews) impossible. While a questionnaire-based survey is a sensible choice, for this reason alone, it also provides us with a broad and less biased understanding of the phenomenon. Moreover, it allows us to apply tried and tested constructs, which have been shown to influence ICT usage intentions in other domains. Hence, we opted to carry out a typical survey-based study, in order to investigate the influence of a range of typical influence factors on Habbo users’ motivations for using the SVW. In addition, the qualitative comments provided by the majority of users in their survey responses have helped us in further interpreting our results.

Data collection

Data for our study was collected through an online survey published on the home page of the German Habbo Hotel portal. The survey contained worded items on a 7-point Likert-scale ranging from strongly agree to strongly disagree, except for perceived network size, which was measured with a semantic scale. All items were adopted from prior literature with wordings adjusted to the SVW context. The measurement items with corresponding references to literature are presented in Appendix 1. Each construct was modeled as reflective.

In total, the online survey was accessed 3,459 times. A total of 1,811 responses were received. Thus, the response rate was approximately 52%. After screening the responses a dataset of 1,770 was included in the analysis. More than 60% of the respondents in the final sample were male. Thirteen was the most common age for Habbo users, followed by 14 and 12.
Quantitative data analysis: Hypotheses testing

The data was analyzed using structural equation modeling (SEM) with Amos 8.0 software. Stochastic imputation was used to replace missing values in the dataset. To assess model fit and construct reliability and validity, the data analysis began with a confirmatory factor analysis (CFA) on the measurement model. Maximum likelihood (ML) estimation was used, since the data was only moderately non-normal and ML has proven robust with large sample sizes and under conditions of non-normality.

The convergent validity was evaluated based on three criteria: 1) all indicator factor loadings should be significant and exceed 0.7; 2) composite reliabilities should exceed 0.80; and 3) the average variance extracted (AVE) by each construct should be greater than the variance due to measurement error (AVE > 0.50) (Fornell and Larcker 1981). The factor loadings exceeded 0.7 and were significant at the 0.001 level. Thus, all reflective measures met the criteria for convergent validity. Discriminant validity was investigated by examining whether the AVE for each construct was higher than the squared correlation between it and all other constructs (Fornell and Larcker 1981). The statistics for convergent and discriminant validity are presented in Appendices 1 and 2 and demonstrate that the respective tests were met. As the fit for the measurement model was good (GFI=0.942; AGFI=0.926; NFI=0.970; TLI=0.972; CFI=0.976; SRMR=0.0327; RSMEA=0.046), we proceeded to testing the hypotheses with the structural model. The risk of common method bias was examined with CFA using the single-factor approach presented by Malhotra et al. (2006). The single-factor model exhibited a very poor fit, which indicates that common method variance (CMV) is unlikely to be a major concern.

Table 2 illustrates the results from the structural model. Altogether, 5 of the 7 hypotheses were supported. The model accounted for 56.3% of the use intention, thus supporting the predictive validity of the research model. Perceived network size was found to be the primary determinant of the continuous use intention. Contrary to our hypothesis, the influence of status and interpersonal influence was found to be negative. Hedonic outcomes were found to have a somewhat stronger influence than utilitarian outcomes.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Std. path coefficient</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Utilitarian outcomes → continuous use intention</td>
<td>0.141**</td>
<td>Yes</td>
</tr>
<tr>
<td>H2: Hedonic outcomes → continuous use intention</td>
<td>0.205***</td>
<td>Yes</td>
</tr>
<tr>
<td>H3: Status → continuous use intention</td>
<td>-0.177***</td>
<td>No</td>
</tr>
<tr>
<td>H4: Social presence → continuous use intention</td>
<td>0.129***</td>
<td>Yes</td>
</tr>
<tr>
<td>H5: Perceived network size → continuous use intention</td>
<td>0.411***</td>
<td>Yes</td>
</tr>
<tr>
<td>H6: Interpersonal influence → continuous use intention</td>
<td>-0.082*</td>
<td>No</td>
</tr>
<tr>
<td>H7: Secondary sources of information → continuous use intention</td>
<td>0.223***</td>
<td>Yes</td>
</tr>
</tbody>
</table>

After having tested the hypothesized relationships, an investigation of the background variables gender, age and length of prior experience with Habbo Hotel was conducted following the procedures advanced by Jöreskog and Sörbom (1993). The analysis revealed only one statistically significant moderating effect: interpersonal influence did not exert a significant influence on the continuous use intention among the youngest users.

Structured content analysis: User comments

In addition to the quantitative analysis, we collected qualitative data derived from an open question asking for reasons why users continue to use Habbo. Out of the 1,811 responses received a total of 1,719 users entered a comment in response to this question. We used structured content analysis to analyze the qualitative data (Jauch et al. 1980). First we read through all comments before using MS Excel to count the appearance of those keywords that appeared the most in the user entries, thus gaining an overview of the main reasons given by the users. This analysis revealed a surprisingly clear picture. In particular, five key concepts emerged from the analysis: FUN, FRIENDS, CHAT, COOL and GAMES (see Table 3 and Figure 2). In doing so, each of the constructs is represented by two semantically similar key words (e.g. sometimes users used the English ‘fun’ instead of the German ‘Spass’).
Wildcards were used to count the entries that contained the respective keywords. In doing so, we controlled for the second appearance of key words, so as to avoid counting double those replies which contained both keywords representing a construct. As table 3 shows, FUN appears to be the main reason for using Habbo, as 61.7% of replies either mention “spass” or “fun,” or both. In addition to this analysis, we also gathered typical replies and translated them into English for further illustration of our results discussion below.

<table>
<thead>
<tr>
<th>Construct</th>
<th>keyword 1</th>
<th># of replies</th>
<th>keyword 2</th>
<th># of replies</th>
<th>unique counts</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUN</td>
<td><em>spass</em></td>
<td>1019</td>
<td><em>fun</em></td>
<td>82</td>
<td>1061</td>
<td>61.7%</td>
</tr>
<tr>
<td>FRIENDS</td>
<td><em>freunde</em></td>
<td>810</td>
<td><em>leute</em></td>
<td>240</td>
<td>977</td>
<td>56.8%</td>
</tr>
<tr>
<td>CHAT</td>
<td><em>chat</em></td>
<td>379</td>
<td><em>unterhalten</em></td>
<td>32</td>
<td>409</td>
<td>23.8%</td>
</tr>
<tr>
<td>COOL</td>
<td><em>cool</em></td>
<td>158</td>
<td><em>geil</em></td>
<td>44</td>
<td>196</td>
<td>11.4%</td>
</tr>
<tr>
<td>GAMES</td>
<td><em>spiel</em></td>
<td>155</td>
<td><em>game</em></td>
<td>13</td>
<td>161</td>
<td>9.4%</td>
</tr>
</tbody>
</table>

Figure 2. Five most prevalent reasons for using Habbo according to the users in Germany

Discussion

In this section we will draw on the above-presented results to discuss continuous user engagement in SVWs and make sense of the Habbo Hotel phenomenon. Hence, the first contribution of our study is to better understand what motivates teenage users to participate in and continue to use the social virtual world created by Habbo Hotel. In doing so, we come to understand the particular nature of Habbo as an online service, which we portray in terms of its stickiness in attracting users to spend time and revisit the platform repeatedly.
Factors driving Habbo use

Our quantitative results demonstrate that the perceived network effect is a strong predictor of teenagers’ continuous SVW engagement. This confirms the results obtained from social networking sites (Sledgianowski and Kulviwat 2009) and instant messaging (Li et al. 2010; Lin and Bhattacherjee 2008), but also suggests that Habbo has reached a certain critical mass with regard to being self-sufficient.

Our results reveal that teenagers do not see Habbo as a means to impress others in their social network. What is even more interesting, we observed that status has a negative influence on the continuous use intention. In other words, users perceiving Habbo as a means to elevate their status are less likely to continue their usage. A potential explanation could be that there are factors inhibiting the usage such as restricted access to the computer or parental control that are particularly salient among the status-oriented users. Moreover, with regard to status, there is also an in-world social setting within Habbo where users can show status and differentiate themselves from other users by purchasing clothing and accessories for their avatar or by holding the premium membership.

In contrast to the findings from prior VW literature conducted in Second Life (Animesh et al. 2011; Jung 2011), social presence was found to contribute directly to the usage intention. Thus, Habbo Hotel’s considerable effort to be a friendly environment for young users appears to have been successful.

With regard to the role of normative influence, young users do not feel pressured by their social environment into using Habbo as we observed a weak negative effect, but are more influenced by media and commercials. The weak interpersonal influence may be due to the anonymity policies enforced within Habbo Hotel. While protecting the users, the policies may inhibit extending one’s existing social circle with the SVW and vice versa. Alternatively, and supported by the negative influence of status, being involved in Habbo is not unanimously considered ‘cool’ by users.

Habbo participation is determined by hedonic and utilitarian outcomes, i.e. the pleasure experienced when using the SVW and the perceived benefits gained through social interaction. The results thus offer support for the assertion of viewing SVWs as multi-purpose IS (Verhagen et al. 2012).

Taken together, the findings reveal that Habbo Hotel is used to obtain pleasurable experiences and to spend time together with other users in the friendly environment offered by the platform. They also indicate that media exert a significant influence on the usage decisions. These results lead us to further investigate user motives using our qualitative data, which reveals that the platform itself (with its services and associated gratifications) exerts a strong motivational influence on users to come back and spend time there.

The stickiness of Habbo

Our analysis of the qualitative user utterances strongly supports our quantitative findings (see figure 2). First of all, our results reveal that the majority of users (61.7%) state ‘having fun’ as their main reason for using Habbo, with 56.8% explicitly mentioning socializing with (new and old) friends as a motivator, followed by chatting (23.8%). The above reasons are strongly related and are often stated in conjunction. Hence, it is the socializing and community nature much more than any other component (e.g. gaming) that users experience as providing ‘fun’ and gratifying. The following are typical statements expressing this relationship:

“*I visit Habbo to have fun and to chat with friends I met there.*”

“*I visit Habbo, because it’s fun to chat with friends and other nice people.*”

“*Because it is fun to meet friends, hang out and chat.*”

Moreover, Habbo affords meeting with people who, due to geographical distance, can’t be visited in real life and allows users to make new friends easily; some users even report that they have found a girlfriend or boyfriend on the platform.

“You can chill with friends, who you couldn’t meet because in real life they live faraway.”

“*Because you can write to friends, even if they are not friends you know in person.*”
Finally, some users stress that Habbo is more than a place to meet people and mention the playing of games (9.4%) and other activities, such as decorating rooms, as a further reason for using Habbo.

“It’s fun. It’s not like normal chat – you can do so much more!”

“I have fun in Habbo thanks to all the furniture and I built great rooms.”

Our findings show that teenagers appreciate Habbo as a space for meeting, chatting and “hanging out”. The users seem to appreciate becoming absorbed in this virtual space for the sake of the pleasure they get from this absorption. The big difference to other social technologies is that Habbo appears to have created a self-contained online community, rather than resembling a service that one uses to connect with one’s ‘real life’ social network, such as with Facebook.

Altogether, the salience of both hedonic motives and benefits in social interaction corroborate the results of the quantitative analysis. Furthermore, the findings offer empirical support for the notion that digital natives consider virtual environments more a natural extension of their everyday communication (Palfrey and Gasser 2008). Essentially, the reasons for participation manifest themselves in relation to other users, hence confirming the salience of perceived network size.

We conclude that Habbo as a service proves to be highly ‘sticky’. While teenagers use Habbo in a fairly non-directed manner, they use the service for the sake of using it: as an absorbing experience, to “hang out”, “kill time”, “have fun”, and “as a change from the real day [ordinary life]”. In the following section we reflect on these findings in the context of theory, existing literature, and the particular nature of teenagers as a target group for online services.

Contributions and Implications

Our research yields a range of contributions and implications for future research. As getting access to teenage usage data is difficult for ethical reasons, ours is one of the first to provide a rich account of the emerging sociology of this new type of online service for teenagers. Our first contribution is to offer a better understanding of the sustained user engagement in a SVW designed for teenagers. Second, by discussing the particular nature and characteristics of Habbo Hotel and comparing our findings with research on other social technologies and hedonic systems, we add on the current understanding of the VW phenomenon but also further the understanding of Habbo Hotel as a unique socio-technical system. Finally, we add to the general understanding of ICT adoption among digital natives.

Co-created social context as a key affordance

Rather than being considered as separate factors by the users, our findings suggest that the presence and actions of other users, i.e. the sense of being part of a community, is incorporated in the perceptions of the hedonic and utilitarian outcomes as the key affordances that take place in interaction with others. Thus the social context manifests itself embedded in the hedonic and utilitarian value of the service. Even though the platform operator regularly organizes events and invites celebrities such as Lady Gaga for a visit, these were largely not mentioned as the key affordances that explain usage. As a result, the social environment the users co-create when using the facilities offered by the service provider appears to be a core constituent of the user experience.

As a result, in Habbo, the fun, socializing and self-representation are closely intertwined making it distinct from ‘traditional’ hedonic IS, such as games. Hence, it is a theoretically useful setting for examining the motivational and social reasons of user engagement. From this perspective, while offering a substantial predictive validity, the value of the constructs adapted from the technology adoption literature is somewhat limited in uncovering the social context. This leads us to considering the particular nature of Habbo as an IT artifact, and the particular characteristics of the user group.

Reflecting on the nature of Habbo as an IT artifact

Habbo presents itself as a unique IT artifact and usage phenomenon, which shares characteristics with a range of other systems, such as virtual worlds, communication systems and online games (see Griffiths...
and Light 2008). However, it has distinct differences to each of these categories. Thus the present study adds to the existing literature on VWs (Goel et al. 2011; Mäntymäki and Salo 2011; Shin 2009), and hedonic (Turel et al. 2010; van der Heijden 2004) and interactive technologies (Cheung et al. 2011; Lin and Bhattacharjee 2008; Lin and Bhattacharjee 2010; Shin 2009).

First, Habbo manifests itself as a virtual world, which draws on avatars and real world metaphors such as rooms and furniture, to invoke the sense of being ‘there’. As such, Habbo allows teenagers to step out of their real life situation, to become absorbed, albeit in a non-directed manner without pursuing the goals traditionally associated with IS or tool usage.

At the same time, Habbo differs from Second Life regarding forms of usage and user motivation. Based on both our quantitative and qualitative analysis, the enjoyment experienced inside Habbo is a more important driver of continuous usage than the utility derived from the usage. The salience of hedonic outcomes in Habbo contrasts with the findings of Shin (2009) about the adoption of Second Life, where perceived enjoyment did not have a significant influence on the use intention. Compared to Second Life, in Habbo there is an absence of e.g. educational institutions and a virtual currency that can be exchanged for real money, which are both referred to as utilitarian gratifications in Second Life (Zhou et al. 2011). Moreover, the demographic profile of the users is likely to dilute the importance of the utilitarian factors in driving the usage decisions.

Second, Habbo facilitates communication and community building much like communication systems, such as Skype, or social technologies like Twitter and Facebook. Interacting with friends and using the chat feature was mentioned as an important form of use and motivation with respect to continuing to use the system. At the same time, Habbo is distinctly different from traditional communication systems and social technologies that facilitate social interaction in ‘real life’. For instance, Habbo does not allow users to remain connected with one’s (real life) social network in an everyday and unobtrusive fashion while doing other things (e.g. using mobile devices) as Skype or Facebook do. Rather, users draw on Habbo deliberately to step out of their real-life situation and enter the community and “hang out” with friends. Moreover, many users have indicated that they connect with new and unknown users inside Habbo and build a new social network online, while one’s social network on platforms such as Facebook typically resembles one’s real-life social network (Lampe et al. 2006).

Third and finally, Habbo shares its hedonic nature and particular kinds of gratifications (e.g. enjoyment) with (online) gaming platforms. As defined by van der Heijden (2004, p. 696) “the value of a hedonic system is a function of the degree to which the user experiences fun when using the system”. However, Habbo lacks a predefined storyline and a scaffolding of goals to drive and keep user attention, which have been found to be a main characteristic of hedonic systems, and typical of online games (see e.g. Yee 2006).

Consequently, Habbo can be described as a virtual world that has a highly social, absorptive space that facilitates hedonic, non-directed forms of use, and social interaction with other users in the pursuit of community building. By offering its users utility such as enhanced social interaction and virtual self-presentation, Habbo can be labeled as a multi-purpose IS. This description reveals that Habbo is, to a large degree, constituted by its forms of use and the particular nature of its user group, rather than the technological characteristics it shares with other platforms. Furthermore, the fact that the utilitarian and hedonic motives were found to be significantly correlated and also often mentioned in conjunction, reflects the convergence of gaming and social networking in Habbo as reported by Griffiths and Light (2008). In addition to these factors, Habbo’s possible utility may also encompass other elements, such as escapism, voyeurism and building of self-image that have been reported to occur in Second Life (Eisenbeiss et al. 2012).

**Digital natives in social virtual worlds**

Prior research has shown that “teenagers consume the Internet as an experiential, rather than economic activity” (Lee and Conroy 2005, p. 8), therefore it is unsurprising that younger users spend more time online in hedonic activities than adults (Griffiths et al. 2004). Reflecting on the particularities of the user group sheds further light on the validity of our results.

Teenagers typically find themselves in a period of change, where one’s place in the complex social
The qualitative user comments further indicate that users seem to appreciate the casual nature of the social space which makes it easier to adopt a new, virtual identity for engaging in various interactions and, in doing so, deliberately leave behind some of the constraints faced in real life, which affords interacting and experimenting with different forms of self-expression in a risk-free way:

"Because I have many friends there it is easier for me to get in contact there, because I'm pretty shy."

"You can do all the things you can’t do in the real world"

In line with these observations, Griffiths and Light (2008) have argued that teenagers make a strong distinction between their interactions in Habbo and their real life encounters (commonly referred to as ‘IRL’ – ‘in real life’). Accordingly, the general sense derived from reading our user comments is that users are very aware of the differences between their real world and the virtual world. Six percent of users even thematize this explicitly in their replies on the differences between the real world and their encounters in Habbo Hotel. In line with our findings above, we conclude that teenagers acknowledge a distinction between Habbo (and their interactions inside the platform) and ‘real’ life. Some users explicitly regard Habbo as a refuge, which affords a welcome change from real life:

"It’s a change from the real day."

"You can just chill after school and forget about the real life trouble – you can create your own life, you have many friends and just fun and you always look forward to new experiences in the Hotel”

The distinction between ‘real’ and virtual world is somewhat dualistic and hence particularly interesting. The users can use Habbo both to make the distinction between the ‘real’ life by conducting various social experimentations or using Habbo as an asylum from reality. However, at the same time Habbo is viewed as an extension of users’ offline social networks and an addition to one’s communication toolkit. Furthermore, the comments reflect that the users generally understand and acknowledge the distinction between activities in Habbo and their offline lives. Habbo is appreciated by its users as a virtual location that affords safety and risk-free interaction in a moderated environment that protects the teenage user community from unwanted (adult) content and behavior by enforcing a strict code of conduct. The bounded nature and cohesiveness of the community can thus be seen as the necessary precondition for the above-discussed behaviors to proliferate. This is nicely expressed in the following user statement:

"Because it is one of the best and safest chats on the Internet. You don’t get groomed or abused and you can get one of the moderators to help you."

We conclude that the particular character and affordances of Habbo as an IT artifact, or phenomenon, are intimately intertwined with the particular needs of the teenage user group in their particular stage of life, such as self-experimentation, socializing and social learning. In light of the risks for young users that are commonly associated with online usage (cf. Chesney et al. 2009), our findings, somewhat surprisingly, indicate that Habbo is perceived as a less risky environment than the real world for experimenting with self-expression and one’s social identity vis-à-vis others.

Limitations and further research

Our study has certain limitations. First of all, we have used self-reported measures and behavioral intention instead of investigating actual behavior. Second, due to the self-selection of the respondents, the statistical generalization of the results to Habbo’s whole user population is not an appropriate course of
action. Also, the current study examined only one service and one cultural context. Thus, extending the scope of inquiry to other applications (other SVWs) as well as cultural settings (other countries) would be useful for further validation of the findings.

Moreover, we have approached our study from a distinct technology/innovation angle focusing on IS adoption factors. However, to fully understand the Habbo phenomenon, our study needs to be complemented with research that approaches the phenomenon from the characteristics of the teenage user group. In particular, further research into: 1) the nature of status games; 2) the proliferation of various hedonic behaviors; 3) the role of anonymity; and 4) role of social influence seem promising. Respectively, we suggest four directions for further research:

1) By purchasing virtual items and premium memberships users in Habbo can obtain additional means for self-expression and differentiate themselves from the holders of the basic account. As a result, purchasing behavior can be a way to boost one's status and enrich user experience. Thus, further research might examine user purchasing behavior and its effects on user experience.

2) As the hedonic outcomes are an important determinant of usage, an appropriate subsequent step in the research process would be to uncover the factors that contribute to a pleasurable user experience in SVWs, in order to better understand what exactly constitutes (and in what ways) the hedonic experience.

3) Protecting users' identity inside the virtual world is designed to prevent cyber bullying and sex crime. As the target audience are legally minors, these precautions are important and beyond any economic interest. However, the anonymity makes transferring status between the 'real' and virtual world difficult, and makes it more difficult to recognize 'real' life friends inside Habbo. Further research might enquire about the role of anonymity as an enabler of the user experiences.

4) The practically nonexistent influence of interpersonal influence and the negative influence of status may be alarming for the platform operator. Making participation in Habbo 'cool' and socially desirable has been attempted, but, based on our findings, this was met with only limited success. As a result, an in-depth analysis of the reasons underlying these relationships would be valuable in order to better understand teenagers as a user group.

**Conclusion**

In this paper we have investigated continuous engagement in social worlds among teenagers with a multi-method study of Habbo Hotel. The study shows that the continuous participation is essentially driven by the presence of other users, captured by perceived network size. Outcomes such as enjoyment, enhanced interaction with friends as well as the feeling of social presence are all affordances that are experienced in relation to other users as the social setting is essentially co-created by the users. The stickiness of Habbo stems from the factors intrinsic to the SVW rather than pressure from users' 'real' life social network. In other words, users engage in the SVW because of what they gain inside Habbo, not what they gain in the 'real' world, nor because of other people's opinions. The findings from the qualitative analysis show that the digital natives both acknowledge the distinction between the 'real' and virtual world, and are confident crossing this border.

With regard to technology adoption research we find that the established adoption factors offer substantial predictive validity but are limited in informing the actual constellation of user-generated affordances and the social setting that surrounds the usage decisions. This not only points to the characteristics of the technology, but to the need to further contextualize IS adoption research to better take into account the context factors such as the nature of the user group and the role of other users in co-creating experiences inside the platform. We further contribute to a better understanding of social virtual worlds in the group of teenage users, and Habbo Hotel both as an IT artifact and a phenomenon.
Appendix 1. The survey instrument and the descriptive statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D</th>
<th>Loading</th>
<th>Measurement item</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI1</td>
<td>4.83</td>
<td>2.399</td>
<td>0.862</td>
<td>Using Habbo... Helps me stay in close touch with my friends.</td>
<td>Li et al. (2010)</td>
</tr>
<tr>
<td>UTI2</td>
<td>4.97</td>
<td>2.312</td>
<td>0.881</td>
<td>... Helps me to make new friends more efficiently.</td>
<td></td>
</tr>
<tr>
<td>UTI3</td>
<td>4.89</td>
<td>2.342</td>
<td>0.833</td>
<td>... Allows me to express myself.</td>
<td></td>
</tr>
<tr>
<td>UTI4</td>
<td>5.03</td>
<td>2.344</td>
<td>0.846</td>
<td>... Is a good way to spend free time.</td>
<td></td>
</tr>
<tr>
<td>HED1</td>
<td>4.61</td>
<td>2.281</td>
<td>0.796</td>
<td>It is enjoyable to use Habbo.</td>
<td></td>
</tr>
<tr>
<td>HED2</td>
<td>5.48</td>
<td>2.227</td>
<td>0.917</td>
<td>It is fun to use Habbo.</td>
<td>(Venkatesh 2000)</td>
</tr>
<tr>
<td>HED3</td>
<td>5.34</td>
<td>2.256</td>
<td>0.933</td>
<td>It is entertaining to use Habbo.</td>
<td></td>
</tr>
<tr>
<td>HED4</td>
<td>5.11</td>
<td>2.267</td>
<td>0.908</td>
<td>It is pleasant to use Habbo.</td>
<td></td>
</tr>
<tr>
<td>STA1</td>
<td>3.98</td>
<td>2.511</td>
<td>0.792</td>
<td>People who use Habbo have a high profile.</td>
<td>(Brown and Venkatesh 2005)</td>
</tr>
<tr>
<td>STA2</td>
<td>3.28</td>
<td>2.431</td>
<td>0.896</td>
<td>People who use Habbo have more prestige than those who do not.</td>
<td></td>
</tr>
<tr>
<td>STA3</td>
<td>3.32</td>
<td>2.499</td>
<td>0.928</td>
<td>Using Habbo improves my status among those who are richest and smartest.</td>
<td></td>
</tr>
<tr>
<td>STA4</td>
<td>3.32</td>
<td>2.499</td>
<td>0.881</td>
<td>Using Habbo improves my status among those who are the most meaningful to me.</td>
<td></td>
</tr>
<tr>
<td>SP1</td>
<td>4.09</td>
<td>2.425</td>
<td>0.887</td>
<td>There is a sense of human contact in Habbo.</td>
<td>(Yoo and Alavi 2001)</td>
</tr>
<tr>
<td>SP2</td>
<td>4.61</td>
<td>2.402</td>
<td>0.839</td>
<td>There is a sense of human warmth in Habbo.</td>
<td></td>
</tr>
<tr>
<td>SP3</td>
<td>3.74</td>
<td>2.443</td>
<td>0.864</td>
<td>There is a sense of sociability in Habbo.</td>
<td></td>
</tr>
<tr>
<td>PNS1</td>
<td>3.08</td>
<td>2.27</td>
<td>0.932</td>
<td>How many of your friends use Habbo? (none…all)</td>
<td>(Lin and Bhattacherjee 2008)</td>
</tr>
<tr>
<td>PNS2</td>
<td>3.38</td>
<td>2.362</td>
<td>0.890</td>
<td>How many of yours peers use Habbo? (none…all)</td>
<td></td>
</tr>
<tr>
<td>PNS3</td>
<td>3.14</td>
<td>2.254</td>
<td>0.905</td>
<td>How many people in your environment use Habbo? (none…all)</td>
<td></td>
</tr>
<tr>
<td>SEC1</td>
<td>3.72</td>
<td>2.551</td>
<td>0.823</td>
<td>Media (Internet, magazines, TV, etc.) and commercials are an important source of information about using Habbo.</td>
<td>(Brown and Venkatesh 2005)</td>
</tr>
<tr>
<td>SEC2</td>
<td>3.50</td>
<td>2.459</td>
<td>0.887</td>
<td>I feel encouraged by media and commercials to use Habbo.</td>
<td></td>
</tr>
<tr>
<td>SEC3</td>
<td>3.56</td>
<td>2.592</td>
<td>0.860</td>
<td>I feel persuaded by media and commercials to use Habbo.</td>
<td></td>
</tr>
<tr>
<td>INT1*</td>
<td>2.66</td>
<td>2.127</td>
<td>0.814</td>
<td>My family thinks I should use Habbo.</td>
<td>(Hsieh et al. 2008)</td>
</tr>
<tr>
<td>INT2*</td>
<td>3.518</td>
<td>2.154</td>
<td>0.908</td>
<td>My friends think I should use Habbo.</td>
<td></td>
</tr>
<tr>
<td>INT3*</td>
<td>3.33</td>
<td>2.451</td>
<td>0.888</td>
<td>People I communicate with most often think I should use Habbo</td>
<td></td>
</tr>
<tr>
<td>CUI1</td>
<td>4.78</td>
<td>2.758</td>
<td>0.953</td>
<td>I intend to continue using Habbo during the next three months.</td>
<td>(Bhattacherjee 2001; Hsieh et al. 2008)</td>
</tr>
<tr>
<td>CUI2</td>
<td>4.55</td>
<td>2.685</td>
<td>0.963</td>
<td>I intend to continue using Habbo frequently during the next three months.</td>
<td></td>
</tr>
<tr>
<td>CUI3</td>
<td>4.84</td>
<td>2.736</td>
<td>0.901</td>
<td>I will keep on using Habbo in the future.</td>
<td></td>
</tr>
</tbody>
</table>

Appendix 2. Composite reliabilities and the squared correlations between the constructs*

<table>
<thead>
<tr>
<th></th>
<th>Comp.Rel.</th>
<th>CUI</th>
<th>ENJ</th>
<th>EXT</th>
<th>SEC</th>
<th>PNS</th>
<th>PU</th>
<th>SP</th>
<th>STA</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUI</td>
<td>0.957</td>
<td>0.726</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENJ</td>
<td>0.938</td>
<td>0.294</td>
<td>0.760</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEC</td>
<td>0.892</td>
<td>0.328</td>
<td>0.216</td>
<td>0.688</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INT</td>
<td>0.904</td>
<td>0.261</td>
<td>0.190</td>
<td>0.567</td>
<td>0.695</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PNS</td>
<td>0.935</td>
<td>0.373</td>
<td>0.157</td>
<td>0.371</td>
<td>0.496</td>
<td>0.713</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PU</td>
<td>0.916</td>
<td>0.349</td>
<td>0.619</td>
<td>0.393</td>
<td>0.352</td>
<td>0.248</td>
<td>0.745</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP</td>
<td>0.898</td>
<td>0.282</td>
<td>0.343</td>
<td>0.348</td>
<td>0.316</td>
<td>0.224</td>
<td>0.558</td>
<td>0.691</td>
<td></td>
</tr>
<tr>
<td>STA</td>
<td>0.929</td>
<td>0.130</td>
<td>0.208</td>
<td>0.315</td>
<td>0.388</td>
<td>0.266</td>
<td>0.346</td>
<td>0.342</td>
<td>0.754</td>
</tr>
</tbody>
</table>

*AVEs bolded in the main diagonal
References


Jones, C., Ramanau, R., Cross, S., and Healing, G. 2010 "Net generation or Digital Natives: Is there a