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Purchasing behavior in social virtual worlds: An examination of Habbo Hotel

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ABSTRACT

Spending real money on virtual goods and services has become a popular form of online consumer behavior, particularly among teenagers. This study builds on the Unified Theory of Acceptance and Use of Technology (UTAUT) to examine the role of motivation, social influence, measured with perceived network size as well as user interface and facilitating conditions in predicting the intention to engage in purchasing in social virtual worlds. The research model is tested with data from 1045 users of Habbo Hotel, world's most popular virtual world for teenagers. The results underscore the role of perceived network size and motivational factors in explaining in-world purchase decisions. The study shows that virtual purchasing behavior is substantially influenced by the factors driving usage behavior. Hence, virtual purchasing can be understood as a means to enhance the user experience. For virtual world operators, reinforcing the sense of presence of user's social network offers a means to promote virtual purchasing.

1. Introduction

Virtual worlds have become popular spaces for social interaction. As of July 2011, virtual worlds have received 1.4 billion registered users, 70% of which are between 5 and 15 years old.[1] In addition to the growing usage rates, the importance of virtual worlds is also increasing from an economic perspective. The overall annual revenue of virtual worlds has been reported to be $7 billion and total volume of the US virtual goods market to be worth $2 billion in 2011.[2]

Purchasing behavior inside virtual worlds plays a pivotal role for the virtual world operators since many virtual worlds do not apply access fees or periodical subscriptions. Instead, virtual worlds generate revenue from selling virtual goods or property, and offering premium accounts with exclusive features and benefits for the users. For example, Habbo Hotel sold virtual goods worth €4.5 million to its users in December 2010.[3]

Virtual worlds can be classified into gaming worlds and social virtual worlds (SVWs) (Jung, 2011). Unlike gaming worlds, SVWs do not have narrative goals or level-ups. The attraction of SVWs lies within the in-world social setting, i.e. interaction with other users in the 3D environment via customizable avatars, while exploring the virtual environment. Hence, SVWs can be viewed to belong to social communication technologies (Koo, Wati, & Jung, 2011). SVWs can facilitate in-world games. However, in contrast to gaming worlds, the games are not designed as a core component of the user experience. As a result, we define SWVs as persistent computer-mediated 3D environments, designed for social interaction and entertainment, where the users are represented as avatars (Bartle, 2003; Bell, 2008; Mäntymäki & Salo, 2011).

Prior literature has examined the role of virtual experiences and the virtual environment (Animesh, Pinsonneault, Yang, & Oh, 2011). Furthermore, the perceived value of virtual items and those factors that are intrinsic to the purchasing process have also been found to affect decisions to purchase in virtual worlds (Guo & Barnes, 2011). In addition, purchasing has been positioned as a subsequent behavior resulting from continuous service usage (Mäntymäki & Salo, 2011). Besides these contributions, the overall body of knowledge on purchasing behavior in SVWs is limited.

To address this gap in the literature, the objective of the study is to examine what factors predict purchasing behavior in social virtual worlds. We build on the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003; see also Venkatesh, Thong, & Xu, 2012) to develop an integrative framework accommodating the motivational factors, perceived network size, user interface and facilitating conditions as predictors of virtual purchasing behavior.

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[2] Hudson, C., Smith, J. Inside Virtual Goods: The US Virtual Goods Market 2011–2012, http://www.Insidevirtualgoods.com/us-Virtual-goods/#aboutreport, retrieved: February 12, 2012.

[3] Sulake Corporation, Habbo – Where else? Sulake Corporation, 2012, http://www.sulake.com/habbo/?navi=2, retrieved: December 6, 2012.

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On a contextual level, research on virtual worlds has been biased towards virtual worlds for adults, particularly Second Life (see e.g. Animesh et al., 2011; Goel, Johnson, Junglas, & Ives, 2011; Nah, Eschenbrenner, & DeWester, 2011; Saunders, Rutkowski, van Genuchten, Vogel, & Orrego, 2001; Shelton, 2010; Zhou, Jin, Vogel, Fang, & Chen, 2011), despite the fact that young people constitute the largest demographic group of virtual world users (Bell, 2008; Wasko, Teigland, Leidner, & Jarvenpaa, 2011). To fill in this second gap in the literature, we empirically focus on Habbo Hotel, which has 278 million registered users and is the most popular virtual world for teenagers with 5 million monthly unique visitors from 150 countries.[4]

2. Theoretical background

2.1. Purchasing behavior in virtual worlds

The distinct characteristic of virtual goods and services (virtual items, characters, currencies, premium memberships) is that they do not have a clear atomistic equivalent or component in them (Fairfield, 2005), and they can only be consumed and have value inside a specific virtual environment.

The literature has identified a number of factors that influence purchasing behavior in virtual worlds. Shin (2008) found perceived risk and social norm the principal determinants of the intention to engage in transactions with virtual currency, followed by attitude, perceived usefulness and ease of use. Lehdonvirta (2009) identified three conceptual categories for the purchase drivers of virtual items, namely functional (game performance and advanced characters), hedonic (aesthetic appeal) and social drivers (visual appearance and rare collectibles). Guo and Barnes (2011) found that extrinsic motivators, such as effort expectancy, performance expectancy and perceived value, as well as intrinsic motivators, such as perceived enjoyment and the customization of the character, predicted the purchase intention in Second Life.

As a result, virtual purchasing behavior is determined by factors intrinsic to the virtual world. Since there are a large number of other users present in SVWs, virtual consumption is also about building identity, experiences and status that resemble real-life consumption habits. Hence consumption patterns are affected by factors known to influence consumer behavior in general, such as motivation and social influence (cf. Sheth, Newman, & Gross, 1991). In addition, the characteristics of the virtual environment have been found to play a role in predicting purchase decisions. Animesh et al. (2011) examined social presence, flow and telepresence stemming from the virtual environment as the key experiences determining the purchasing intention in Second Life.

Purchasing behavior represents the financial aspect of the overall engagement in the virtual world. In addition to money, the users invest time in in-world activities, but also in their customer relationship with the virtual world operator. In their empirical investigation of the topic, Mäntymäki and Salo (2011) found a strong relationship between continuous user engagement and purchasing behavior in the SVW context.

The literature has also paid attention to the interplay and spillover effects between virtual and real-world purchasing behavior. Nah et al. (2011) examined the relationship between engagement with a brand in the virtual world and intentions to engage with the brand offline. Their results demonstrate that pleasurable experiences with a brand in the virtual world translate into a willingness to engage with the brand also in the offline setting. Furthermore, Shelton (2010) found that motivations for using Second Life correlated with the purchasing of both virtual and real-life products. Taken together, the literature offers evidence that virtual purchasing is influenced by factors intrinsic to the virtual world, the attributes of the virtual items as well consumers' offline behavior and preferences.

2.2. Extending UTAUT

The use context of the IT artifact is an important factor in understanding user behavior (Benbasat & Zmud, 2003). Thus, we adopt the approach by Venkatesh et al. (2003, 2012) and develop an integrative framework to accommodate the characteristics of SVWs targeted for young people.

UTAUT was developed as a synthesis of the accumulated body of knowledge on individual-level technology adoption. UTAUT takes into account the expected performance of the IT artifact, measured with effort expectancy, the expected effort required to use the system (effort expectancy) as well as social influence and facilitating conditions (Venkatesh et al., 2003). UTAUT offers a well-established theoretical foundation that has proven capable of adapting to a wide range of technologies, including virtual worlds (Guo & Barnes, 2011). Moreover, by combining several theoretical approaches, UTAUT is capable of encompassing the multitude of potential factors underlying purchasing behavior in SVWs, and thus serves as an overarching theoretical framework of the study. We further develop UTAUT by disaggregating performance expectancy into motivational factors, effort expectancy into interface-related factors, re-conceptualizing the social influence, and finally by disaggregating facilitating conditions into self-efficacy and availability.

In the original UTAUT, performance expectancy was used to capture the perceived performance gains derived from using the IT artifact. The use of SVWs, such as Habbo Hotel is however related to free time and leisure rather than work and productivity, which is likely to underscore the importance of intrinsic motivation (Hsu & Lu, 2007; van der Heijden, 2004), yet does not preclude the existence of utilitarian motives such as enhanced communication, social interaction and self-expression. Altogether it is plausible to assume that motivational factors predict purchasing behavior in SVWs, including Habbo Hotel. Hence, motivation theories (Calder & Staw, 1975; Deci, 1975) are used as the theoretical foundation for the motivation block in the research model.

In UTAUT, the social influence was measured with subjective norm that encompasses the social desirability of using the IT artifact (Venkatesh et al., 2003). In SVWs, as with other services for social interaction and communication, the presence of other users is the factor that provides usage with a purpose (Lin & Bhattacherjee, 2008). As possessing virtual items and the premium membership is a means to build identity and demonstrate status inside the virtual world, purchasing behavior is likely to be influenced by the social setting; specifically the perceived network effects (cf. Mäntymäki & Salo, 2011). As a result, the theory of network externalities (Katz & Shapiro, 1986), complemented with innovation diffusion theory (see Valente, 1995), is employed to scrutinize the role of social influence.

In the original UTAUT, effort expectancy was used to measure the perceived ease or difficulty associated with the usage of the system. Since SVWs include more features and functions with which to enjoy and explore the virtual environment than e.g. instant messengers or social network sites, the user interface and the virtual environment are of central importance in creating an engaging user experience and avoiding frustration. For example, SVWs facilitate virtual self-expression with dance moves, clothing, hairstyles and accessories. The availability of these social cues is likely to constitute social presence (Short, Williams, & Christie, 1976), which in turns creates an environment that encourages virtual spending. Hence, the features related to the user interface are also likely to

[4] Habbo Hotel – Check in to check it out, http://www.sulake.com/habbo.

affect purchase decisions. We employ the Technology Acceptance Model (TAM) (Davis, 1989) and social presence theory (Short et al., 1976) as the foundations for the interface-block in the research model.

Venkatesh et al. (2003, p. 453) defined facilitating conditions as the degree to which an individual believe that organizational and technical infrastructure exists to support use of the system. Habbo Hotel is targeted toward teens who have been exposed to information technology since their childhood, and who can be termed 'digital natives' (Palfrey & Gasser, 2008). Therefore, the users can be assumed to be rather confident with using various types of IT applications as well as interacting in online social environments. Therefore, investigating the role of self-efficacy as a predictor of virtual purchasing is particularly interesting. Additionally, as the users are minors who typically live with their families, their use of the computer and the Internet may be influenced, monitored and perhaps limited by parents. As a result, factors facilitating usage are salient predictors of the purchase intention. Grounded on Social-cognitive theory (SCT) (Bandura, 1977) and the Theory of Planned Behavior (TPB) (Ajzen, 1991), we employ self-efficacy and availability as the facilitating conditions.

Table 1 summarizes the theoretical foundations of the nomological net of the study, and the research construct with definitions as well as references to relevant prior virtual world research. The research hypotheses are developed in the following section.

3. Hypotheses

3.1. Motivational factors

Prior literature on user behavior in virtual worlds has found extrinsic motivation, measured with perceived usefulness for a focal construct in predicting the usage decisions (Mäntymäki & Salo, 2011; Shen & Eder, 2009; Shin, 2009). In addition, Guo and Barnes (2011) found that extrinsic motivation affects purchase behavior in Second Life. Furthermore, the specific utility related to being engaged in Habbo Hotel is likely to relate socializing and making new friends. Thus, by purchasing virtual items or the premium membership in Habbo Hotel, users can access clothing and furniture as well as exclusive benefits and features that are only available to premium members. For example, an exclusive benefit of the premium subscription is an extended "friends list", i.e. other users with whom one can chat privately within the in-world messenger without being in the same virtual space. Essentially, purchasing can be viewed as means to customize user experience and improve one's in-world performance and status within the SVW. Hence, we propose that the extrinsic motivation for being engaged in the SVW predicts purchase decisions, and therefore put forward the hypothesis:

H1: Perceived usefulness positively affects the purchase intention.

Intrinsic motivation, in other words, the enjoyment and pleasure resulting from engagement in the virtual world has been reported as driving usage decisions (Mäntymäki & Salo, 2011). In addition, Shelton (2010) found a significant relationship between entertainment motives for participation and purchasing behavior in Second Life. Nah et al. (2011) reported that perceived enjoyment related to a brand experienced in the virtual world predicts the intention to engage with the brand offline. Based on prior empirical evidence on virtual world use (Mäntymäki & Salo, 2011; Schwarz, Schwarz, Jung, Perez, & Wiley-Patton, 2011), we employ perceived enjoyment as a proxy for intrinsic motivation and assert that purchasing behavior is motivated by the enjoyment derived from the usage. Therefore, it is hypothesized:

H2: Perceived enjoyment positively affects the purchase intention.

3.2. Social influence

Due to network externalities (Katz & Shapiro, 1986), the size of one's personal network inside the virtual world influences the amount of opportunities for social interaction and communication. Furthermore, a large social circle in an SVW provides more opportunities to demonstrate status through virtual purchasing or when trading virtual items with other users. Prior evidence from online social networking (Aggarwal & Yu, 2012; Sledgianowski & Kulviwat, 2009), instant messaging (Lin & Bhattacherjee, 2008) and SVWs (Mäntymäki & Salo, 2011) offers empirical evidence showing that a user's perceived network size predicts their usage of the SVW. Furthermore, Guo and Barnes (2009) found social influence affecting decisions to purchase virtual goods among Chinese online game players. Hence, we assert that a large personal network in an SVW increases the value of the SVW for the user and consequently increases their willingness to invest money in the SVW experience. As a result, we hypothesize the following:

H3: Perceived network size positively affects the purchase intention.

3.3. Interface-related factors

Social presence has been found to have a direct positive impact on users' online purchase intentions (Gefen & Straub, 2004; Hassanein & Head, 2007) and to reinforce trust in online environments, thus reducing the cognitive uncertainty associated with purchasing via the Internet (Dash & Saji, 2007). Moreover, Animesh et al. (2011) found social presence having no significant direct effect on the purchase intention among Second Life users.

As Habbo Hotel is a venue for communication and social interaction, purchasing virtual items can be viewed as a means to further increase the information richness of the medium (cf. Daft & Lengel, 1986) by accessorizing the avatar or receiving skills, such as the dance moves available only to those users who have purchased the premium membership. Thus, social presence influences via two mechanisms: directly by influencing the perception of the trustworthiness and the empathy of the service, thus reducing uncertainty about purchasing; and indirectly by increasing the value of Habbo Hotel as a communication medium, hence making purchasing more meaningful. Hence, we postulate the following:

H4: Social presence positively affects the purchase intention.

Virtual worlds facilitate a 3D graphic environment and avatar-based navigation. Hence, the usability plays a focal role in determining user experience. Previous research on the use of virtual worlds use has examined perceived ease of use mostly as a predictor of attitude (Hua & Haughton, 2009; Mäntymäki & Salo, 2011; Schwarz et al., 2011) and the use intention (Fetscherin & Lattemann, 2008). To sustain the users' attraction, learning to operate in the virtual world should not require a substantial effort. In consequence, perceived ease of use is likely to be a precondition for purchasing. Thus we propose the following hypothesis:

H5: Perceived ease of use positively affects the purchase intention.

3.4. Facilitating conditions

Social cognitive theory (SCT) posits a triadic reciprocity between the behavior an individual intends to perform, his/her cognitive perceptions, and the environment (Bandura, 1986). SCT asserts that people tend to perform behaviors that they believe will lead to favorable consequences rather than behaviors resulting in negative ones (Bandura, 1986). Furthermore, beliefs about one's ability to perform a specific behavior, referred to as self-efficacy, influence

Table 1
The nomological net of study.

Driver of SVW use	Theoretical origin	Construct	Definition	Related virtual world research
Motivational factors	Motivation theories (Calder & Staw, 1975); Self-determination theory (Deci, 1975)	Perceived usefulness	The degree an individual believes using the SVW will help him or her to attain gains in social interaction.	(Mäntymäki & Salo, 2011; Shin, 2009)
	Motivation theories (Calder & Staw, 1975); Self-determination theory (Deci, 1975)	Perceived enjoyment	The extent to which using the SVW is perceived as enjoyable in its own right.	(Mäntymäki & Salo, 2011; Nah et al., 2011; Shin, 2009)
Social influence	Theory of network externalities (Katz & Shapiro, 1986); Innovation diffusion theory (Valente, 1995)	Perceived network size	The perception of the degree to which important others are present in the SVW.	(Guo & Barnes, 2009; Mäntymäki & Salo, 2011)
Interface factors	Social presence theory (Short et al., 1976)	Social presence	The degree of human warmth associated with the SVW.	(Animesh et al., 2011; Schwarz et al., 2011)
	TAM (Davis, 1989)	Perceived ease of use	The degree to which an individual perceives using an SVW is free of effort	(Mäntymäki & Salo, 2011; Shin, 2008)
Facilitating conditions	Social cognitive theory (Bandura, 1997; Compeau & Higgins, 1995)	Self-efficacy	Judgment of one's capability to use the SVW	(Shin, 2009)
	TPB (Ajzen, 1991) (cf. also Hsieh et al., 2008; Venkatesh et al., 2003)	Availability	External factors preventing the use of the SVW	n/a

their choices about which behaviors to perform (Bandura, 1977, 1986).

Self-efficacy has been defined as people's judgments of their capability to organize and to perform the courses of action required to attain designated types of performances. It is not concerned with the skills one has, but with the judgments of what one can do with whatever skills one possesses (Bandura, 1986, p. 391).

Compeau and Higgins (1995) developed a measurement scale for examining computer self-efficacy in determining IT adoption. In addition, the literature has also made a similar distinction and examined the relationship between general and specific computer self-efficacy (Agarwal, Sambamurthy, & Stair, 2000). General self-efficacy refers to self-efficacy with computers whereas specific self-efficacy is related to a specific software or application. The literature has examined the role of self-efficacy in various technology adoption settings (Hernandez, Jimenez, & Jose Martin, 2009; Hsu, Ju, Yen, & Chang, 2007; Vijayasarathy, 2004) including SVWs (Shin, 2009). In this research, the focus is on self-efficacy with a specific SVW rather than general computer self-efficacy (Agarwal et al., 2000; cf. Yi & Hwang, 2003).

With regard to SVWs, self-efficacy is a meaningful construct to be examined since the user using the SVW must feel confident not only with the avatar-based navigation, but also with the social dynamics and the code of conduct inside the virtual world. Second, young users have been familiar with ICT and the Internet from early childhood, which makes their learning of how to use IT applications faster and more intuitive compared with older generations (cf. Palfrey & Gasser, 2008). In summary, the influence of self-efficacy is an insightful construct with which to examine the purchase intention from the perspectives of the characteristics of both the IT artifact and the user group. As a result, it is hypothesized:

H6: Self-efficacy positively affects the purchase intention.

Using s SVW requires access to a computer and the Internet. Since Habbo Hotel users are typically teenagers who normally live with their parents and siblings, it can be assumed that parental control may reduce the time spent on computer. Additionally, access to the computer may need to be negotiated with the other members of the household (see Merikivi & Mäntymäki, 2009). In consequence, it is plausible to assume that the availability of the SVW can be limited, which reduces the opportunities to enjoy and utilize the virtual goods and services purchased. This, in turn, may have a negative influence on a user's willingness to spend money on virtual possessions. Consequently, the final hypothesis is postulated:

H7: Limited availability negatively affects the purchase intention.

Gender, age and length of experience are viewed as potentially moderating the influence of the effects of the motivational, social, interface and facilitating conditions. However, their influence is not formally hypothesized. The research model is presented in Fig. 1.

4. Empirical research

4.1. Habbo Hotel as the research context

With 273 million registered users and offering access through more than 30 country-specific portals, Habbo Hotel is regarded as one of the most popular and widely acknowledged teen-oriented virtual worlds. Currently, customers between 13 and 18 years old account for 90% of the overall base, the gender distribution being nearly equal. The three-dimensional user interface has borrowed its retrospective design from older computer and console games. However, Habbo Hotel can be distinguished from gaming virtual worlds, such as World of Warcraft, in that the designer-produced, progressively advancing storyline is replaced by user-determined objectives. With countless virtual cafés, parks, and user-decorated private rooms, Habbo Hotel provides an extensive environment within which users can interact with one another and play various non-violent games.

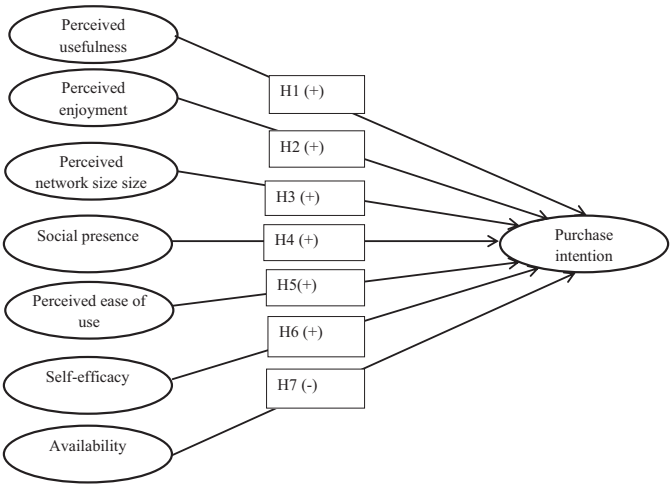

Fig. 1. The research model.

To sum up, Habbo Hotel is designed to be a safe virtual environment in which young users can engage in various activities. Users can play in-world games, take part in events such as celebrity visits and contests, organize parties, decorate their rooms within the hotel as well as socialize with other users and make new friends, etc. As Habbo Hotel facilitates a wide range of activities, it is also used for various user-determined purposes (cf. Verhagen, Feldberg, van den Hooff, Meents, & Merikivi, 2012).

To be able to purchase virtual items in Habbo Hotel, one must acquire Habbo credits that in turn can be purchased using real money with an SMS, or offline in a similar way to prepaid mobile subscriptions. Virtual items can be used to accessorize the avatar, decorate one's virtual room or to be acquired as collectibles. Furthermore, the users can purchase a premium membership that provides exclusive features that are not available on the free of charge standard account.

4.2. Data collection

The data was collected through an online survey of the users of the Finnish Habbo Hotel portal in co-operation with Sulake Corporation, the Finnish company that owns and maintains Habbo Hotel. The Finnish portal was selected since new features are frequently tested by Finnish users before being launched in other Habbo Hotel portals. In contrast to Second Life, Habbo Hotel users log on at a local portal and each portal has its own specific content. Hence, the user experience is, at least to some extent, portal-specific.

The survey was constructed in English. Prior to the main data collection, the survey instrument was tested with a sample of Canadian Habbo Hotel users to ensure the applicability of the measures. The questionnaire was then translated into Finnish by two IS researchers, both native Finnish speakers. Finally, the questionnaire was double-checked by a qualified translator and employees of Sulake Corporation, the company operating Habbo Hotel, to ensure that the questions were interpretable for the target audience.

To collect the data, an invitation to participate in the study was posted on the front page of the Finnish Habbo portal. The invitation led to a web-based questionnaire that included the research constructs of our model and some socio-demographics. Multiple responses from the same IP-address were omitted by the survey system.

The respondents were not offered incentives of any kind. With regard to the research ethics, the fact that a majority of the Habbo users are minors was taken into account when designing the survey. Revealing one's real name or other personal information is forbidden inside Habbo Hotel; discussions including such information are moderated. To ensure anonymity, either the real or the Habbo user names of the respondents were not requested at any point in the survey. Secondly, with the exception of the background questions on gender and age, no questions about the respondents' offline lives were included in the survey.

The survey was opened 8928 times. Three thousand two hundred and sixty-five respondents proceeded to the final page and submitted the survey. Hence, altogether 36.6 percent of those who opened the questionnaire completed it. To further ensure the reliability of the results only fully completed questionnaires were included in the analysis. Furthermore, since Habbo is targeted for teenagers, only responses from respondents aged between 13 and 18 years of age were included in the sample. As a result, the final sample consisted of 1045 responses (Table 2).

Table 2
Age and gender distribution of the sample.

Age		Gender		Total
		Female	Male	
13	Count	244	145	389
	Percentage	63.0	37.0	100.0
14	Count	184	111	295
	Percentage	62.0	38.0	100.0
15	Count	100	73	173
	Percentage	58.0	42.0	100.0
16	Count	54	46	100
	Percentage	54.0	46.0	100.0
17	Count	30	22	52
	Percentage	58.0	42.0	100.0
18	Count	19	17	36
	Percentage	53.0	47.0	100.0
Total	Count	631	414	1045
	Percentage	60.0	40.0	100.0

4.3. Measurement

To ensure the reliability of the measurement, the survey items were adopted from prior literature with wording adapted to match the SVW context and the target audience. The items were measured with a seven-point Likert scale, anchored from strongly disagree to strongly agree – except perceived network size, which was measured with semantic scale. As the research constructs were of psychological nature, reflective measurement was employed. The measurement items with references to the respective literature can be found in Appendix A.

The data was analyzed using structural equation modeling (SEM) with Amos 8.0 software.

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 (Reinartz, Haenlein, & Haenseler, 2009).

Convergent validity indicates the degree to which the items of a scale that are theoretically related are also related in reality. Discriminant validity reflects whether the items measure the construct in question or other constructs. The convergent validity was evaluated based on three criteria (Fornell & Larcker, 1981): firstly, all indicator factor loadings were significant and exceeded 0.70. Secondly, composite reliabilities exceeded 0.80. Thirdly, average variance extracted (AVE) by each construct was greater than the variance due to measurement error (AVE > 0.50). Table 3 illustrates that the data met the criteria for convergent validity. Regarding discriminant validity, the AVE for each construct should exceed the squared correlation between that and any other construct (Fornell & Larcker, 1981). As Table 4 shows, the criteria for discriminant validity were met.

Once the convergent and discriminant validity were proved to be acceptable, the goodness-of-fit of the CFA model was investigated. All the fit indices for the measurement model demonstrated a good model fit (CMIN/df = 3.105; GFI = 0.945; AGFI = 0.926; TLI = 0.973; SRMR = 0.032; NFI = 0.968; CFI = 0.978; RMSEA = 0.045).

The risk of common method bias was examined with CFA using the single-factor approach presented by Malhotra, Kim, and Patil (2006). The single-factor model exhibited a very poor fit, which indicates that common method variance (CMV) is unlikely to be a major concern. Since the one factor approach is known to be conservative in detecting biases, an additional CMV test was conducted by including an underlying common method factor in the research model (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). A comparison of the loadings between the item and its theoretical construct, and the item and the common method factor indicated that all but four method factor loadings were not statistically significant

Table 3
Descriptive statistics and convergent validity.

Construct	Item	Mean	S.D.	Loading[a]	C.R.	AVE
Purchase intention	PURCH1	3.990	2.266	0.930	0.933	0.712
	PURCH2	3.787	2.274	0.911		
	PURCH3	4.455	2.270	0.881		
Perceived ease of use	PEOU1	6.256	1.412	0.840	0.894	0.689
	PEOU2	5.873	1.581	0.867		
	PEOU3	5.804	1.672	0.870		
Perceived usefulness	PU1	4.759	2.107	0.918	0.940	0.762
	PU2	4.662	2.119	0.937		
	PU3	4.659	2.108	0.886		
	PU4	4.890	2.029	0.829		
Perceived enjoyment	ENJ1	5.593	1.585	0.881	0.937	0.714
	ENJ2	5.433	1.598	0.927		
	ENJ3	5.286	1.692	0.928		
Perceived network size	PNS1	3.438	1.982	0.910	0.887	0.685
	PNS2	3.900	1.922	0.790		
	PNS3	3.286	1.968	0.848		
Self-efficacy	SE1	6.259	1.404	0.918	0.941	0.717
	SE2	6.292	1.343	0.918		
	SE3	6.256	1.412	0.918		
Availability	AVA1	2.465	2.065	0.899	0.834	0.589
	AVA2	2.767	2.130	0.790		
Social presence	SP1	4.659	2.108	0.756	0.871	0.676
	SP2	5.125	1.891	0.858		
	SP3	5.001	1.828	0.880		

[a] All loadings significant at $p < 0.001$ level.

and all the item-method loadings were significantly lower than the item-trait loadings. Moreover, the item loadings for the theoretical constructs remained on a good level. Altogether, this indicates that CMV is not a major contaminant of the results and unlikely to distort the interpretations.

4.4. Structural model

Having established the measurement model, the structural model that includes the hypothesized relationships was tested. The results from testing the structural model are presented in Fig. 2. The model accounted for almost 40% of the variance in the purchase intention, which demonstrates good predictive validity (Straub, Boudreau, & Gefen, 2004). Overall, four out of seven hypotheses received empirical support. Perceived network size was found to be the primary predictor of purchase intention, followed by perceived enjoyment and usefulness. Social presence and self-efficacy did not exert a statistically significant effect on the purchase intention, and thus H4 and H6 were not supported. In addition, contrary to hypothesis 7 the relationship between challenges in availability and purchase intention was found to be positive. 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

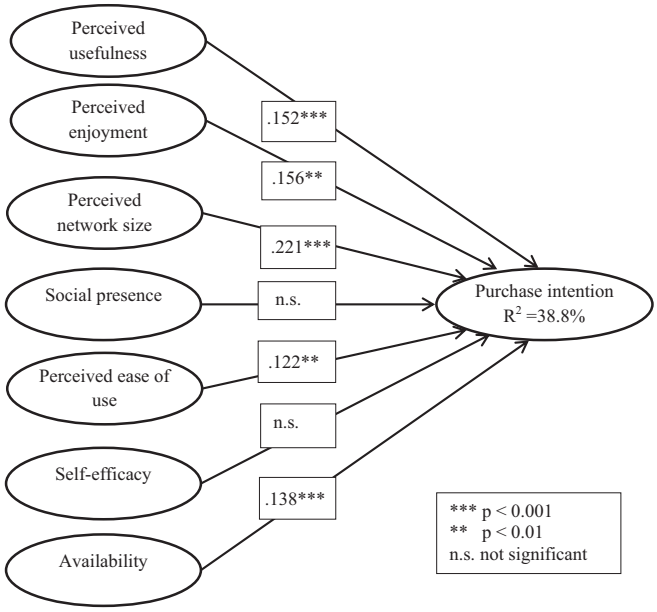

Fig. 2. Results of the hypotheses testing.

Table 4
Squared correlations between the constructs (AVEs in the main diagonal).

	PURCH	PU	ENJ	PEOU	PNS	SE	AVA	SP
PURCH	**0.712**							
PU	0.287	**0.762**						
ENJ	0.271	0.498	**0.714**					
PEOU	0.147	0.188	0.316	**0.689**				
PNS	0.274	0.333	0.208	0.084	**0.685**			
SE	0.027	0.030	0.106	0.370	0.001	**0.717**		
AVA	0.103	0.055	0.025	0.000	0.226	0.017	**0.589**	
SP	0.250	0.456	0.542	0.284	0.207	0.099	0.038	**0.676**

statistically significant ($p < 0.05$) moderating effect. Gender was found to moderate the effect of perceived network size on the purchase intention, and the positive relationship was somewhat stronger among girls.

5. Discussion

5.1. Theoretical implications

The objective of the study was to investigate what factors predict purchasing behavior in social virtual worlds. The results demonstrate the importance of social influence, measured with perceived network size as well as both extrinsic and intrinsic types of motivation in predicting the purchase intention. The role of social influence differs from the results obtained by Guo and Barnes (2011) who reported an insignificant relationship between the subjective norm and the purchase intention among Second Life users. The difference can be explained by contextual differences between Habbo Hotel and Second Life but also by the fact that the subjective norm captures the normative influence, whereas perceived network size reflects the informational dimensions of social influence (Deutsch & Gerard, 1955). Furthermore, our findings support including hedonic motivation in UTAUT (see Venkatesh et al., 2012).

Overall, the results offer empirical support for the notion that users engage in virtual purchasing to increase the specific value derived from the usage. Second, the value of in-world purchasing materializes in the presence of the social network. The value of Habbo Hotel as a communication and socializing venue is essentially dependent on the presence of other users. As people generally tend to interact with people within their established social network, the presence of friends and other relevant reference groups is of particular importance. Furthermore, using virtual possessions or the benefits of the premium membership as a vehicle to gain status is dependent on the presence of other users.

The fact that limited availability had a positive effect on the purchase intention was somewhat counterintuitive and hence deserves further attention. A possible interpretation would be that users perceiving their access to Habbo Hotel to be limited may feel those activities in that virtual world are particularly important to them. Therefore, they would like to spend there as much time as possible, and also be more willing to invest money in the experience. Consequently, parents may wish to limit their children's amount of computer time and online time. Thus the users may be particularly sensitive to any attempts to limit their engagement in the SVW, and therefore perceive the availability of Habbo Hotel as limited.

The strong influence of perceived network size suggests that a bandwagon effect (Abrahamson & Rosenkopf, 1993) exists with regard to virtual purchasing in Habbo Hotel. As adolescence is a period in life when friends and peers become a main source of social influence (Brown, 1990), it is plausible to assume the bandwagon effect playing a more central role in services for young people than in e.g. Second Life that is targeted for adults.

5.2. Implications for business

The role of perceived network size as the primary driver of purchase intention reflects the fact value of all virtual belongings is dependent on the social environment within the virtual world. Consequently, having fun and communicating effectively with real-life friends who are involved in the virtual world and currently online are key affordances that make in-world purchasing meaningful. To protect its young users Habbo Hotel aims at preserving anonymity inside the virtual world. However, anonymity may have a negative influence on virtual purchasing since users have limited information about the extent to which their social network is present in Habbo Hotel.

Given that a substantial share of the variance in the purchase intention was explained by factors known to drive the usage decisions, operator activities to improve the user experience are likely to have a positive influence on in-world purchasing behavior. As selling virtual items and services is the primary source of revenue for Habbo Hotel, the available selection of virtual clothing, accessories, furniture and pets is extensive, and a potential way to further boost sales would be to offer users predefined bundles of items, for example, matching clothing, or offering a feature that would enable users to design their own virtual products as in Second Life.

The positive relationship between the ease of use of the service and purchasing demonstrates the importance of an intuitive user interface for the overall user experience. This is an interesting notion since the users of Habbo Hotel are generally tech-savvy and confident in their ability to use the service. The avatar-based navigation as well a variety of experiences and activities inside the virtual world make high demands on the user-friendliness of the user interface. The user interface should be designed to require minimal cognitive effort, but offer a constant stream of instant gratification while facilitating the incremental learning of the features of the system and the dynamics of the in-world social environment.

5.3. Limitations and further research

The study is subject to some limitations. At the same time, the limitations offer avenues for further inquiry. Regarding the research design, the empirical data represents one country and one virtual world only. More research is thus needed to investigate whether the results will remain valid for other virtual worlds in other cultural contexts. Second, since the respondents in our study were primarily teens, the findings noted herein must be interpreted with caution when considering other age categories. As a result, we encourage cross-cultural, cross-platform comparisons that add to the generalizability of the findings.

This study examined purchasing as a behavior resulting from the factors driving user engagement. However, virtual purchasing behavior is likely to have drivers of its own. For example, the aesthetic and self-expressive value derived from decorating one's virtual room is likely to motivate users to purchase virtual furniture. In addition, virtual items can be purchased to demonstrate status in the in-world social setting. Therefore, we suggest future research on examining whether the e.g. the social influence and motivational structures influence differently across product types. Furthermore, the purchasing experience per se can be considered rewarding. Altogether, further research examining the experiential and recreational aspects of virtual purchasing.

Additionally, the underlying assumptions of the theoretical foundation of the study are based on a rational calculus. We therefore suggest further research on investigating factors such as escapism, addiction and inertia in predicting virtual purchase decisions.

Given that perceived network size was found to be a focal construct, further research could aim at a more fine-grained analysis of the in-world social setting in predicting purchase decisions. This could be facilitated by incorporating constructs such as social capital (Hsiao & Chiou, 2012) and sense of belonging (Chai & Kim, 2012). Moreover, the fact that the effect of perceived network on the purchase intention was stronger among girls calls for a more detailed understanding of gender differences in virtual world use and in the perceptions of the in-world social setting. A qualitative or (n)ethnographic research would enable a richer understanding of the experiences and the social context from the users' perspective.

Finally, as price generally plays a pivotal role in setting the level of demand, further research ought to examine the influence of

pricing on the demand for and the perceived value of virtual goods and services.

Appendix A. The survey instrument

	Measurement item	Source
PURCH1	I intend to purchase Habbo items and/or Habbo Club memberships shortly.	(Bhattacherjee, 2001; Venkatesh & Davis, 2000)
PURCH2	I predict I will purchase Habbo items and/or Habbo Club memberships in the short term.	
PURCH3	I will frequently purchase Habbo items and/or Habbo Club memberships in the future.	
PEOU1	Using Habbo to communicate with others is clear and understandable.	(Davis, Bagozzi, & Warshaw, 1989; van der Heijden, 2004)
PEOU2	Navigation through the menus and toolbars in Habbo is easy to do.	
PEOU3	I feel that Habbo's interface is easy to learn.	
PU1	Using Habbo. . . Helps me stay in close touch with my friends.	(Davis, 1989; Li, Chau, & Van Slyke, 2010)
PU2	Helps me stay in close touch with people I know.	
PU3	Helps me to communicate easier with people I know.	
PU4	Helps me to make new friends more efficiently.	
ENJ1	It is enjoyable to use Habbo.	(van der Heijden, 2004; Venkatesh, 2000)
ENJ2	It is fun to use Habbo.	
ENJ3	It is entertaining to use Habbo.	
PNS1	How many of your friends use Habbo? (none. . .all)	(Lin & Bhattacherjee, 2008)
PNS2	How many of yours peers use Habbo? (none. . .all)	
PNS3	How many people in your environment use Habbo? (none. . .all)	
SE1	I feel comfortable using Habbo on my own.	(Compeau & Higgins, 1995; Venkatesh et al., 2003)
SE2	I can easily operate in Habbo on my own.	
SE3	I feel comfortable using Habbo, even if there is no one around me to tell how to use it.	
AVA1	I don't always get to use Habbo because my parents won't allow me.	(Hsieh, Rai, & Keil, 2008)
AVA2	I cannot use Habbo when I want to.	(Hsieh et al., 2008)
SP1	There is a sense of human contact in Habbo.	(Cyr, Hassanein, Head, & Ivanov, 2007; Hassanein & Head, 2007)
SP2	There is a sense of human warmth in Habbo.	
SP3	There is a sense of sociability in Habbo.	

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