Understanding Knowledge Sharing and Social Capital in Social Network Sites

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Abstract: *This research is intended to explore whether the intensity of use of SNSs is related to users' social capital dimension: structural (social interaction ties), relational social capital (trust, norms of reciprocity, and identification), cognitive (shared vision) and furthermore their relation with knowledge sharing. The result will be analyzed using PLS-SEM method to examine the hypotheses. We found that the use of SNSs raise all dimensions of social capital. We also found that structural and cognitive dimensions of social capital positively related to knowledge sharing.*

Keywords: Social Networking Sites, Social Capital, Knowledge Sharing, Structural Dimension, Relational Dimension, Cognitive Dimension

1. Introduction

Relationship marketing has an ultimate outcome to develop a unique company asset called a marketing network. This network consists of the company and its supporting stakeholders. Hult defined stakeholder marketing as "activities and processes within a system of social institutions that facilitate and maintain value through exchange relationships with multiple stakeholders" [1]. These stakeholders include external environment stakeholders like customers, suppliers, distributors, retailers, etc and internal environment stakeholder such as employees [2][1].

An organization will experience profit by building an effective network of relationships with key stakeholders [3] including marketing network that should be done in internal marketing element of holistic marketing. Internal marketing ensures that everyone in the organization embraces appropriate marketing principles and smart marketers recognize that marketing activities within the company is very important because an effective internal marketing program is a prerequisite for effective external marketing efforts [2] [4].

Marketing is no longer the responsibility of a single department but company-wide activities that needs clear communication of how the company's marketing orientation and philosophy serve customers [2]. Moreover, customers can contribute and work together with employees from production department during a new product development process in an activity called co-production [5]. It is very important to facilitate organizational learning and knowledge sharing among employees, department within organization and even with external partner to develop organizational capabilities [6].

Computer and internet facilitate organization to connect each other easily. We have entered a period of socio-economic change when internet technology arises. Interactive internet service like Web 2.0 offers business organizations enhanced knowledge management system to interact with customers and partners [7].

Web 2.0 is a technology that allows it's user to interact actively each other like daily social life [8]. One of Web 2.0's most a popular service is social media that lies in a social network sites (SNSs) [9]. Kaplan and Haenlein defined social media as "a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content".[10]. Web 2.0 enables businesses to complement existing company capabilities by integrating multiple Web 2.0 platforms include knowledge management initiatives, project management efforts, and social networks that connect employees [7]. Furthermore, Lee mentioned that Web 2.0 enhances the capability in various activities, and these activities including internal marketing.

Marketing employees within organization may use SNSs for internal marketing knowledge sharing activities within their internal marketing network, so it's important to understand how knowledge is shared in SNSs through social capital [11]. This understanding will help organizations to leverage their SNSs effectively and at the same time build their social capital, since it generates a positive effect of interaction among employees [12] especially to promote trust among employees and enhance identification to the organization using SNSs [11]. Additionally, former research by [11] mentioned the need for future research to investigate the relationship between knowledge sharing and the structural dimension and cognitive dimension of social capital, and to explore other norms such as reciprocity in the context of SNSs.

Social capital can be measured with three dimensions: structural (the overall pattern of connections between actors), relational (the kind of personal relationships people have developed with each other through a history of interactions), and cognitive (those resources providing shared representation, interpretations, and systems of meaning among parties) [13][14]. Few studies have examined the relationships between SNSs, social capital, and knowledge sharing. Even though [11] explore the relationship between the use of SNSs, social capital, and

knowledge sharing but their research only focus on relational dimension of social capital.

We believe that all social capital dimensions mentioned by [14] play an important role in sharing knowledge. Based on former researches, we believe that social interaction ties [13] [15], trust [11] [15], norms of reciprocity [13], identification [11] [13], and shared vision [13] [15] play an important role in sharing knowledge in online social networking environments.

Our paper tries to close these research gaps by exploring whether the intensity of use of SNSs is related to users' social capital dimension: structural (social interaction ties), relational social capital (trust, norms of reciprocity, and identification), cognitive (shared vision) and furthermore their relation with knowledge sharing. The research questions are (1) does the use of SNSs build all dimensions of social capital? (2) Do all dimensions of social capital facilitate knowledge sharing in SNSs?

2. Social Capital

Social capital premise believe that social networks have value. Social capital can be described as the expected collective or economic benefits derived from the preferential treatment and cooperation between individuals and groups. Just like other type of capital e.g. physical capital (cars, computers, etc) that can increase productivity, social contacts affect the productivity of individuals and groups as well.

There are many definitions regarding social capital. One of the cause is variations of their primarily focus. Using that perspective we can categorize their definitions into 3 categories, whether they focus primarily on (1) the relations an actor maintains with other actors (external linkage), (2) the structure of relations among actors within a collectivity (internal linkage), or (3) both types of linkages [16]. Similar categorization is mentioned by DeLone. De Lone mentioned that the components of the organizational enablers construct for social capital are: Bridging, where individuals are brought together purposely for collective work which also related to weak ties or external linkage, Bonding, strong ties or internal linkage where cognitive norms and implicit understanding is developed by personnel on both sides like in family [17].

Since we are going to investigate the relationship between SNSs, social capital, and knowledge sharing in an internal marketing perspective, then it will be appropriate to use the third category which is both types. Even though internal marketing main concern is internal linking, but in marketing activities we should always consider external linking as well with other external stakeholder environment.

Nahapiet and Ghoshal views social capital as both external and internal linkage [16]. Social capital is "The sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilized through that network" [14]. Moreover, they suggest that social capital should be considered in terms of

three dimensions: structural, relational, and cognitive [14]. Structural dimension means the overall pattern of connections between actors, relational dimension means the kind of personal relationships people have developed with each other through a history of interactions, and cognitive dimension means those resources providing shared representation, interpretations, and systems of meaning among parties [13].

3. Social Network Sites and Social Capital

The definition of Social Network Sites (SNSs) is web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system [18].

SNSs allow individuals to meet strangers and friends who share some offline connection called "latent ties" [19]. This latent ties will become weak ties and strong ties, but usually SNSs will articulate weak ties [20]. On many large SNSs, participants primarily communicating with people who already a part of their extended social network, not to meet new people [18].

Some research on SNSs have examined it's relationship with social capital. Wellman found out that Bridging social capital may be increased by SNSs and the use of the Internet supplements social capital [21]. Ellison found a strong association between use of Facebook and the three types of social capital, with the strongest relationship being to bridging social capital [22]. Valenzuela & Kee found small positive significant associations between SNSs and social capital [23].

Even though those studies found various positive significant relationships between SNSs and social capital, but Kakanhalli, et.al. mentioned that key aspects of social capital, which are related to the context for knowledge exchange, belong to the relational dimension [24]. On the other hand,[11] research did not find relationship between SNSs, social capital (relational dimension) and knowledge sharing and mentioned that future research needed to investigate the relationship between structural dimension, cognitive dimension and norm of reciprocity of relational dimension with knowledge sharing in SNSs environment.

Following Nahapiet and Ghoshal, the structural dimension of social capital is manifested as social interaction ties, the relational dimension is manifested as trust, norm of reciprocity and identification, and the cognitive dimension is manifested as shared vision and shared language [14]. We exclude shared language, because as far as we know, there is no significant relationship between shared language and SNSs nor knowledge sharing [13].

Based on those, we hypothesize the following:

H1a: The SNS usage intensity increases user's perceived Social Interaction Ties in SNSs
H1b: The SNS usage intensity increases user's perceived Trust in SNSs

H1c: The SNS usage intensity increases user's perceived Norm of Reciprocity in SNSs
H1d: The SNS usage intensity increases user's perceived Identification in SNSs
H1e: The SNS usage intensity increases user's perceived Shared Vision in SNSs

4. Social Capital and Knowledge Sharing

Knowledge is "information processed by individuals including ideas, facts, expertise, and judgments relevant for individual, team, and organizational performance" [25]. Based on that definition, Wang & Noe defined knowledge sharing as "the provision of task information and know-how to help others and to collaborate with others to solve problems, develop new ideas, or implement policies or procedures" [25].

Former researches on relationship between social capital and knowledge sharing have various result. Social interaction ties found to have positive significant relationship with knowledge sharing [13] [15] but found to have no relationship in [24]. Other researchers showed that Trust has positive and significant relationship with knowledge sharing [15], but has no significant relationship with knowledge sharing in other research [11][13]. Norms of reciprocity found to have significant relationship with knowledge sharing [13]. Identification has significant positive relationship with knowledge sharing[13] but no relationship in [11]. Shared vision found to have negative significant relationship with knowledge quality [13] [15] but found to have no relationship in [24].

Accordingly, we hypothesize the following:

H2a: user's perceived Social Interaction Ties increases knowledge sharing in SNSs.
H2b: user's perceived Trust increases knowledge sharing in SNSs.
H2c: user's perceived Norm of Reciprocity increases knowledge sharing in SNSs.
H2d: user's perceived Identification increases knowledge sharing in SNSs.
H2e: user's perceived Shared Vision decreases knowledge sharing in SNSs.

Object of this research is proportion between SNSs intensity and user's social capital and proportion between user's social capital and their knowledge sharing.

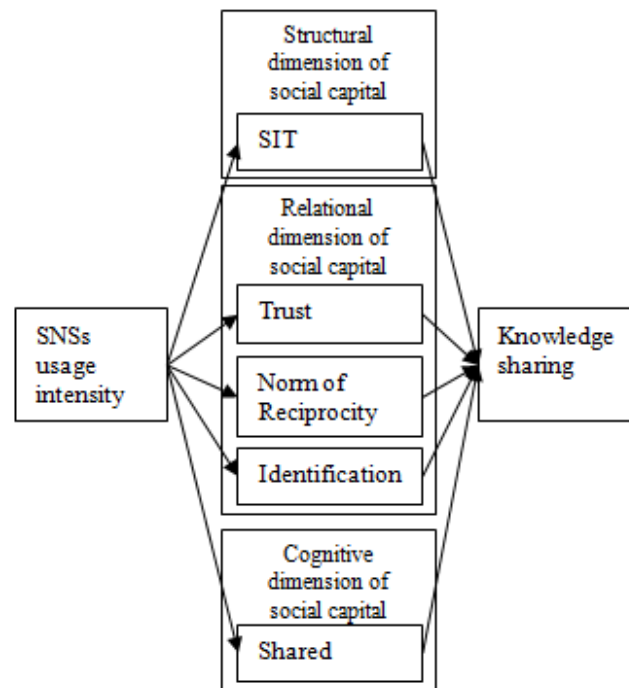Figure 1 shows the conceptual model of this research.

Figure 1: Conceptual Model

5. Methodology

We conduct an online survey to examine whether the intensity of use of SNSs is related to users' relational social capital, and knowledge sharing. We use Partial Least Squares Path Modeling (PLSPM) or PLS-SEM to examine the hypotheses since this method is the preferred method when the research is aimed for theory development and prediction [26]. Moreover, Hair, et.al mentioned that we can use PLS-SEM when the research is exploratory or an extension of an existing structural theory, such as this research.

5.1 Measurement Development

Following [14] and [13] result, we use this sub dimension to manifest the 3 dimensions of social capital: the structural dimension of social capital manifested as social interaction ties, the relational dimension manifested as trust, norm of reciprocity and identification, and the cognitive dimension manifested as shared vision.

The initial items on the SNS Usage Intensity were based on [22]. The initial items on Social Interaction Ties, Trust, Norm of Reciprocity, Identification and Shared Vision were based on [13]. The initial items on Knowledge Sharing were based on [11].

All of those items were examined in online social network environments because the way how people interact in online social networking environments may be different from offline environments. Items then tested using online survey form to found out their reliability and validity. Reliability was tested by using Cronbach's Alpha and validity using corrected items correlation.

We exclude the first question asking about how many friends does the respondent have in Facebook (X1) due to low

Standardized loadings (-0,087) and Critical Ratio (-0,560). We re-estimate the model after exclude this indicator. The final questionnaire can be found in the Appendix.

5.2 Survey Administration

Facebook is the most popular SNSs in Indonesia, so it's logical to assume that Facebook users are representative for SNSs in Indonesia. The survey was offered through various media on the internet including Facebook, web sites, and twitter during November 2013. Respondents was asked first whether they are a Facebook user or not to filter only Facebook users respondent. To increase response rate, we offer gift like e-book and top up for their cellular phone.

Sample responses received from 110 respondents. However, we omitted 10 of it due to similar respondent or because they don't use Facebook. This results 100 samples to be analyzed. The descriptive statistic shows that 80 % of respondents are males and 20% females. Their occupancy are varies, students 47%, employee 39%, business owner 6%, and unemployed 8%.

6. Results

Sample size of 30-100 is suitable for PLS-SEM [27] . [26] mentioned to select PLS-SEM if the sample size is relatively low. The rule of thumb for calculating sample size is that "PLS-SEM minimum sample size should be equal to the larger of the following: (1) ten times the largest number of formative indicators used to measure one construct or (2) ten times the largest number of structural paths directed at a particular latent construct in the structural model" [26]. Using that criteria, the minimum sample size for this research is 70, referring to the number of indicator for SNSs

(7 indicators).

[26] mentioned several rule of thumbs for Reflective Measurement Models as follows: Composite reliability should be higher than 0.70, Indicator loadings should be higher than 0.70, the average variance extracted (AVE) should be higher than 0.50, the AVE of each latent construct should higher than the construct's highest squared correlation with any other latent construct, and an indicator's loadings should be higher than all of its cross loadings.

Table 1: Internal consistency reliability data

Latent variable	Dimensions	Cronbach's alpha	D.G. rho (PCA)
SNSs	7	0.863	0.896
SIT	4	0.734	0.836
Trust	5	0.877	0.911
NoR	2	0.852	0.931
Identification	4	0.871	0.912
SV	3	0.817	0.893
KS	6	0.913	0.934

Composite reliability is represented by D.G rho in PLS-SEM [28]. As shown in table 1, all composite reliability is meet Hair's criteria. Additionally, all Cronbach's alpha more than 0.7 as well. This means that the internal consistency reliability is accepted.

The indicator reliability of this model can be seen in table 2. All indicators except X1 are used in analysis. Even though not all indicator loadings (shown in Standardized loadings) is more than 0.7 as mentioned by Hair, but according to Chin (1998) only those below 0.5 should be excluded from the analysis [29].

Table 2: Indicator reliability

Latent variable	Manifest variables	Standardized loadings	Critical ratio (CR)
SNSs	X2	0.607	4.679
	X3	0.810	11.646
	X4	0.662	8.578
	X5	0.818	13.638
	X6	0.827	18.070
	X7	0.839	26.818
	X8	0.692	9.831
SIT	Y1	0.847	20.909
	Y2	0.650	7.288
	Y3	0.661	8.702
	Y4	0.812	18.520
Trust	Y5	0.691	7.407
	Y6	0.880	35.300
	Y7	0.826	17.046
	Y8	0.844	19.703
	Y9	0.865	26.242
NoR	Y10	0.914	29.984
	Y11	0.950	80.319
Identification	Y12	0.840	18.934
	Y13	0.842	16.120

	Y14	0.839	14.346
	Y15	0.876	23.039
SV	Y19	0.823	20.881
	Y20	0.876	22.058
	Y21	0.868	27.461
KS	Y22	0.788	15.215
	Y23	0.865	24.825
	Y24	0.824	18.113
	Y25	0.859	27.942
	Y26	0.878	34.832
	Y27	0.796	17.174

All mean communalities are above 0.5, therefore, all indicator meet the convergent validity criteria from Hair's.

AVE of each latent construct is higher than the construct's highest squared correlation, and all indicator's loadings are higher than all of its cross loadings. These results support the discriminant validity of the model.

The results of the hypothesis summarized in table 3. The results show that hypothesizes H1a, H1b, H1c, H1d, H1d, H1e, and H1a are supported. H2e results are significant, but Shared Vision is not proved negatively related to Knowledge Sharing. Shared Vision is positively related to knowledge sharing.

Table 3: Hypothesis Summaries Result

Hypothesis	Supported	Estimates	t-statistics
SNSs → SIT	Yes	0.546	6.454
SNSs → Trust	Yes	0.451	4.997
SNSs → NoR	Yes	0.460	5.126
SNSs → Identification	Yes	0.566	6.792
SNSs → SV	Yes	0.412	4.478
SIT → KS	Yes	0.296	3.533
Trust → KS	No	-0.018	-0.199
NoR → KS	No	0.054	0.582
Identification → KS	No	0.069	0.745
SV → KS	No	0.500	5.552

The R2 value shown in table 4 show that SIT, Identification and KS can be explained by the model. R2 values of 0.75, 0.50, or 0.25 for endogenous latent variables in the structural model can be described as substantial, moderate, or weak, respectively [26]. The R2 values show that KS is explained the most (R2 = .581), Identification the second most (R2 = .320), and SIT the third most (R2 = .298).

Table 4: R^2 value

Endogenous	R^2
SIT	0.298
Trust	0.203
NoR	0.211
Identification	0.320
SV	0.170
KS	0.581

Overall model ability to predict can be measured by its overall model ability to predict can be measured by its Goodness of Fit Indices. The criteria is GoF small = 0:1,

GoF medium = 0:25, and GoF large = 0:36 [30]. The result shows that GoF value is 0.445 or large. We can say that the model can explain empirical data well.

7. Discussion

The results show that the SNS usage intensity increases all social capital dimension as we predict. The results also show that SIT and SV are positively related to Knowledge sharing, but there is no significant relationship between trust, norm of reciprocity and identification with knowledge sharing. We can say that there is a relationship between some dimensions of social capital with knowledge sharing.

The results show that all social capital dimensions are relevant to SNSs use. These findings are consistent with [11] [21] [22] [23] that mentioned the existence of relationship between SNSs usage and social capital more specifically relationship dimension. Additionally, we give a new prove that there are relationship between SNSs usage and structural dimension and between SNSs usage with cognitive dimension of social capital. The more people use their social networking sites, the more social capital they feel exist.

These findings also consistent with [11] that found no relationship between relational dimensions of social capital with knowledge sharing. Additionally, this finding also give preliminary answer to the theory gap about the relationship between structural and knowledge sharing, consistent with [13][15] in SNSs. The second finding is that there is a significant relationship between cognitive dimension with knowledge sharing in SNSs which is consistent with [13] but unlike their finding, the relationship if positive.

The cognitive dimension means that people are willing to share their knowledge when they think that the other have the same vision to share their knowledge as well. The level of social interaction ties also affects their willingness to share knowledge. The more they feel tied up each other, the more likely they will share their knowledge.

8. Implications and Conclusions

8.1 Implications

This research finds that the SNS usage intensity is positively related to all dimensions (structural, relational and cognitive) of social capital. Furthermore, structural and cognitive

dimensions have positive effect on knowledge sharing and only relational dimension doesn't have significant effect.

Unlike [11] which only use students as their respondent, this research collected data from various samples including employee and business owner. Based on this findings, we can conclude that organizations can leverage their SNSs usage to improve knowledge sharing (including for internal marketing purpose) through structural and cognitive dimensions of social capital. Organizations can moderate discussion to increase social interactivity ties and shared vision in order to get knowledge sharing in SNSs.

8.2 Conclusions

- This research shows relationship between SNSs and social capital. These findings support former research by [11][21][22][23]. We can say that the positive relationship between SNSs and Social Capital exists especially on students and employee users.
- This research also uses [11] framework to investigate relationship between SNSs usage, social capital and knowledge sharing. Even though using different samples, but the relationship between SNSs, relational dimension and knowledge sharing is consistent in both researches. Based on both research, we can conclude that SNSs usage is positively related to relational dimension of social capital and relational dimension of social capital has no relationship to knowledge sharing either for students or employee.

9. Future Scope

Even though this research has found the relationship between structural and cognitive dimensions with knowledge sharing, there is still a research gap regarding eWoM. Future research should include eWoM as investigated by [11] to find out its relationship with structural and cognitive dimensions of social capital.

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