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July 2009

# INVESTGATING THE INTENTION OF PURCHASING DIGITAL ITEMS IN VIRTUAL COMMUNITIES

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### Recommended Citation

Kim, Hee-Woong; Koh, Joon; and Lee, Hyun Lyung, "INVESTGATING THE INTENTION OF PURCHASING DIGITAL ITEMS IN VIRTUAL COMMUNITIES" (2009). *PACIS 2009 Proceedings*. 18.

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# INVESTGATING THE INTENTION OF PURCHASING DIGITAL ITEMS IN VIRTUAL COMMUNITIES

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## Abstract

*Most virtual community (VC) providers lack profitable business models. The challenge for VC providers is to generate and increase revenue from sources other than advertising. The sale of digital items (e.g., avatar) to VC members is a recent revenue generation method. This study examines how VC members decide to purchase digital items from the customer value perspective. Based on customer value theory, this study identifies six factors over three dimensions of customer value and examines their effects on VC members' intention of purchasing digital items. Our finding suggests that the effect of value on members' purchase intentions is significant in the functional (i.e., quality of digital items), social (i.e., social self-image), and emotional (i.e., playfulness) value dimensions. This study provides important implications for practitioners to understand how they can foster an ideal environment for customers to perceive more value in their digital items so that it would be more compelling to make purchases in a VC.*

Keywords: Digital items, Customer value, Virtual Community

# 1. INTRODUCTION

In the recent years, majority of virtual community (hereinafter, VC) providers have faced the lack of a profitable business model. Since Hagel and Armstrong (1996) published insights on the commercial expediency of VCs, many researchers and practitioners have begun looking into how owners should manage their online communities and businesses to maximize their economic potential (Koh and Kim 2003-4). Most VC providers derive their revenues mainly from advertising but are still bordering on profitability although they might have a significantly large member base.

However, there is a rising web phenomenon of VCs employing an innovative kind of revenue generation method which earns primarily through the sales of digital items to virtual community members (Kang & Yang 2006). "Digital items" known as "virtual assets", can include online avatars, accessories for the avatars, decorative ornaments like furniture, digital wallpapers, skins, background music and virtual weapons used for Internet games. These digital items are employed by users for representation and articulation in the online space, especially to create and enhance their online profiles in webs and games. The sale of digital items is increasingly becoming widespread in online Social Networking Communities (hereinafter, SNCs), a distinctive form of VCs whose fundamental purpose is to help users connect with friends, business partners, or other individuals.

A representative success case of a profitable SNC that sells digital items as its core business is Cyworld ([www.cyworld.com](http://www.cyworld.com)). Cyworld's daily revenue from selling digital items is estimated to be around US\$300,000 (USNews 2006) and its annual sales reached approximately \$120 million in Korea alone for the year 2005 (Businessweek 2006). Similar to Cyworld, Internet companies such as Habbo ([www.habbo.com](http://www.habbo.com)), There.com ([www.there.com](http://www.there.com)), Secondlife ([www.secondlife.com](http://www.secondlife.com)), and Livejournal ([www.livejournal.com](http://www.livejournal.com)) have started selling digital items to their members to generate revenue. In the case of Second Life, the people who log in spend \$50-60 a week to buy digital items and use the services.

Particularly with the increasing popularity of online social networking, more people are actively joining and participating in SNCs to be integrated as part of any online social network. SNCs are hence evolving into massive networked groups with a critical mass of purchasing power that can potentially be augmented multifold given the network externalities embedded in the social system. This implies the need for marketers and practitioners to better understand the digital item purchase and usage behaviour of members in the context SNCs to maximize the economic potential of this thriving form of VCs by leveraging on their user base.

However, there is lack of understanding about what motivates people to purchase digital items in the context of SNCs. Even if Cyworld and a few other Internet companies have evidently illustrated an innovative and profitable business model centered on selling digital items, there is insufficient level of understanding to explain why community members buy and use these items. Few studies that tried to study the motivations for people to buy and use digital avatars, focused on the social science perspective and hardly took into account the marketing perspective.

This study aims to examine digital item purchase behaviours of SNC users from the value perspective based on customer value theory. From marketing and e-commerce literature, customer value is known to be an important predictor of consumer buying behaviour as it is found largely to influence customers' purchase decisions (e.g. Zeithaml 1988; Sheth et al. 1991; Babin et al. 1994; Sweetney & Soutar 2001). Our findings would provide practical guidelines as to how VC providers and Internet companies can realize revenues and profit by capitalizing on their member base through the sale of digital items.

## 2. CONCEPTUAL BACKGROUND

### 2.1 Digital Items

Majority of VCs presently derive their revenues primarily from advertising. Instead of relying on advertising revenues, a few SNCs have adopted an innovative way of running a lucrative business

mainly out of selling digital items to their community members (Kang & Yang 2006). “Digital items” are new media elements used by users for representation, expression and communication in online environments. Some common examples of digital items are digital avatars, accessories for the avatars (e.g. clothes, shoes, and hats), ornamental items for virtual rooms (e.g. furniture, art paintings, and wallpapers), background skins, music tracks and even digital weapons for online games. Price for digital items typically ranges from a few cents to a few dollars each.

Digital avatars are graphic icons representing users. Users typically participate in a virtual world by controlling an avatar, a character that represents them in the virtual context (Lehdonvirta 2005). Mostly as two-dimensional animated figures, avatars have brought visibility to one’s online self (Webb 2001). Avatars have long been used in various fields on the Internet such as games, chat rooms, and a live forum for online conversation (Chung 2005).

Avatars are particularly widespread in multiplayer online role-playing games (“MMORPGs”). Evolving from MMORPGs, the avatar technology is gradually being integrated into many other forms of platforms where social interaction is integral. MSN has tied new avatar technology into Microsoft Passport a few years back, aiming to monetize its social messaging services, allowing the avatar to be downloaded onto mobile handsets (New Media Age 2003).

From literature more geared towards the identity perspective, an avatar can be seen as a unique way of visually representing one’s self-identity and desire for self-disclosure. In text-based communications, users can express their identity with their ID, nickname and profile (Reid 1994). An avatar has a special meaning as a symbol of identity in a virtual community. Users want their identity within a virtual community to replace their physical body and to control the degree to which they disclose themselves over the computer. Furthermore, this fascination makes Internet users, who are accustomed to free services, willing to pay for avatars (Kang & Yang 2006).

## **2.2 Customer Value Type**

Among the various concepts discussed by marketing and e-commerce literature, the notion of “customer value” is often found to be an important predictor of buying behaviour and a significant influencer of customers’ purchase decisions (e.g., Dodds et al. 1991; Sheth et al. 1991; Babin et al. 1994; Zeithaml 1988). The central role of consumer value has been conceptualized (Woodruff 1997) and empirically demonstrated (Grisaffe & Kumar 1998) in traditional marketing literature.

Value is regarded as a strong predictor for favourable behavioural intentions such as purchase intentions (Zeithaml 1988; Dodds et al. 1991; Chang & Wildt 1994). In terms of value perceptions, a broader theoretical framework of perceived value was developed by Sheth et al. (1991), who explained that consumer choice is a function of multiple ‘consumption value’ dimensions and that these values make differential contributions in different choice situations. As the dimensions they proposed are comprehensive to a variety of fields and has been deemed to establish good foundation for extending existing value constructs, it largely forms the basis of research for in other newer relevant studies (e.g. Sweetney & Soutar 2001, Rintamaki et al. 2006).

The value frameworks discussed by Sheth et al. (1991), Sweetney and Soutar (2001), and Rintamaki et al. (2006) all incorporated three pertinent dimensions of customer consumption values, namely (1) functional value, (2) emotional value, and (3) social value. All of them found that functional, emotional and social values were key influencers to consumer behaviour in each of their context.

Functional value of a product means “the perceived utility acquired from a product’s capacity for functional, utilitarian or physical performance” (Sheth et al. 1991). A product acquires functional value through the possession of salient functional, utilitarian, or physical attributes. Functional value is measured on a profile of choice attributes. Traditionally, functional value is presumed to be the primary driver of consumer choice. This assumption underlies economic utility theory advanced by Stigler (1950), and popularly expressed in terms of “rational economic man.” A product’s functional value may be derived from its characteristics or attributes such as reliability, durability, and price.

Emotional value of a product means “the perceived utility acquired from a product’s capacity to arouse feelings or affective states” (Sheth et al. 1991). A product acquires emotional value when associated with specific feelings of when precipitating or perpetuating those feelings. Emotional value, also commonly known as hedonic or experiential value, has been influenced by theory and research in several other pertinent areas of inquiry. Research in advertising and atmospherics has suggested that marketing and promotional mix variables arouse emotional responses that may be generalized to marketed products (e.g. Holbrook 1983; Park & Young 1986). According to Holbrook and Hirschman (1982), hedonic consumption involves the multi-sensory, fantasy and emotive aspects of one’s experience with products.

Social value means “the perceived utility acquired from a product with one or more specific social groups” (Sheth et al. 1991). Consuming a product can represent a social act where symbolic meanings, social codes, relationships, and the consumer’s identity and self may be produced and reproduced (Firat & Venkatesh 1993). The motive of buying and using products depends on how a customer wants to be seen and/or how he wants to see himself by others (Sheth et al. 1991; Sirgy et al. 2000; Sweeney & Soutar 2001). Products have been known to possess symbolic or conspicuous consumption value in excess of their functional utility.

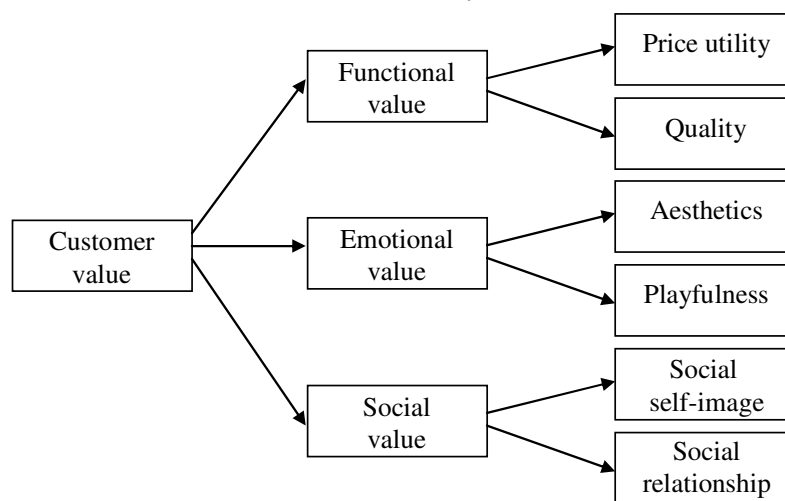


Figure 1. Conceptual Framework

Based on the above discussion, this study identifies factors representing each type of customer value associated with digital items in the context of VC (see Figure 1). First, we define functional value as *the utility of a digital item based on the perceived ratio or trade-off between its quality and the price to obtain it* (Monroe 1990). This study identified two factors corresponding to the functional value of digital item, price utility and quality. Product utility represents the perceived efficient use of money to minimize what is sacrificed to obtain the digital item (Zeithaml 1988). Quality represents the perceived overall excellence and expected performance of digital item (Zeithaml 1988).

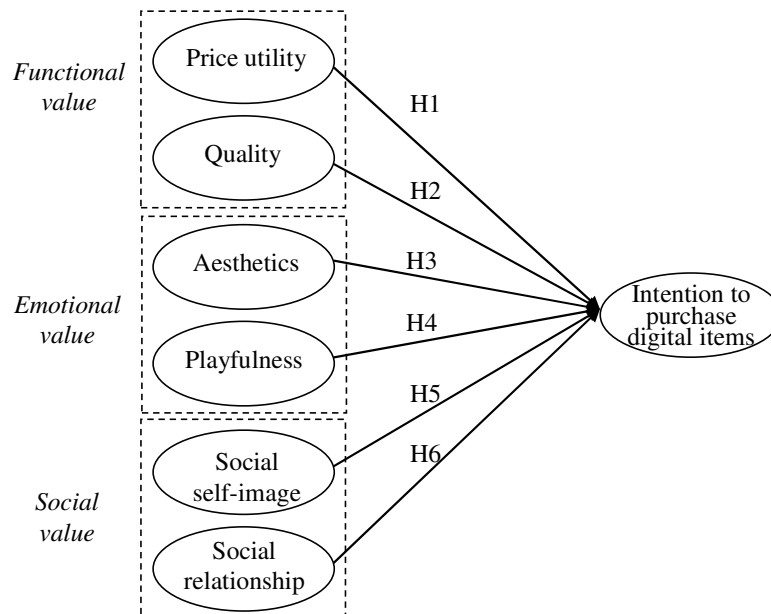
This study defines emotional value as *the utility of a digital item derived from the perceived feelings or affective states that it generates* (Sweeney and Soutar 2001). We identify two factors corresponding to emotional value, aesthetics and playfulness. Aesthetics represent visual appeal of the focal digital item (Shun et al. 2008). Playfulness represents the perceived intrinsic enjoyment, interest, fun and curiosity generated from engaging in absorbing interactions with the digital item (Moon and Kim 2001).

We define social value as *the utility of a digital item derived from its perceived ability to enhance social well-being*. This study identifies two factors corresponding to social value, social self-image and social relationship. Social self-image represents the digital item’s perceived capability to enhance social self-image i.e., the projection of how one appears to others (Sweeney and Soutar 2001). Social relationship represents the digital items’ perceived capability to help form, maintain, and enhance interpersonal relationships.

### 3. RESEARCH MODEL AND HYPOTHESES

We develop the research model (see Figure 2) and the corresponding hypotheses based on the above conceptual discussion. Price utility here is a component of functional value which positively contributes to total customer value. Adapted mainly from Zeithaml (1988), price utility is defined in our context as the utility derived due to the perceived efficient use of money to minimize what is sacrificed to obtain the product. From the transaction utility theory (Thaler 1985), the more favourable the price of a product, the higher the perceived price utility from the customers' point of view as they perceive that their money would be used more efficiently. Therefore, with a higher price utility, the higher the perceived acquisition utility, and the higher their purchase intentions because they view the transaction as more valuable.

*H1: Price utility has a positive effect on the intention to purchase digital items.*



*Figure 2. Research model*

In marketing and e-commerce literature, quality and price are commonly associated with the functional dimension of customer value. Digital items are products which are characterized by indestructibility, transmutability and reproducibility. Digital items, which appear mainly in the form of multimedia elements can encompass more abstract dimensions of quality, such as aesthetics, features and perceived quality image. In particular, aesthetic quality is one of the most prominent dimensions of quality for digital items like graphical icons or online music tracks, since these digital items generally seem to be more aesthetic or pleasure-related in nature. Hence, digital items with higher perceived quality may lead to greater perceived customer value, inducing higher purchase intentions from consumers.

*H2: Quality has a positive effect on the intention to purchase digital items.*

Aesthetics, representing visual appeal of focal digital item, could attract the interests of potential buyers. Aesthetics is actually a key component of hedonic shopping (Rintamaki et al. 2006). For this reason, aesthetics of a digital item could lead to the intention of purchasing the digital item in a VC.

*H3: Aesthetics has a positive effect on the intention to purchase digital items.*

Previous research found that attitudinal outcomes, such as positive affect, pleasure, and satisfaction, result from the playful experience (Sandelands et al. 1983). Playfulness is expected to be associated with increased behavioural intention, and possibly purchase intentions. Sheth et al. (1991) posited that the consumption of goods and services are frequently associated with emotional response, such as the romance aroused by a candlelight dinner, which contributes to increased value for the consumer in the emotional dimension. Perceived playful responses of fun and fantasy evoked through consuming digital items can be seen as a kind of emotional value for consumers. Therefore, this intrinsic value

brought about by perceived playfulness during the consumption process may trigger purchase intentions of community members.

*H4: Playfulness has a positive effect on the intention to purchase digital items.*

People consume products to enhance their social self-image because the purchase, display, and use of goods can communicate symbolic meaning to the individual and to others. The purchase and use of products is a means by which an individual can express self-image socially to others. Therefore, products are consumed for their social meanings as symbols (Solomon 1983). Digital items can help to enhance representation and articulation in the online space, so it is likely for consumers to buy and use digital items as symbolic goods to enhance their social self-image. Hence, we propose:

*H5: Social self-Image has a positive effect on the intention to purchase digital items.*

Baumeister and Leary (1995) addressed the need in humans to form and maintain strong, stable interpersonal relationships. The need is for frequent interactions within an ongoing relational bond. VCs are places where individuals can find and give emotional support, companionship and encouragement (Wellman et al., 1996). Walker (2003) found that people created extrinsic home pages to maintain pre-existing relationships. By embellishing homepages with attractive digital items like great music, members can expect to lure in more visitors to their homepages, such as friends or strangers whom they can potentially build relationships with. With more friends and strangers attracted to visiting their homepages, it takes less effort for owners to keep up with these social relationships. Therefore, digital items are believed to be useful for social relationships and this value can lead to members' motivation to purchase them. Hence, we propose:

*H6: Social relationship has a positive effect on the intention to purchase digital items.*

#### **4. RESEARCH METHODOLOGY**

This study adopted an online survey approach as the research methodology. We selected Cyworld as the context of our study because it is a successful VC in terms of profiting from the sale of digital items. Although in some aspects similar to U.S. social networking sites such as MySpace ([www.myspace.com](http://www.myspace.com)) or Secondlife ([www.secondlife.com](http://www.secondlife.com)), Cyworld gives social networking additional twists that make it more realistic and alluring. Users possess their own virtual assets which can be customized. For instance, users have digital avatars which can be supplemented with digital accessories like clothes, hats and shoes. In addition, they have virtual "rooms" that can be decorated with chic digital furniture, art pieces, electronics, wallpapers, even music. Instant messaging is included in the service, so owners can chat with visitors. One can even access the features of Cyworld from a mobile phone.

Besides graphical digital items, as of September 2006 Cyworld has sold over 160 million songs, making it the second-largest music store in the world behind Apple's iTunes. Cyworld also has more video traffic than YouTube (U.S. News 2006). Also in 2006, Cyworld received the Wharton Infosys Business Transformation Award for its society-wide transformation of interpersonal interaction.

To buy these digital items, users must first exchange cash for a digital currency in Cyworld called "Dotori" (Korean for "acorns"), which cost approximately US\$0.10 each. Prices for digital items vary from about 2 Dotori (US\$0.20) for a wall painting to 5 Dotori (US\$0.50) for a song, or 30 Dotori (US\$3) and above for a background for one's homepage for a year. Most of these digital items are time-limited, and automatically disappear once that time has expired so users have to repurchase once that happens. Cyworld has made money, selling at least hundred million US dollars worth of Dotoris to users in Korea alone annually, which is required for the purchase of digital items (Businessweek 2006). The Dotoris are bought through credit card, bank transfer, gift certificates or direct debit on a mobile phone bill.

The study adopted existing validated scales whenever possible. These scales were adapted to reflect our research model. The price utility items were taken from the perceived value for price measurement scale developed by Sweetney & Soutar (2001). For the quality construct, one item was adapted from Sweetney & Soutar (2001) while three other items were based on the concept of quality as explained by Zeithaml (1988). For the aesthetics construct, we adopted items from Mathwick et al.

(2001). As for the playfulness construct, three items were adapted from Moon & Kim (2001) and two variations of these items were added on. Social self-image measurement items were adapted from Sweetney & Soutar (2001). Items assessing social relationship were developed with relevance to our construct definition which is built upon the definitions of Maslow (1968) and Bowlby (1969). To measure purchase intentions, purchase intention scale was adopted from Dodds et al. (1991). All items were measured along a seven-point Likert scale (1= strongly disagree, 7 = strongly agree). The list of items for each construct used in the final survey is provided in Appendix.

Online members of the Korean Social Networking Community, Cyworld, were the respondents being surveyed. Cyworld has around 20 million members, more than one third of Korea's 48.2 million, with more than 17 million unique visitors each month. Empirical data was collected using web-based survey which was made available through a homepage to members of the SNC. The survey questions were formulated in English and translated to Korean by a translator and double-checked by an IS professor who is fluent in Korean.

The survey was conducted over a period of one week with each respondent receiving 5,000 Korean Won (US\$5) in exchange for completing the online questionnaire. A total of 225 completed and usable responses were obtained as the final sample. There are more male respondents than female, with males making up 60.9% of the sample size. Majority of the respondents are between 20 to 29 years old (68.8%) with the mean age being 23.06 years, indicating a youthful group of VC users. In terms of profession, about 91.1% of the respondents are employees and students. The respondents are generally proficient with Internet usage as 85.3% of them have at least 7 years of Internet experience. 96.4% of those surveyed have been using Cyworld for at least a year.

## 5. DATA ANALYSIS AND RESULTS

To validate the survey instrument, we assessed its convergent and discriminant validity. Convergent validity can be established by examining the standardized path loading, composite reliability (CR), Cronbach's  $\alpha$ , and the average variance extracted (AVE) (Gefen et al. 2000). We first performed confirmatory factor analysis (CFA) using LISREL. The standardized path loadings were all significant (t-value > 1.96) and greater than 0.7. The composite reliability (CR) and the Cronbach's  $\alpha$  for all constructs exceeded 0.7. The average variance extracted (AVE) for each construct was greater than 0.5. The convergent validity for the constructs was supported.

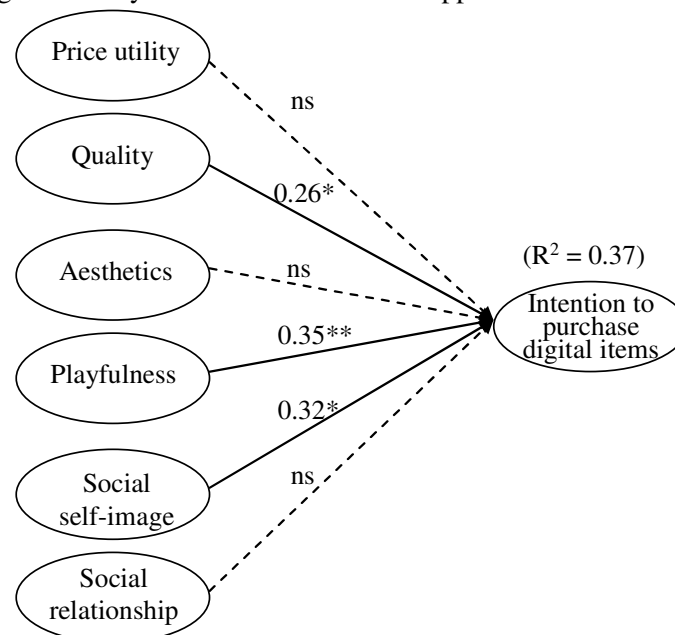


Figure 3. Testing results

Normed  $\chi^2 = 1.44$ , RMSEA = 0.044, GFI = 0.90, AGFI=0.87, CFI = 0.99, NFI = 0.97  
 (\*:  $p < 0.05$ , \*\*:  $p < 0.01$ , ns: non-significant at the 0.05 level)



Next, we assessed the discriminant validity of the measurement model. The square root of AVE for each construct (diagonal term) exceeded the correlations between the construct and other constructs (off-diagonal terms). Hence, discriminant validity of the instrument was established.

After establishing the validity of the measurement instrument, we examined the structural model using LISREL. The results of testing the structural model are shown in Figure 3. All the fit indices meet the recommended guidelines (Gefen et al. 2000). Thus the structural model has an adequate fit with the data.

The results indicate that quality (H2), playfulness (H4), and social self-image (H5) had significant effects on the intention to purchase digital items, explaining 37 percent of its variance. However, price utility (H1), aesthetics (H3), and social relationship (H6) had insignificant effect on the purchase intention.

## 6. DISCUSSION AND IMPLICATIONS

### 6.1 Discussion of Findings

The major finding of this study is that perceived *quality*, *playfulness* and *social self-image* are significant factors influencing consumers' intention of purchasing digital items in VCs. The first finding explains that online customers perceive quality of digital items and the quality affects the intention of purchasing digital items in virtual communities. That is, since there are many VCs adopting and offering digital items to online users and customers these days. Some digital items in certain VCs are poorly designed and not perform well. For this reason, quality of digital items affects the purchase intention even in the sales of digital items. Our finding that playfulness affects the purchase intention is similar to marketing research which suggests that emotional or hedonic values gained by customers through product consumption lead them to form more positive intentions towards purchase and usage of these products. As Csikszentmihalyi (1975) noted, a positive subjective experience becomes an important reason for performing an activity. This is also consistent with what other researchers like Mathwick et al. (2001) have validated in other contexts.

Social self-image was also found to have a significant positive effect on the purchase intention. From the symbolic interactionism perspective, individual's self-image is largely based on others' appraisals (e.g. Solomon 1983; Sirgy 1982). VC members especially in the Social Network Communities are concerned with the projection of how they appear to others, especially in this online social networking environment where the display of self or identity can be highly visible to others through personal profiles and reputation indicators. As Boyd et al. (2004) suggested, digital items can provide visible and audible cues to better present the portrayal of their identities to others, reducing the difficulty of for others to gauge them. Members strive to enhance their social self-image through the consumption of digital items because these items can offer them a greater level of representation and articulation in the online space, allowing them to better craft the image of themselves which they wish others to have of them. Therefore, the consuming behaviour of an individual will be directed toward enhancing social self-image through consumption of digital items as symbols.

However, price utility was found to be insignificant to the purchase intention. This means that although the price of the digital items are perceived to be reasonable, SNC members may still not be interested to purchase and use them if they do not perceive value from aspects like playfulness and social self-image. However, the insignificance of price utility might be due to the fact that survey respondents who have not purchased any digital item before tend to hold a fuzzy perception of the prices of the digital items.

Aesthetics was also found to have insignificant relationship with the purchase intention, indicating that subjects do not perceive aesthetics of digital items as an important subcomponent of value leading to their purchase intentions. Social relationship was also insignificant to the purchase intention. It might be because not many members in the context of this SNC have discovered or experienced the usefulness of digital items for social relationship, making them more indifferent to the perceived value

that can come from social relationship during the consumption of digital items. More studies need to be conducted to investigate the consistency of this finding.

## **6.2 Limitations**

The results of this study should be interpreted in the context of its limitations. First, this study has been conducted based data and observations from a single online community in South Korea. In addition, in other countries where the Information Technology infrastructure is different from Korea, VCs might not occupy such an esteemed place in the lifestyle of users. More research is needed to examine the robustness of the findings across the diverse context of VCs. Also, it might be possible that the subcomponents in our study are not holistic enough to explain for each dimension of value. There might be possible relationships between purchase intention and other value-dimensional constructs which are not present in our study.

## **6.3 Implications for Research and Practice**

There are several theoretical implications in this study. Firstly, this study is a pioneering empirical research that investigates the purchase intention of digital items based on the notion of consumer's perceived value in the online context. To employ the value conceptualization in the area of digital item consumption deepens academics' understanding of the dimensions and subcomponents of value that contribute to consumers' digital item purchase behaviour.

Secondly, this study conceptualized the value framework in the context of VCs. Consumers' perceived value are categorized into three dimensions: functional, emotional and social. Each of these dimensions has been discussed in depth and this provides a structured theoretical framework and new insights for VC researchers for future research. Traditionally, marketing and e-commerce literature has focused more extensively on functional and emotional value. Our study further considers the importance of social value especially in the context of online communities and subsequently proved its explanatory power in analyzing behaviours that occur in VCs where sociality is inherently present.

Lastly, this study provides empirical evidence that perceived quality, playfulness and social self-image are three main factors that significantly influence consumers' online purchase intention of digital items in the context of SNCs. Future research needs to identify the specific and different roles of these three factors in SNCs.

In terms of practical implications, we discussed a practical case on the Cyworld as an innovative and profitable business model which leverages on the sale of digital items in VCs. While previous VCs are facing limitations in generating revenue, Cyworld demonstrates a new way of doing business online by catering to members' playful experiential needs, social identity concerns and social networking desires. It has highlighted that consumers are ready to spend real money on intangible digital items that exist only in the virtual realm. This may be a pleasant surprise to online businesses and spur them to be creative in coming up with new products and services.

Secondly, our study gave an account of online social networking communities, a unique and highly popular category of VCs which have proliferated exponentially on the Internet. It helps to generate insights about the sociology of online social networking and explain such questions as why such online communities are thriving or how it works. Such insights are useful in various disciplines ranging from social sciences to information technology to business.

Thirdly, the findings of our study would be valuable for practitioners in the market who wish to adopt or improve the business model of selling digital items in an online community. Our finding that quality, playfulness and social self-image are three important factors affecting consumers' purchase intentions for digital items implies that VC providers and online businesses selling digital items should prioritize their efforts and focus on these three factors if they want to increase the purchases of these items by members. Especially, practitioners should try to increase the playfulness experienced by members during digital item consumption and the digital items' capability to enhance members' social self-image through the SNC by designing high quality digital items.

Playfulness can be enhanced in VCs in a couple of ways. VCs and online businesses can increase the creative use of richer multimedia elements embedded in these digital items to increase their interactivity or dynamism. For example, avatars can be animated more interestingly to interact with the user by responding to the user's commands or mouse movements. They can even be made to talk using text-to-speech technology so users can hear them speak. Artificial intelligence technology may be employed to make digital items like avatars move so that they seem to be alive. Next, VCs should seek to increase the variety of digital items so that consumers can have the more options of buying different digital items for different occasions. For instance, there can be a larger assortment of digital accessories or background skins available for user to switch between, or a larger selection of music tracks for members to purchase. Further, the overall VC environment can be made more enjoyable, fun and fantasized. VCs can take on altering themes each day, so one day users find themselves in a city setting and the next day they might be in a castle scene. Also, social self-image can also be heightened in some ways. First, VCs may integrate some form of sociality which is of high relevance to members' daily lives. This can increase their chances of consuming digital items as he or she perceives importance in projecting a presentable self-image to others in a community. Another way is to increase the level of personalization of members by their consuming digital items. Lastly, digital items consumption must be made easily visible to others and they should be capable of making a statement about buyer's self-image or identity. Impression management becomes more important in a conspicuous setting and it increases members' purchase intention for digital items to craft the desired image before the audience.

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## Appendix. Measurement Instrument

Variable	Item	Wording	Reference
Price Utility	FPU1	The digital items sold here are generally reasonably priced.	Sweetney & Soutar (2001)
	FPU2	The digital items sold here offer value for money.	
	FPU3	The digital items sold here are good products for the price.	
	FPU4	The digital items sold here are considered economical in terms of price.	
Quality	FQU1	The digital items sold here have an acceptable standard of quality.	Sweetney & Soutar (2001)
	FQU2	The digital items sold here are reliable in their performance.	Zeithaml (1988)
	FQU3	The digital items sold here are good in terms of their overall excellence.	
	FQU4	The digital items sold here possess a degree of quality which is satisfactory.	
Social Self-Image	SSI1	Using the digital items sold here enhances my self image to others.	Sweetney & Soutar (2001)
	SSI2	Using the digital items sold here improves my self-expression to others.	
	SSI3	Using the digital items sold here makes a good impression on other people.	
	SSI4	Using the digital items sold here improves the way I am perceived.	
Social Relationship	SSR1	Using the digital items sold here better enables me to form interpersonal bonds with others.	Maslow (1968); Bowlby (1969)
	SSR2	Using the digital items sold here helps me maintain my social relationships with others.	
	SSR3	Using the digital items sold here helps me make new friends.	
	SSR4	Using the digital items sold here enhances my social relationships with others.	
Aesthetics	EAE1	The digital items sold here are lovely	Mathwick et al. (2001)
	EAE2	The digital items sold here reflect beauty	
	EAE3	The digital items sold here are aesthetically appealing	
	EAE4	The digital items sold here have attractive aesthetic feature	
Playfulness	EPL1	Using the digital items sold here gives fun to me.	Moon & Kim (2001)
	EPL2	Using the digital items sold here is interesting to me.	
	EPL3	Using the digital items sold here stimulates my curiosity.	
	EPL4	Using the digital items sold here arouses my imagination.	
	EPL5	Using the digital items sold here keeps me absorbed.	
Purchase Intention	PIN1	The probability that I would consider buying digital items from Cyworld within the next 6 months is high.	Dodds et al. (1991)
	PIN2	My willingness to buy a digital item from Cyworld within the next 6 months is high.	
	PIN3	The likelihood of my purchasing a digital item from Cyworld within the next 6 months is high.	