

Attributes of Social Networking Services : A Classification and Comparison

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소셜 네트워크 서비스의 속성 : 분류와 비교

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Since a social networking service (SNS) is considered as an effective means to communicate and interact with customers, companies are trying to utilize SNS effectively. There is a lack of theory relating to the attributes of SNS. This study aims to investigate the attributes of SNS to classify SNS. Based on the social network theory, and previous studies on internet, blog, homepage, communication attributes, this study proposes the seven attributes to classify SNS: interaction, communication, entertainment, information, sharing, intimacy and connection. A pre-test, a pilot test and a main test are conducted. In the main test, 239 SNS users are participated. Through a factor analysis this study verifies the seven attributes of SNS. An analysis of variance with multiple comparisons of Scheffé method identifies that three attributes, interaction, communication and connection, are found to play significant roles to differentiate SNS. Looking at the overall mean values of the SNS by attribute, interaction, sharing, entertainment, intimacy and communication were relatively high in Facebook. Facebook showed higher values in attributes of interaction, sharing, entertainment, intimacy and communication. Twitter shows the relatively high scores for information and connection. Regarding interaction, Facebook shows higher scores than Twitter and Cyworld. For connection, Cyworld showed a significantly lower score than Twitter and Facebook. Cyworld was separated from the others in the light of communication. Cyworld is relatively weak in communication as it is limited to the message exchanges. The results will help in identifying major attributes for each SNS and classifying SNS.

Keywords : Social Networking Services (SNS), Media Attributes, Social Network Theory, Factor Analysis, Analysis of Variance, Multiple Comparison

1. Introduction

Social networking services (SNS) can be said to be the service that is formed as communities with the same pur-

poses or services form into groups. Being different from traditional media, SNS constitutes an internet-based technology which makes it possible to interactively communicate between users [48]. Users can share human connections with other users while exchanging their lists of connections with each other [19]. Mobile SNS becomes a promising e-service platform of the future [60]. However, the properties of such connections can be different to some degree [67]. SNS users

gratify their social and emotional needs that realize connections in a person-to-person manner [64, 94].

Major SNS sites, such as Facebook, Twitter, and YouTube, have similar functions. Those have specialized functions as well. <Table 1> shows functions of each SNS.

SNS sites have differentiated functions as well as similar ones. The different functions featured in each SNS represent the difference of pursuing directions for the SNS. In order to identify how those SNS sites have different pursuing directions, this study utilizes attributes of SNS sites [26, 98]. The difference in the attributes of individual SNS is considered to be an important basis for the decision to supplement or extend the functions of these social networking sites in the future.

There is a lack of theory relating to the attributes and users of SNS. Few studies have compared attitudes and behaviors across sites. This study aims at investigating attributes of SNS to classify SNS. Based on these attributes, this study tries to evaluate major SNS to differentiate them. The different attributes will help in understanding the pursuing directions of each SNS as well as the difference of functions of SNS sites.

2. Theoretical Background

In order to identify major attributes of SNS, this study utilizes several theories, such as social network theory, media attributes, blog attributes, homepage attributes, and communication attributes. Based on the previous literature, this study

tries to develop an SNS attribute model. In this study, function is defined as a feature provided by individual SNS, and attribute is defined as the characteristics provided by these functions.

2.1 Social Network Theory

A social network is defined as a network of personal or business contacts, especially promoted by social networking over the internet [8, 18, 59, 66]. SNS is the online service that shifts the concept of offline social relations into a virtual community [92]. A sense of mutual engagement and openness are important factors that form an online community [10, 91].

Many studies have investigated how such services may play into issues of identity, privacy, social capital, youth culture and education [2, 9, 19, 22, 44, 48, 49, 89]. Those who post mobilization requests on Facebook report higher social capital tend to see the site as a better source of information, coordination, and networked communication [81].

2.2 Media Attributes

Differences in motivation lead to different communication choices [4, 57]. Audiences listen to the radio to seek companionship and to overcome social isolation, and this is why talk radio still serves as an alternative to other forms of mass media [5]. Multimedia is intended to be differentiated from the existing media in terms of the mode of delivery and presentation for teaching and training [82].

<Table 1> Functions of Major SNS

SNS Sites	Functions
Facebook	Editing profiles (interests, workplaces, schools), instant messaging, receiving real-time updates (news feeds/mini-feeds), checking friend statuses (recent statuses), sharing content (videos, images), searching, commenting, managing contacts (member group management), adding Facebook applications, cross linking with other sites, receiving recommendations and comments from friends
Twitter	Editing profiles (interests, workplaces, schools), receiving RSS feeds, managing follow/follower/retweet/reply functions, direct messaging, cross linking with other sites, receiving recommendations for finding people/friends listed/friends, searching interests field, using hash tags, writing (140 characters or less)
Cyworld	Editing profiles, sharing content (videos, images), searching, commenting, recommendations for finding people/friends listed/friends, direct messaging, listening to music, clipping
YouTube	Sharing/uploading/recommending videos, commenting on video bulletin boards, categorizing videos, customizing video views, translating video captions, video RSS, managing favorites, cross linking with other sites
Flickr	Uploading, sharing and modifying videos and pictures, commenting for videos and pictures on bulletin boards, tag searching for videos and pictures, cross linking with other sites

Source : Facebook, Twitter, Cyworld, YouTube, and Flickr sites.

<Table 2> Classification of SNS Functions

Alexander & Michael[56]	Ko et al.[6]	Functions of SNS
Expert finding	Expert search	Function that enables you to search for those who have expertise or things of interest
Network awareness	Identity	Function that enables you to express your status, mood or feeling.
Exchange	Communication	Function that enables you to share your messages or conversations with others
Contact management	Connection	Function that enables you to establish, communicate and manage a relationship with others

The concept of television is conceived of as a life companion, offering relaxation from stress, habituation, entertainment, enjoyment and the obtainment of information and knowledge [7, 27, 43, 95]. Motivation for internet use is identified as information acquisition, pleasure, socialization, social avoidance and job exchange based on the democratic characteristic [33, 65, 88].

2.3 Internet Attributes

There are several studies on the motives for the internet usage : interpersonal utility, passing the time, seeking information, convenience and entertainment [79]; diversion/entertainment, a sense of identity, human relationships, social interaction and information [81]; entertainment, hobbies, social relationships, the acquisition of information and escapism [106]; and perceived enjoyment (internal motive), perceived usefulness (external motive) and perceived ease of use [101].

Motives of using computers were connected to the experience of enjoyment [29], perceived usefulness and perceived fun [53]. The characteristics of mobile internet services are openness and interaction while users are on the move. Mobile internet services emphasize mobility, portability and personalization.

2.4 Blog Attributes

Blog is a closed compound formed by web and log and the online equivalent of keeping a daily log [14]. Blogs contain records of personal life, reviews and opinions, expressions of emotions, expressions of personal thoughts and

community forums [75]. The motives of blogs were information seeking and media checking, convenience, personal fulfillment, political surveillance, social surveillance and expression and affiliation [58].

2.5 Homepage Attributes

Users use internet web sites as a means of acquisition of reliable information, electronic commerce and exchanges, pursuits of entertainment/enjoyment and fun [39]. Motives of using personal homepages are entertainment, information, social interaction, self-expression, passing time, professional advancement and new trends [80]. Entertainment and information are the characteristics of internet media [24].

2.6 Communication Attributes

People not only exchange information and communicate with each other through means of communication, but also make society a communal society by persuading each other [38]. People exchange and share information and opinions on interesting subjects through communication, thus getting to know each other better and feeling a sense of closeness [21]. The perceived interaction has a positive effect on satisfaction and continuous use [72]. Due to the new internet communication tools, online word of mouth has a stronger effect than the traditional offline word of mouth [50]. If a person is absorbed in a community, community sentiment is formed and a sense of closeness for community members increases. As a result, the person feels a sense of belonging [11].

<Table 3> Functions of SNS and Attributes of Online Media

	Functions & Attributes	Reference
SNS Functions	Identity management, expert search, context awareness, network awareness, exchange, contact management	[1]
	Expert search, communication, connection, content sharing, identity	[64]
Media Attributes	Interaction, hypertext, multimedia	[30, 104]
	Interaction, asynchronism, one-to-many communication, many-to-many multi-dimensional democracy	[76, 86, 96]
	Interaction, demassification, asynchronism, connection, digital	[74]
	Message speed/pass time, activity, privacy of media, interaction	[51]
	Personal communication, interaction of media, message stream, message speed/time, knowledge of informer, intimacy, feedback possibility, control, synchronism, easy accessibility of media	[90]
	Interaction, hypermedia	[15]
Internet Attributes	Interaction, internationalization, communication, connection, expense, fun, passing time	[55]
Blog Attributes	Trust of information, interaction, entertainment, intimacy, ease of accessibility	[70]
Communication Attributes	Interaction, information, convenience of use, ease of use	[84, 105]
Homepage Attributes	Ease of use, product information, entertainment, trust, customer support, currency	[35]
	Entertainment, information, homepage construction	[24]
	Convenience, interaction, private preferences	[42]
	Information, entertainment, interaction	[24]

SNS has the characteristics of virtual communities which are defined as a group of people who interact with each other with common interests and experiences [52, 91]. Social identity is created when people interact with each other, and people try to square their target with the community’s target [102]. Mobile media play a variety of roles as a personal computer and are used as a means of important communication with the development of technologies [77, 78].

3. SNS Attributes Model

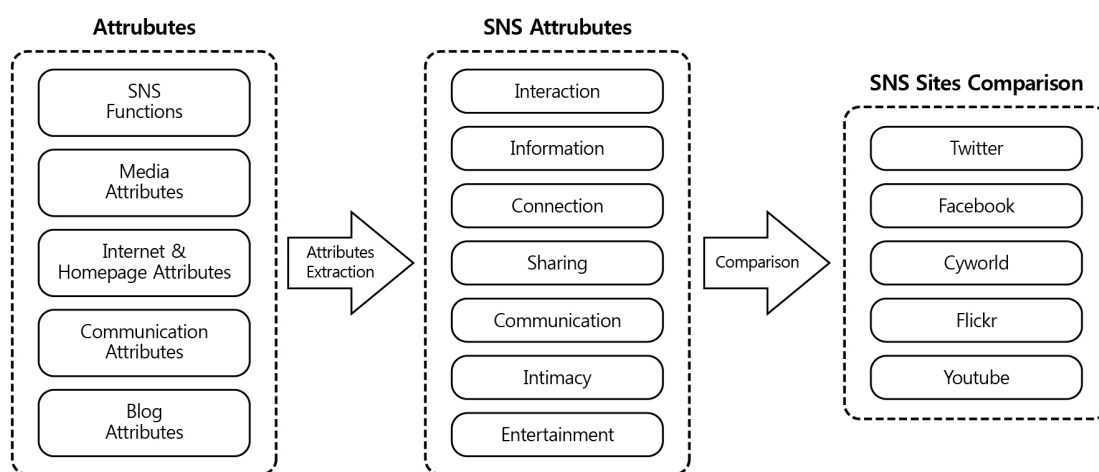
This study proposes an SNS attributes model in which the seven attributes explain SNS. The SNS attribute model is developed from the attribute theories of media and communication as well as the attribute theories of online websites, blogs, and homepages. It also checks the functions and characteristics of SNS in order to explain SNS attributes comprehensively.

<Figure 1> shows an overall research procedure in this

study. <Table 4> indicates the backgrounds of extracting SNS attributes. <Table 4> matches SNS attributes proposed in this study with attributes in previous literature which use similar meanings or concepts.

3.1 Interaction

Interaction enables a degree of control in mutual disclosure and role exchange between the participants in the communication [85, 87]. Interaction is defined as direct communication between individuals or groups of people without limits of time and space [13], as bilateral communication in virtual communities [55]. The more intense users of such sites engage in more social activities on SNSs than those who spend less time on them and only use one such site [47]. With the SNS function of exchange, and attributes of media (interaction), the internet (interaction), blogs (interaction), communication (interaction) and homepages (interaction), interaction has been identified as an attribute of SNS.



<Figure 1> SNS Attributes Model

<Table 4> SNS Attributes

Attributes	SNS Functions	Attributes				
		Media	Internet	Blog	Communication	Homepage
Interaction	Exchange [1]	Interaction [83]	Interaction [54]	Interaction [69]	Interaction [82, 101]	Interaction [41]
Communication	Communication [63]	Personal communication [87]; Many to many multi-dimensional democracy [96]	-	-	-	-
Entertainment	Network awareness [1]	Multimedia [30, 100]	Fun [54]	Entertainment [69]	-	Entertainment [24, 60]
Information	Communication, content sharing [63]	Message speed/pass time [50], Knowledge of informer [87]	-	-	Information [82, 101]	Information [24]
Sharing	Content sharing [63]	Message speed/pass time [50]	-	-	-	-
Intimacy	Network awareness [1], Identity [63]	Intimacy [87]	-	Intimacy [69]	-	-
Connection	Connection [63]	Connection [73]	Connection [54]	Easy Accessibility [69]	User convenience [82, 101]	Ease of use [34]

Interaction enables a sender to become a receiver at the same time, and an individual or a group can modify the contents in SNS or participate in topics real-time without limitations. Interaction is also defined as something that can facilitate immediate actions between the users through user participation and real-time feedback.

3.2 Communication

The word of mouth is defined as the face-to-face communication founded on individual experiences [16, 17] and as the modern phenomenon of potential buyers collecting and sharing information in chat rooms, news groups and bulletin boards [41]. The marketing communication model via the internet is interruption-free communication [51], virtual community is the potential for an integration of content and communication [46] and online community is a social relationship forged in cyberspace [37].

Communication is defined as having a multi-dimensional communication attribute where point-to-point, point-to-many and many-to-many communications are enabled. It is expressed as speed, range and mapping through communication tools. Text, picture and video files can be transferred and be shared by people.

3.3 Entertainment

The entertainment attribute of homepages promotes enjoyment and pleasure to users [35, 77, 78]. Archiving and entertainment are the major motivators for internet use [35]. Consumers use the internet for entertainment and utilization of information [79] and users are satisfied when the entertainment related motivation is gratified [33].

Based on the precedent studies, the network awareness function of SNS, and the media attributes (multi-media characteristics), internet (fun), blogs (fun) and homepages (fun), entertainment has been identified as one of the SNS attributes. Entertainment is defined as the attribute that provides enjoyment, interest and useful information. Users can find fun factors from SNS and form close relations with others.

3.4 Information

The informativeness construct can be defined as the extent to which the web provides users with resourceful and helpful information [24, 32]. Information influences over user perceptions, behavior and intentions of behavior, and that it is reasonable to consider information in the evaluation of the homepage

contents [62, 70]. Through recommendation and sharing functions, SNS enable an easy and quick distribution of information.

Attributes of media (message speed/pass time, information about the communicator), communication (information) and homepages (information), information has been identified as one of the SNS attributes [54]. Extensive information can be collected on the internet. Information is defined as the attribute where information is recommended by other users, and real-time validation of desirous, variable and reliable information is easily enabled.

3.5 Sharing

Sharing is identified as an attribute of SNS to share things that are meaningful to the participants and exposure derived from sharing or distribution in SNS could generate a revenue stream at a different level than web searching [68, 99] and the chief dimensions that differentiate SNS from earlier forms of media are the sharing of personal experiences with others, and that they are volatile and spreadable [63, 107].

Sharing has been identified as one of the SNS attributes [20]. Sharing is defined as the attribute that enables the easy and quick posting and the sharing or distribution of personal content like music and videos via web or mobile devices.

3.6 Intimacy

Intimacy is defined as the level of closeness felt by the members of a specific community site. Intimacy plays an important role in user engrossment and community formation [3, 28]. Members of a virtual community obtain emotional satisfaction such as closeness in their exchanges with other members [56]. Users communicate on Facebook using a one-to-many style, in which they are the creators disseminating content to their friends [83]. Social diversity of the Facebook network predicted online tension as did the number of family members on Facebook, in contrast to work and social contacts [12, 23].

Intimacy facilitates relation building with other users online, enhances current relations and expands the depth of relationship [6]. Intimacy is defined as something that has the potential to improve a relationship that already exists.

3.7 Connection

Connection has evolved to facilitate the entering into a relationship between individuals in virtual space through information. The role of the group organizer as an information

provider and coordinator contributes to the sustainability of the group and the group members forms a collective identity through the framing process of discourse [25]. SNS can be connected through a combination of various forms of media or links, and content can be shared with or distributed to other SNS. Users often uses SNS to connect and reconnect with friends and family members [73, 100].

Connection has been identified as one of the SNS attributes. In SNS, connection enables the creation of personal homepages to which personal articles, photos and video files are posted, and makes it easier to build and manage personal homepages than the conventional methods. The definition of connection includes the potential for assisting in information searches without the worry of getting lost on the web.

4. Research Methodology

4.1 Data Collection

An online-survey was conducted to collect data. The sample was selected from among individuals who are using SNS in Korea. A pre-test, a pilot test and a main test were conducted. The pre-test was used to refine a measurement instrument made by reviewing the previously available literature. Based on the results of the pre-test, this study further developed an instrument to measure the major constructs and then conducted a pilot test. In terms of methodology, this study carried out a factor analysis three times (pre-test, pilot test and main test), surveyed data and then finalized the constructs regarding measurement reliability and validity to verify a causal relationship model.

This study selected 239 (six survey responses removed, due to their incomplete responses) usable survey responses out of 245 for 10 days through an online survey which was conducted by Embrain (www.embrain.com). The sample consisted of 50.2% male and 49.8% female participants ranging from 15 to 55 years old, the majority of which were in their twenties and thirties (49.7% and 27.6%, respectively). Respondents mainly used Cyworld (46%), Facebook (24.7%) and Twitter (21.7%). Most of the respondents have used SNS heavily : 55% of the respondents use at least one of the services for more than one hour per day. Hence, the respondents seem to be qualified to analyze attributes of SNS.

Cyworld was once used as a major SNS in Korea, but its users have decreased sharply due to the spread of Facebook and Twitter. Although the number of users of Cyworld de-

creased sharply, this service was started in Korea and used by many Korean users at one time, so it was included in this study.

Items to measure constructs in the model were mainly adopted from prior research. Some minor wording changes were made for the SNS context. New constructs in the model, however, had to be constructed. All items were measured on a five-point Likert scale.

<Table 5> Demographics of Participants

	Items	Number	Percentage
Gender	Male	120	50.21
	Female	119	49.79
Age	Under 20	37	15.48
	21~30	119	49.7
	31~40	66	27.6
	41~50	13	5.4
	Over51	4	1.6
Education	High school or below	49	20.5
	College	38	15.8
	Undergraduate	114	47.6
	Graduate	38	15.8
Occupation	Student	108	45.1
	Manager	68	28.5
	Specialized job	27	11.2
	Service industry	8	3.3
	Technical post	9	3.8
	Housewife	8	3.3
	Etc.	11	4.6
Mainly used SNS site	Twitter	52	21.7
	Facebook	59	24.7
	Cyworld	110	46
	Flickr	4	1.6
	YouTube	6	2.5
	QQ	3	1.3
	Etc	5	2.1
SNS use time (1 day)	Less than 1 hour	106	44.4
	Less than 2 hours	80	33.4
	Less than 3 hours	35	14.7
	Less than 4 hours	12	5
	Over 4 hours	6	2.5

4.2 Analyses

Before running an exploratory factor analysis and reliability check, we checked where the data satisfied the assumptions for factor analysis. The following three checks were performed : the correlation coefficient among question items, Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA).

Validity is the extent to which a measure diverges from other similar measures. Testing for validity involves checking whether the items measure the construct in question or other constructs. With the exception of a strong correlation between some constructs (e.g., interaction, information, con-

nection, sharing, entertainment, intimacy and communication), correlations were moderate, weak or nonexistent.

Reliability is the most common index of the validity of measures. It is used to check whether the scale items measure the construct in question or other constructs; a value of 0.70 or above is deemed acceptable [40]. Cronbach's coefficient alpha was used to test the inter-item reliability of the scales used in this study. Cronbach's alpha assesses how well the items in a set are positively correlated with one another. In general, reliability of less than 0.60 is considered poor, reliability in the 0.70 range is considered acceptable, and reliability greater than .80 is considered good [96]. As shown in <Table 6>, all of the alpha values were greater than the recommended level and showed good reliability with Cronbach's alpha (> 0.70) in each construct.

Factor analysis was done using the data collected from the first version of the survey. The cut-off criteria had a factor loading of 0.60. The analysis was done using a step-wise approach. The question item which had the lowest maximum

factor loading was removed. If the lowest maximum factor loading was less than 0.60, the factor analysis was repeated until the lowest maximum factor loading was greater than 0.60. Three items were finally omitted. Values of 0.50 and above are recommended for factor analysis [40]. In addition, factor analysis was used to examine construct validity. The Kaiser-Meyer-Olkin test and Bartlett's test of sphericity were first used to assess the appropriateness of the correlation matrices for the factor analysis [45].

In order to see if there are variances in mean values between the chosen SNS, it was further verified using ANOVA and a multiple comparison.

Further examinations are necessary to find to which extent variances in SNS attributes exist by SNS. One of the most common tools to verify such variances is multiple comparisons. There are a number of methods in multiple comparisons, but for this research, that of Scheffé was used to verify variances in the most commonly used SNS (Twitter, Facebook, and Cyworld).

<Table 6> Results of Factor Analysis and Reliability Checks

Component	1	2	3	4	5	6	7	Cronbach's alpha
Interaction_1	.820	.075	.175	.117	.086	.114	.147	.872
Interaction_2	.817	.028	.172	.102	.114	.159	.180	
Interaction_3	.770	.082	.008	.149	.042	.171	.233	
Interaction_4	.748	.087	.112	.130	.195	-.022	.064	
Information_1	.030	.843	.124	.117	.202	.218	.069	.906
Information_2	.116	.841	.200	.104	.179	.129	.070	
Information_3	.081	.827	.090	.106	.109	.152	.083	
Information_4	.057	.750	.186	.214	.158	.187	.216	
Connection_1	.242	.248	.711	.086	.222	.164	.151	.838
Connection_2	.310	.086	.707	.104	-.084	.165	.154	
Connection_3	.348	.041	.695	.191	.088	.125	-.022	
Connection_4	-.062	.191	.690	.135	.260	.089	.135	
Connection_5	-.125	.228	.673	.117	.376	.093	.164	
Sharing_1	.053	.231	.050	.812	.116	.078	.137	.847
Sharing_2	.215	.198	.199	.795	.069	.001	.077	
Sharing_3	.110	.067	.045	.768	.245	.169	.087	
Sharing_4	.233	.009	.401	.666	.077	.132	.099	
Entertainment_1	.137	.233	.145	.251	.777	.119	.075	.859
Entertainment_2	.231	.279	.197	.180	.746	.182	.116	
Entertainment_3	.191	.177	.271	.106	.704	.235	.126	
Intimacy_1	.218	.162	.186	.132	.176	.791	.064	.809
Intimacy_2	.091	.294	.123	.104	.057	.756	.119	
Intimacy_3	.097	.208	.181	.094	.251	.743	.174	
Communication_1	.165	.141	.068	.211	.123	.244	.792	.767
Communication_2	.265	.236	.189	.032	.084	.064	.723	
Communication_3	.392	.021	.273	.195	.118	.070	.605	
Number of items	4	4	5	4	3	3	3	
Eigen-value	9.74	2.60	1.72	1.62	1.21	1.14	1.01	
% of variance	37.46	10.03	6.62	6.23	4.67	4.40	3.91	
KMO .897								

Note) Numbers in bold show loading coefficients for items in each construct.

5. Results

5.1 SNS Attributes

The data satisfies the assumption for the factor analysis. The result of Bartlett’s test of sphericity in this study shows that Sig (p) = 0.000 < α (= 0.05) ($\chi^2 = 4066.056$, df = 351). The result implies that there is no evidence that the correlation matrix is an identity matrix.

All seven factors showed a number of strong loadings, and all variables loaded substantially on only one factor. The results of this analysis provided evidence of construct validity.

<Table 7> Results of Analysis of Variance

SNS Attributes	IN	IF	CO	SH	EN	IT	CM
F.	5.71***	.34	10.67***	1.20	.96	1.91	4.25**

IN : Interaction; IF : Information; CO : Connection; SH : Sharing; EN : Entertainment; IT : Intimacy; and CM : Communication.

Note) *p < 0.1, **p < 0.5, ***p < 0.01.

5.2 Comparison of SNS in Terms of Attributes

The mean values of the independent variables were obtained based on 239 questionnaire responses. The mean values of the independent variables refer to that of the score of items that are grouped by attribute. The results of the mean values of the seven attributes of SNS are shown in <Table 8>.

Upon examination of variances in attributes between the SNS with variance analysis, there was a significant variance for interaction, connection and communication at the significance level of 0.05. In other words, interaction, connection and communication attributes from the seven attributes of SNS showed a significant variance by SNS. From the evidence, it can be inferred that the attributes play differentiated roles in various SNS.

First, looking at the overall mean values of the SNS by attribute, interaction, sharing, entertainment, intimacy and communication were relatively high in Facebook, as previous literature supports [103], while information and connection prevailed in Twitter. The mean values of all seven attributes were relatively lower in Cyworld than in Facebook and Twitter. These values present implications in the light of management of and entry into an SNS, with thoughts on how much attention should be paid to each of the services to be rendered.

Second, Facebook showed higher values in attributes of

<Table 8> Results of Multiple Comparisons (Scheffé)

SNS Attributes	SNS Sites			Factors AVG
	Twitter (n = 52)	Facebook (n = 59)	Cyworld (n = 110)	
Interaction	3.87 ^a	4.20^b	3.79 ^a	3.95
Information	3.33	3.25	3.22	3.27
Connection	4.10^a	3.99 ^a	3.69 ^b	3.92
Sharing	3.51	3.71	3.55	3.59
Entertainment	3.68	3.84	3.67	3.73
Intimacy	3.63	3.68	3.44	3.58
Communication	3.79 ^a	3.93^a	3.57 ^b	3.77

- Note : a and b indicate the group in which significant difference are identified by Sheffe’s multiple comparison. Otherwise, there are no significant differences among SNS sites.
- Bold : highest scored site of each attribute.

interaction, sharing, entertainment, intimacy and communication than other SNS. It can be inferred that the level of satisfaction over the features of personal homepage building and the operation of personal forums and various entertaining tools like social games and forums within the SNS, which make it easier to communicate with other users than other SNS, is well manifested in the result.

Third, from the relatively high scores for information and connection in Twitter, as previous literature supports [93], it is further observed that Twitter offers an easy user interface, facilitating the writing function on ‘Time line’ or the ‘Retweet’ function. Also, Twitter has an open policy by which the company’s information is disclosed to the public through the Open API, enabling the writing only by simple login to the Twitter account from an external site. While Facebook and Cyworld implemented the two-way connection structure to link friends in a community, the one-way network connection implemented by Twitter makes it faster to connect people, forming more chains of connection.

Fourthly, regarding interaction, Facebook shows higher scores than Twitter and Cyworld, which means Facebook is better in terms of user participation and immediate interaction than Twitter and Cyworld. Fifth, for connection, Cyworld showed a significantly lower score than Twitter and Facebook, which means Cyworld is lower in terms of platform openness, media combination and connection to links than Twitter and Facebook. Sixth, Cyworld was separated from the others in the light of communication. Cyworld is relatively weak in communication as it is limited to the message exchanges by and between ‘Ilchons’ while many-to-many and constant communication is enabled with Twitter and Facebook.

6. Conclusions

6.1 Implications

One of the important activities for businesses is to attract public attention to a product or service through advertisements and commercials to the public. Prior to social networks, the conventional means of successfully garnering public attention were time consuming and costly.

Companies have expanded their business strategies through the adoption of SNS, which they utilize as an effective and indispensable marketing tool, particularly in the past few years which have seen an explosion of SNS and SNS use. However, businesses are utilizing SNS not only to attract more public attention and reduce the time and costs of advertising, but also to interact with consumers and understand their reactions in real time. The fact that there is no entry barrier for an SNS operation makes SNS an open media with great potential for growth, and SNS is in particular emerging as the chief instruments for forming public opinion. This in turn means that SNS possesses great influence over social issues, which are circulated and discussed through SNS communities. SNS is growing to become pivots of modern life with ever increasing influence.

This research endeavored to analyze the attributes and functions of SNS and investigated the most appropriate attributes and functions that companies should have in order to increase their social marketing effects.

In summary the findings of this research are as follows : First, in consideration of the precedent research in all their aspects and through factorial analysis, seven attributes of SNS were identified : *Interaction, Information, Connection, Sharing, Entertainment, Intimacy* and *Communication*. Second, looking at the overall mean values of SNS by attribute, interaction, sharing, entertainment, intimacy and communication were relatively high in Facebook; while information and connection prevailed in Twitter. The mean values of all seven attributes were relatively lower in Cyworld than in Facebook and Twitter. Third, following variance analysis of the seven attributes drawn from the study, the attributes of interaction and connection showed a significant variance in the SNS (Facebook, Twitter and Cyworld). This implies that each SNS plays a differentiated role in virtual communities and presents implications in the light of the management of and entry into an SNS with thoughts as to how much attention should be paid to each of the services to be rendered.

Fourthly, through multiple comparisons, this study shows differences of perceived attributes on SNS. For the interaction attribute, Facebook is better than Twitter and Cyworld. From this result, this study concludes that Facebook is better in terms of user participation and immediate interaction than Cyworld. For connection and communication, Twitter and Facebook are better than Cyworld. Thus, this study shows in terms of platform openness, media combination and connection to links, that Twitter and Facebook are evaluated more highly than Cyworld. Also, Cyworld is relatively weak in communication as it is limited to the message exchanges by and between *Ilchons* while many-to-many and constant communication is enabled with Twitter and Facebook.

This research was carried out to validate attributes of SNS from a general perspective, and the findings are of great significance for academic and application development. From the academic perspective, these results provide a foundation for the development of further research, and have demonstrated the potential to develop a general theory that can throw ideas into shape.

From the application perspective, this research is timely as SNS is being established as an effective two-way communication tool between companies and consumers. Variances in attributes of SNS identified from the research are of significance from the application perspective, and provide insight into the successful management of the attributes for current and future SNS operators. In other words, an SNS administrator would be able to recognize variances in attributes from site to site in the operation of an SNS.

Such analyses will help SNS operators to gratify the attributes required by the SNS in question in order to attract more members. Furthermore, by examination of user needs and motivations for SNS use, they will be able to arrange gratifying information and provide data for effective user management, thereby establishing strategies that can promote optimized managerial performance.

SNS is an effective two-way communication tool between companies and consumers. Variances in attributes of SNS identified from the research provide insight into the successful management of the attributes for current and future SNS operators. SNS administrators would be able to recognize variances in attributes from site to site in the operation of an SNS. The results will help practitioners in identifying major attributes for each SNS and utilizing the SNS better for their own purposes.

The results will also contribute to identify attributes of

SNS and to classify SNS from the view of academics. The results provide a foundation for the development of further research, and have demonstrated the potential to develop a general theory that can throw ideas into shape.

6.2 Limitations and Future Research

This research drew attributes of SNS based on the measurement items introduced in the documents that were available at the time of research in order to add effectiveness to social marketing. This study, however, had several limitations which must be noted.

First, the pattern of SNS use in consideration of user personalities, motivation for and level of satisfaction from the SNS use were not applied to the research. There is a lack of specified research relating to motivation for SNS use and the level of satisfaction by SNS use. Second, in order to classify the types of SNS, the surveyed respondents were asked to select an SNS they mainly used. Cyworld (46%) was the one that is most used by the respondents in Korea, which impairs explanation ability for the research findings. Third, validation for the correlation between the seven attributes and their performance in the actual operation of an SNS does not exist. The research sought to provide explanations on the SNS attributes through multiple comparison of SNS. It will be meaningful to verify empirically how these attributes identified from this research can affect the operation of communities in reality. Fourthly, the SNS attributes are limited to seven in this research, but other attributes such as reliability, mobility, continuity and so on may also be considered.

Further study will be possible in the future based on the limitations of this research. First, research on the relationship model relating to the correlation between an SNS and the personalities of its users, type of the relationship therein, user satisfaction and intention of re-visit from the marketing perspective and the like may be necessary. The role and importance of SNS will be clearly manifested to incorporate success in the additional research findings. Second, in order to provide sound evidence for the SNS attributes, a survey of SNS operators should be conducted to check if they experience more effectiveness after having adopted an SNS strategy. In addition, there will be a difference between open SNS such as Facebook and Twitter and closed SNS such as Cyworld and QQ. Research on SNS attributes will be needed based on the above consideration.

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<Appendix> Instrument to Measure Attributes of SNS

Interaction [24, 30, 41]

1. The SNS that I use enables me to perform two-way communication.
2. The SNS that I use enables me to communicate with other people smoothly.
3. The SNS that I use enables me to participate in the conversation with other users through message boards, communities and chatting.
4. The SNS that I use is highly responsive to users.

Information [24, 31]

1. The SNS that I use offers in-depth information that I need.
2. The SNS that I use offers useful information that I need.
3. The SNS that I use offers professional information that I need.
4. The SNS that I use offers reliable information that I need.

Connection [30, 34]

1. The SNS that I use allows easy access to information.
2. The SNS that I use is easy to access through mobile devices.
3. The SNS that I use is easy to manage in writing comments.
4. The SNS that I use allows me to work easily without a complicated registration process.
5. The SNS that I use allows me to access information easily without a complicated registration process.

Sharing [30]

1. The SNS that I use enables me to distribute music easily.
2. The SNS that I use enables me to distribute video clips easily.
3. The SNS that I use enables me to easily scrap and save content (video, music, other content) on my private homepage.
4. The SNS that I use enables me to convey content (video, music, other content) links easily.

Entertainment [24, 34, 50]

1. The SNS that I use has a good design and good functions.
2. The SNS that I use is enjoyable.
3. The SNS that I use is interesting.

Intimacy [3, 70]

1. I am satisfied with the relationships (neighbors, friends) that I have cultivated through the SNS.
2. Through the SNS that I use, I intend to participate in e offline meetings or events.
3. I believe the relationship with my offline friends has become closer because they were connected with me through the SNS that I use.

Communication [30]

1. The SNS that I use is well equipped with communities, message boards, chatting and so on in which the users can share opinions.
2. The SNS that I use allows me to offer a lot of information because the message board is activated.
3. The SNS that I use enables me to send and receive my opinions to other people or groups easily.