

Enhancing the Value of Social Networking Websites through Producer-Consumer Collaborations

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Abstract—The producer-consumer collaboration in a social networking website is formed whereby software designers release their attributes on websites for user-designed and user-created forms, especially for dynamic customized attributes. Such collaboration in social networking websites is especially relevant for members who create and share ideas and experiences with narrative types through interactive interface mechanisms. Dynamic customized attributes members can create and accumulate as well as share their content and experience. As well, interactive interface attributes provide and link feedback from other members as formed by emotional bonds among members. The protection of privacy and security for content are also key attributes to increase the performance of websites. The attributes are first derived from four social networking sites and explore how the member's habits influence the performance of websites through online surveys.

Keywords- *dynamic customized attributes, interactive interface mechanisms, collaboration, and social networking sites.*

I. INTRODUCTION

According to the innovation paradigm in a product's design and development, social networking websites should benefit from members outside of a firm who are involved in such websites to create and share their innovations, ideas, and experiences, satisfying their own needs or forming emotional bonds with other members. Extending "producer-producer partnerships" in theoretical development, a useful tool also involves members in websites [1]. In practice, the website alignment of firms may trigger collaborations over the social networking sites, which go beyond prior literature on how blogs or bulletin boards influence the behaviors of members. This article especially discusses reasons and attributes for triggering and nurturing social networking websites.

A firm generally releases some attributes to embed its own members into the website design and development process - namely, producer-consumer collaborations. With advanced Internet and digital technology, firms can easily leverage members' innovations, ideas and experiences that help increase the value of websites for individual members.

Through collaborations, members execute continuous releases, refreshes, additions and updating of content with the feedback and comments from other members, so as to enhance a website's idiosyncrasy, whereby self-enhancement and sensory pleasure arise by themselves. Prior studies offer divergent results for social networking websites, such as the

characteristics of blogs and electronic bulletin boards [2] as well as the effects of privacy and security on the trust using websites [3]. This article explores what are the key attributes for people to spend time and energy on social networking websites.

In general, customized attributes for websites reside mostly for blogs or bulletin boards in which each member can release, deposit, update individual information-owned and share it with other members. For instance, blogs can serve as a repository of individual memory, disclosing actual names, photographs and some information with the comments from other members as formed in idiosyncrasies. Interactive externality-sensitive attributes for websites serve as a mechanism for feedback from other members. The privacy and security for using websites enhance and encourage members for their involvement.

The rest of this article is divided into four sections. The first section provides the concepts as well as the hypotheses and the methods. This is followed by a more detailed discussion.

II. CONCEPT

The design and development of a website goes beyond the members' needs to focus on the seeding which can ultimately increase the overall value of the website [4]. As an example of seeding, members release ideas, innovation and information on blogs. Firms can generally incorporate the users' seeding in their website designs and development [5]. There are Internet networks which have lead users who have had better experience in products to share similar interests and to take advantage of connectivity for the design, development, and distribution of new products [6]. Similar phenomena are present in brand communities [7] in which members tend to know more than the firms about their particular needs and usage situations for produces and services [8]. Through such collaborations, the attributes of websites are driven and responded by members' ideas, information and experience. Thus, by involving members in the design and development of websites, the social networking sites can closely and continuously be associated with individual personalities and idiosyncrasies.

Members generally create their own narratives or offer their stories with a distinct archetypal pattern in which other members offer viewpoints related to those stories that are unfolded over time [9]. In this process, firms are often associated with interactive mechanisms in which other

members can provide immediate feedback for stimulating user-created websites [1].

Thus, members are regarded as active co-producers of value and meaning for websites. Through collaboration in websites, members can continuously post, release and create specific text with linear narrative styles that finally enhance the idiosyncrasies of websites.

This article tries to explore what kinds of attributes for the websites can attract the use of the members' time. Through prior analysis, the attributes for websites can incipiently be categorized into dynamic customized (e.g., personal blogs), protected content (e.g., the protection of privacy and security) [3] and externalities-sensitive attributes (e.g., interactivity with other members) [10]. Such dynamic customized attributes continuously respond to members' activities. In addition, this article also examines the effects of habitual inclination for members on the performance (i.e., value) of those websites.

III. HYPOTHESE

A. Dynamic customization attributes

With the Internet and digital technology, computer-mediated environments (CMEs) enable members with tools for self-expression using signs, symbols, and material objects [11]. With regard to self-expression, members arrange hypertext and multimedia which includes static (i.e., text, images, and graphics) and dynamic (i.e., audio, full-motion video, and animation) content to represent their personalities and to form emotional bonds with other members [12]. Such member-to member emotional bonds are built on non-sequential writing from the comments of other members. Members can share their own detailed life stories or view narrative stories from other members (readers) [11], which finally are associated as a new form of possession for members. Thus,

H₁: Through collaboration in websites, the level of dynamic customized attributes is positively associated with the performance of these websites.

With regard to websites, members consider their general procedural and rule understanding [4], which are also marked by shared moral responsibilities and rights among members and firms, especially with regard to privacy and security. The privacy clauses focus on the protection of individually identifiable information, which includes privacy policies, notes, and disclosures for members. The security describes the safety of the computer, personal information and the members' activities on the websites [3]. Through the protection of privacy and security, the members' activities with their outcomes are encouraged and enhanced in their disclosure, transfer and diffusion. Briefly, those attributes are positively associated with the performance of websites, contributing to group cohesion for members [13].

H₂: Through collaboration on websites, the privacy and security for content attributes are positively associated with the performance of the websites.

B. Externality-sensitive attributes

In collaboration, the interactive interfaces increase interpersonal interactions which are reinforced through peer-to-peer exchanges that gradually "link value" among members [14, 9]. These interfaces generally exist in two types. One type is based on interpersonal networks (network-generalized exchanges: e.g., blogs) and the other is based on public electronic bulletin boards (group-generalized exchange) [11]. Through these attributes, the quality of signals, technical information, know-how and e-WOM all prevail over these relationships.

Those attributes provide the mechanism of shared interests, problem solution [2] and feedback for members. Of course, members also can attain broader and more abstract goals [16] such as sharing experiences, self-presentation with their own stories, revealing innovative ideas, assisting others and making friends [17]. A shared sense within websites would evolve from these feelings for individuals to experience a sense of belonging for a website [11]. Thus,

H₃: With collaboration in websites, interactive externality-sensitive attributes (e.g., interactivity with other members) is positively associated with the performance of websites.

C. Members' habits

Members generally have habits which present repetitive and specific activities. For example, one habit is the posting of text to explain ideas or self-presentation. Members regard their habits as being preferable to alternative activities when they think that their habits are beneficial. Those habits will be an inference for their evaluation on website design and development [18]. The value of websites relies on seeding activities for members who release and post text to other members and get feedback from comments by other members [2]. Thus,

H₄: The evaluation of websites for members is increased when their habitual inclination of sharing information has been enhanced.

IV. METHODS

The deriving attributes come from actual and popular social networking websites and test such hypotheses using CFA (exploratory factor analysis) in Taiwan, but do not limit the results to other kinds of virtual communities. Those websites include Facebook (<http://www.facebook.com>), MSN (<http://tw.msn.com>), MySpace (<http://www.myspace.com>) and Plurk (<http://www.plurk.com>). The effects of the members' habits on the evaluation of those attributes are followed and reported as well.

A. Deriving those Attributes

Based on the concept of previous literature studies to code attributes, probable attributes resulted in 282 items. As follows, 30 heavy users for social networking websites rate the importance of each attribute, through a seven-point response scale ranging from "strongly disagree" to "strongly agree," in which the average rate of importance must be over 3.5. On the basis of the initial scale reliability checks,

the survey was modified slightly, such that the part that deleted any items do not fit the coefficient alpha (<0.7).

Then these items are submitted to an iterative purification process, including an exploratory factor, reliability following Churchill's, Anderson and Gerbing's, Bollen's and Nunnally and Bernstein's [19,20,21,22] recommendations. The final survey in the attributes of a website retains 64 items. Eight heavy users further checked the survey again through written and verbal comments, rephrasing improperly worded items and deleting items that do not fit the concept, construct, completeness, and uniqueness. Measured habitual inclination for members is assessed by subjective estimates rather than objective estimates (i.e., scale anchors of never or rarely to almost always) for comparing the activities of sharing information [23]. Thirty actual members were pre-tested online.

B. Data Collection

All the surveys collected consistent members' viewpoints with the first question asking, "Which social networking websites did you spend the most time for this half year?" They then evaluated each attribute by website. We tried to collect 400 samples for the websites to test the hypotheses. Finally, of the 350 completed surveys gathered over one month, 299 were usable, with a response rate of 75%. The sample's demographics include 47.6% men, and 38.3% who are in the 23–30-year-old age group. With respect to the respondents' expenditures on leisure, 60.5% spent NT\$2,000 to NT\$4,999 (approximately US\$63 to US\$105) on a monthly basis.

C. Analysis

This study examined all scale items using a combination of software analysis tools including SPSS 13, Microsoft Excel 2003, and AMOS 5.0 to carry out the analyses. After obtaining factor loading and cumulative variances, all models first executed the Wilks' lambda and homogeneity test (e.g., Box's M) for variances in which the effects of gender, age, and education, occupation, available expenditure on the average responding rating were not significant (=0.92;=0.94;=0.87;=0.90, $p > 0.05$ in Wilks' lambda test by F value). All attributes included groups set up (1) by dynamic customized factors (CU1 and CU2), (2) by the protection of privacy and security for content (CO1 and CO2) and (3) by interactive interfaces (IA) within blogs or bulletin boards. Table 1 presents the correlation coefficients; for example the PTO (the performance of a website) had a significant and positive relationship with its IA, CU1 and CU2 under correlation coefficients of 0.78,0.67, and 0.81, respectively, and $p < 0.01$. Each score for the average variance extracted of constructs—including [CU], [CO1], [CO2], [IA1], and [IA2]—is greater than 0.5 and the square for its correlation coefficients [24].

TABLE 1. CORRELATION COEFFICIENTS AMONG VARIABLES

	AV	S.E	(1)	(2)	PTO	IA	CU1	CO1	CU2	CO2
PTO	5.00	0.86								
IA	5.71	0.98	0.95	0.82	0.67					

CU1	5.33	1.01	0.92	0.72	0.78	0.67				
CO1	4.71	1.39	0.94	0.80	0.81	0.38	0.48			
CU2	4.45	1.23	0.93	0.82	0.63	0.19	0.33	0.37		
CO2	4.80	1.24	0.84	0.63	0.79	0.37	0.50-	0.64	0.36	
IN	5.13	1.12	0.95	0.86	0.60	0.59	0.60	0.39	0.30	0.40

Notes: AV indicates average; All values are $p < .001$; (1) indicates Cronbach's α coefficient alpha ;(2) indicates AVE (average variance extracted) ;

The evaluation of website attributes is a second-order construct and its five dimensions are first-order actors measured through their respective indicators. The second-order CFA is deemed to be acceptable on the basis of a battery of fit index models ($\chi^2=370.59$; d.f. = 147(2.52); [CFI] =0 .96; [IFI] =0 .96; [RMSEA] = 0.072) but the first-order actors are deemed to not be a good fit ($\chi^2=80.8$; d.f. = 5). The path coefficients between the indicators for their respective first-order and second-order factors is significant at the $\alpha = 0.05$ level [24] respectively, which all positively impact the performance of the website to support H1, H2 and H3 (see Table 2).

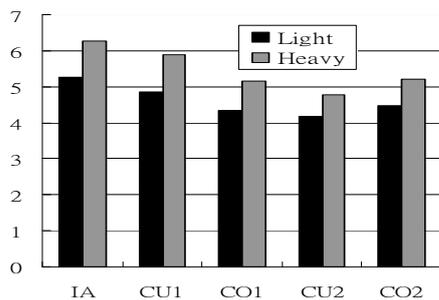
TABLE 2. RESULTS OF THE CFA

Using a Second-Order Conceptualization of [Websites Performance]						
Indicator	Direction	Construct	S.L	S.E	C.R	t-value
First-order						
IA	←	PTO	0.68			
CU1	←	PTO	0.46	0.15	5.13	0.00
CU2	←	PTO	0.82	0.13	9.99	0.00
CO1	←	PTO	0.71	0.21	6.59	0.00
CO2	←	PTO	0.67	0.22	6.32	0.00

Notes: the result for second-order is presented in Appendix

Habitual inclination [IN] is measured by members who present the level of sharing individual information, connecting with friends, and sharing information-owned within the website. The light and heavy types for habits are reflected below and above the mean of the [IN], respectively. Considering the Wilks' lambda test through the F value, the impact of the habitual type on dynamic customized, content, and interactive attributes (=0.68, $p < .00$) are significant. In ANOVA's result, the impact of habitual types on CU1, CU2, CO1, CO2 and IA attributes that are the value of light type (=5.26; =4.86; =4.35; =4.19; =4.48) is less than the heavy type ($F(1,299) = 105.04; = 103.69; = 26.46; = 16.90; = 27.02$, $p < .00$; =6.27; =5.90; =5.16; =4.77; =5.20) that are significant to support the H4 .

FIGURE 1. THE IMPACT OF HABITUAL TYPES ON ATTRIBUTES



V. DISCUSSION

The intrinsic value of websites depend on the level of dynamic customized attributes [25] in which members can post their personal information, ideas and innovations, as well as share experiences with a linear narrative structure. Those attributes shown in the website can deposit, update, arrange and share personal photography (Cu21), personal information (Cu22) as well as post personal text (Cu23) and leave personal messages (Cu24) to other members. With the assistance of interactive externality-sensitive attributes, public bulletin boards also promote specific issues (e.g., making friends) which can be shared by all members that result in emotional resonance among members, such as fan pages (Cu11), self-hype functions (Cu12), and making friends center (Cu13).

In computer-mediated environments, interactive interface mechanisms especially exist in the interface within personal and public bulletin boards which provide feedback or comments from other members such as an editing function for sharing messages (I1), replying to a bulletin board (I2) and the function of immediate response (I2) for sharing information as well as public bulletin boards (I4) for releasing information, and message boards (I5) for leaving messages to friends.

Of course, important issues are the protection of privacy and security (CO1 and CO2) for members' activities, such as releasing and sharing information, which enhance the value of the websites. The protection of privacy focuses on the protection of privacy (Co21), personal data with privacy (Co22), and individual friend with privacy (Co23). With regard to Internet security, this article focuses on procedural and rule explanation (Co11), the protection of Internet security (Co12), copyright protection (Co13), and the explanation of obligation and rights for members (Co14). Finally habitual inclinations for sharing information enhance the effects of those attributes on the value of websites which are likely characteristics of seeding within websites [5].

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APPENDIX RESULTS OF THE CFA

Using a Second-Order Conceptualization of [Websites Performance]						
Indictor	Direction	Construct	S.L	S.E	C.R	t-value
Second-Order						
externality-sensitive attributes						
I1	←	IA	0.82			
I2	←	IA	0.84	0.06	17.07	0.00
I3	←	IA	0.87	0.06	18.02	0.00
I4	←	IA	0.91	0.05	19.48	0.00
I5	←	IA	0.81	0.06	16.06	0.00
Customization1						
Cu11	←	CU1	0.75			
Cu12	←	CU2	0.86	0.09	13.41	0.00
Cu13	←	CU3	0.77	0.08	11.93	0.00
Customization 2						
Cu21	←	CU2	0.92			
Cu22	←	CU2	0.92	0.04	26.66	0.00
Cu23	←	CU2	0.87	0.05	22.43	0.00
Cu21	←	CU2	0.88	0.04	23.24	0.00
Privacy						
Co21	←	CO2	0.86			
Co22	←	CO2	0.90	0.05	21.48	0.00
Co23	←	CO2	0.95	0.05	23.45	0.00
Security						
Co11	←	CO1	0.93			
Co12	←	CO1	0.90	0.04	25.97	0.00
Co13	←	CO1	0.85	0.04	22.68	0.00
Co14	←	CO1	0.93	0.03	27.78	0.00

Notes:

1. In IA, the function of a website having an editing message (I1) /replying board (I2) / the function of immediate responses(I3) / public bulletin board(I4)/message board (I5)for releasing and sharing information.
2. In CO2, the website has the protection of privacy (Co21)/ personal data with privacy (Co22)/ friend’s data with privacy (Co23).
3. In CU1, the function of a website includes a fans page (Cu11)/self-hype (Cu12)/making friends center (Cu13).
4. In CU2, the function of a website for depositing, updating, arranging and sharing personal photography (Cu21) / personal information (Cu22)/ personal text (Cu23)/ personal messages (Cu24).
5. In CO1, the website provides procedural and rule explanation (Co11)/the protection of Internet security (Co12)/copyright protection (Co13)/ the explanation of obligation and rights (Co14).
6. Cumulative variances for all scale items, is 19.1 % in IA ,16.67% in CU2, 13% in CO2, 11.41% in CO1 and 18.64% in CU1, respectively.