

Optimum Scale of Social Networking Services for Organizational Knowledge Management

Michiko YOSHIDA

*Economic Research Centre, FUJITSU Research Institute, 11th Fl. New Pier Takeshiba
South Tower, 1-16-1 Kaigan, Minato-ku, Tokyo, 105-0022, Japan
Tel: +81.(0)3.5401.8392, Fax: + 81.(0)3.5401.8438,
Email: michiko.yoshida@jp.fujitsu.com*

Abstract: This paper analyses the effect of utilizing Intranet SNSs for work by using data from nationwide questionnaires conducted every six months since August 2006. The discussion will be concentrated on the following three points: (1) what kind of knowledge is suitable for what kind of enterprise, (2) what elements are necessary for employees' effective knowledge management, and (3) what is the optimum scale of intranet SNSs for knowledge management. We have conducted Covariance Structure Analysis under the hypothesis that rich social capital enhances the effect of knowledge management through SNSs. It is found that sharing experiences of failure and success is important for industrial knowledge management. Furthermore, rich Social Capital is a necessary condition for successful knowledge management. Also, it is found that the effect of utilizing SNSs for work are influenced by the size of the enterprise, and it has optimum scale from the perspective of manager class. This means that an effect is not achieved in all enterprises with the introduction of SNSs.

Keywords: SNS (Social Networking Services), Social Capital, Knowledge, Span of Control, Failure and success

1. Introduction

1.1 *Trend of Japanese Enterprises Introducing Intranet SNSs*

Trends such as Blogs and SNSs (social networking services), where individuals transmit information and share it on the internet, are becoming prominent. This development is also apparent in enterprise activity.

In Japan, enterprises are introducing intranet Blogs or SNSs for the purposes of knowledge management and to revitalise employees' communication. The number of these enterprises has been increasing.

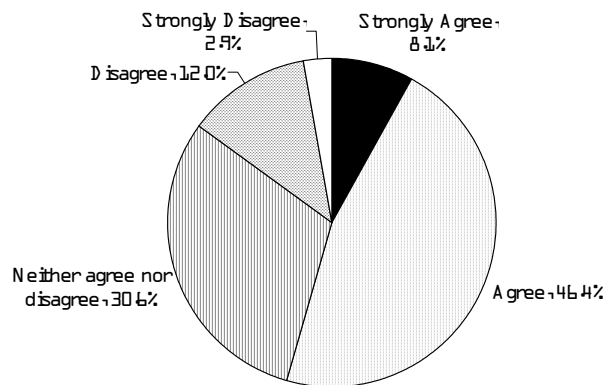
In the background of the introduction of Intranet SNSs by Japanese enterprises is the decrease in workplace communication, as well as the desire of these enterprises to ride the trend of the globally popular Web 2.0, increase networks within the company and encourage collaboration between employees.

Regarding communication in particular, not only communication among fellow employees but also the gap between different generations has become a problem. According to the survey conducted by Fujitsu Research Institute in February 2008, over half of the enterprises introducing SNSs answered that there is a communication gap among different generations at the workplace (Table 1).

The increase in the ability of individuals to disseminate information is influencing the information-flow inside enterprises. For example, it has traditionally been difficult for free

exchange of opinions to occur between employees that transcends divisions in vertically compartmentalized organizations.

Table 1: Do you think there is a communication gap between different generations at your company?



Source: Fujitsu Research Institute Questionnaire Survey, February 2008. N=483.

Targets are corporate managers, board members, department managers, section managers and assistant managers. One answer only.

There are various reports and articles circulating in the mass media about the merits enjoyed by Japanese enterprises that have introduced SNSs on the intranet. However, these are qualitative findings of individual enterprises or heart warming stories from employees, and not trends of the entire Japanese market or analysis of time-series.

It is found that among enterprises introducing intranet SNSs, many have evaluation systems, monetary incentives, or non-monetary compensation systems (such as an award system) in place in the event that employees produce effective new products, services or projects using the intranet SNS. In the same August 2006 survey, 76.1% of enterprises utilizing intranet SNSs had some kind of organizational evaluation system in place, and while falling a bit the percentage was still 64.8% in the February 2008 survey. On the other hand, the figure was 59.6% among the whole sample of the combined users of intranet Blogs and SNSs in August 2006, and 52.1% in February 2008.

From this we can imagine enterprise efforts to promote the utilization of intranet SNSs among employees and connect this with an organizational outcome.

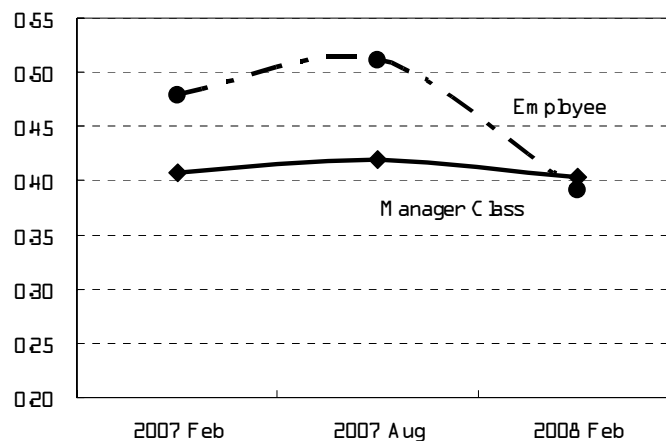
1.2 Decreasing Effect of Utilizing Intranet SNSs

In Japan, the social concern with “Flare”, in which certain diaries end after much ado, has been growing for several years. One trivial comment on the diaries of SNSs invites emotional reflection from friends or readers. Such an emotional comment invites other ones consequently. This flare phenomenon happens not only in hobby-oriented SNSs but also in Intranet SNSs where it is possible to identify the employee’s ID or department from the access data.

Minetaki and Yoshida (2008) have conducted positive analysis for one year from February 2007 to February 2008 by dividing among employees who actually use intranet SNSs and management which enforces this. This analysis has been conducted under the assumption that rich social capital increases the effect of knowledge management using intranet SNS. According the results of the analysis, for management the effect remained mostly level over the last year, while for employees it began to decrease in August 2007 (Table 2).

However, contrary to this overall trend, enterprises that are effectively using intranet SNSs do exist. In addition, the sizes of enterprises in Japan that are introducing intranet SNSs are quite varied.

Table 2: One-year Transition of Effect of Social Capital on Knowledge Management that Utilizes Intranet SNSs



Source: Fujitsu Research Institute Questionnaire Survey, from February 2007 to February 2008. The solid arrow means the result from manager class analysis and the dashed arrow means that of employee's.

2. Objectives

The objective of this paper is to analyse the effect of introducing and utilizing intranet SNSs, and to establish the efficacy of it in organisational knowledge management. In particular, the purpose is to reveal differences in the utilization of intranet SNSs among enterprise size (number of employees). A numerical analysis of Intra-SNSs has yet to be conducted, except network analysis using the data of access logs. The fact and background of enterprises introducing intranet SNSs has been reported, but the mechanism of how intranet communication of organisational knowledge is dispersed is unknown.

It has traditionally been difficult for people with a shared awareness of issues to collaborate when limited to the kind of communication found within a corporate hierarchy.

In the traditional model of intra-enterprise communication, an employee wanting to establish contact with someone in a different group would have to request that a superior act as an intermediary. This kind of communication and collaboration is dependent on institutional hierarchy and human environments of the workplace. Through data analysis, the optimum scale and elements for knowledge management through SNSs are discussed.

3. Methodology

We have conducted questionnaire surveys and positive analysis. In this study, we focus on three points: (1) what kind of knowledge is suitable for what kind of enterprise, (2) what elements are necessary for employees' effective knowledge management, and (3) what is the optimum scale of intranet SNSs for knowledge management.

We have conducted Covariance Structure Analysis under the hypothesis that rich social capital enhances the effect of knowledge management through SNSs.

3.1 Questionnaire Survey

The Economic Research Centre of Fujitsu Research Institute has conducted a questionnaire survey every six months since August 2006. Two kinds of surveys have been conducted each time. One targets corporate managers, board members, department managers, section managers and assistant managers who let employees use job-related SNSs in their Intranets (those respondents are limited to those who have a grasp, as manager class, of what the job-related Intranet SNSs are being used for). The other survey targets employees who actually use job-related SNSs on the Intranet. The main subject of this paper focuses only on the

manager class to find out how this group views Intranet SNSs. Table 3 shows the industry classification of the respondents.

Table 3: Respondents' Industry Classification

		Non manufacturing (excluded service industry)	Manufacturing	Service	Total
Aug-2006	Whole Sample	426	172	432	1030
	SNS Utilization	118	58	109	285
Feb-2007	Whole Sample	631	293	621	1545
	SNS Utilization	181	126	194	501
Aug-2007	Whole Sample	379	203	445	1027
	SNS Utilization	111	86	117	314
Feb-2008	Whole Sample	515	225	626	1366
	SNS Utilization	159	108	216	483

(# of answers)

Source: Fujitsu Research Institute Questionnaire Survey, from August 2006 to February 2008.
Targets are corporate managers, board members, department managers, section managers and assistant managers. One answer only.

The data used for the positive analysis is as described in Tables 4 and 5. There are two latent variables of "social capital" and "knowledge management", and the index variables of these latent variables are also shown in Table 4 and 5.

Table 4 concerns organization environment. This investigates whether rich social capital has been formed in the company regardless of the utilization of an intranet SNS. That is to say; this looks at whether employees are enthusiastic about pursuing the goals and dreams of the entire company, whether there is an open atmosphere to consult with other employees, whether employees help other employees' work though not concerned with their own business, how easy it is for employees' opinions to reach management, whether employees like the company, whether there is trust for other employees, whether there is understanding and financial support from management when employees collaborate beyond divisions, and whether the company is taking advantage of outside networks for business. Answers are given in a 5-grade evaluation. While answers are weighted towards "3", in other words no plus or minus effect, overall there is a positive effect.

These index variables depend on face-to-face workplace relationships. If information is exchanged regardless of face-to-face relationships or in the Intranet SNSs, but there is no mutual positive effect, it would be difficult for information exchange to occur.

Table 4: Index Variables of Social Capital: whether or not rich social capital has been formed in the company regardless of the utilization of an intranet SNS

Index Variable	(five-grade evaluation)				
	1	2	3	4	5
Enthusiastic about pursuing the goals and dreams of the whole company	21	65	197	177	23
Open atmosphere to consult with other employees	12	63	161	212	35
Help other employees' work though not concerned with one's own business	14	73	135	213	48
Easiness of employees' opinions to reach management	18	99	167	169	30
Employees like the company	10	56	175	203	37
Trust for other employees	8	43	134	267	31
Managers express understanding when collaborating beyond divisions	44	91	189	136	23
Managers support financially when collaborating beyond divisions	18	81	158	193	33
Company utilizes external business networks	23	98	169	170	23

(# of answers)

Source: Fujitsu Research Institute Questionnaire Survey, February 2008. N=483.
Targets are corporate managers, board members, department managers, section managers and assistant managers. One answer only.

Table 5 looks at the effect after intranet SNS has been utilized. In other words, it shows the change in information gathering cost per employee as a result of utilizing the intranet SNS. Similar to social capital (Table 1), answers are given in a 5-grade evaluation, and while answers are weighted towards “3” (no plus or minus effect) as a whole there is a positive effect.

Table 5: Index Variables of Knowledge Management: how the job-related Intranet SNSs enhance efficiency of Knowledge Management

Index Variable	five-grade evaluation				
	1	2	3	4	5
Decreased time for collection of information	14	35	242	163	29
Decreased cost for collection of information	12	41	264	140	26
Improved the speed for decision-making	13	25	282	141	22
Widened employees' views	12	30	233	183	25
Shortened the time to find key persons	8	33	248	165	29
Shortened the time to acquire knowledge from key persons	7	37	249	154	36
Shortened the time to interpret knowledge and apply it to business	6	33	274	141	29

(# of answers)

Source: Fujitsu Research Institute Questionnaire Survey, February 2008. N=483.
Targets are corporate managers, board members, department managers, section managers and assistant managers. One answer only.

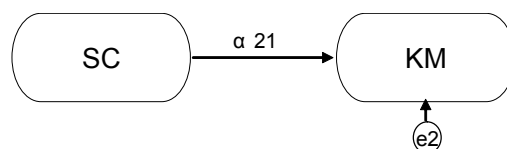
3.2 Model of Covariance Structure Analysis

Using this data, we conducted a covariance structure analysis with the model below. To find differences among sizes of enterprises, the analysis was conducted by dividing the data into the following three groups:

1. Number of employees is under 500
2. Number of employees is 500-1000
3. Number of employees is over 1000

The model is as follows:

$$KM = \alpha_{21}SC + e_2$$



“SC” refers to “social capital” described above. We set latent variables from the index variables above.

“KM” refers to “knowledge management” which means the efficiency for acquiring knowledge. We set latent variable from the index variables above.

4. Results of Covariance Structure Analysis

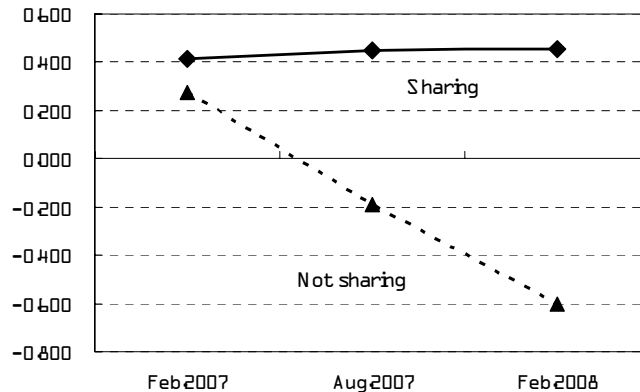
4.1 Sharing of Success and/or Failures Examples on Intranet SNSs

The questionnaire result shows whether or not information about failure and success examples is exchanged among employees on the Intranet SNSs. In February 2008, about 65% answered that failure or success examples or both are exchanged and employees

communicate. Those who responded that failure or success examples or both, in addition to other information, are exchanged on their enterprises' Intranet SNS were asked whether or not such examples provide new and beneficial change to their work. About 60% answered that sharing failure or success examples or both has brought about new and beneficial change to a great or very great extent.

Table 6 is analysis with only management level data as its subject. It shows differences in the knowledge management effect among enterprises that conduct sharing of work success and/or failure examples on the enterprise intranet SNS, and enterprises that do not.

Table 6: Coefficient comparison of enterprises that share of work success/failure examples on the enterprise intranet SNS and those that do not (management only)



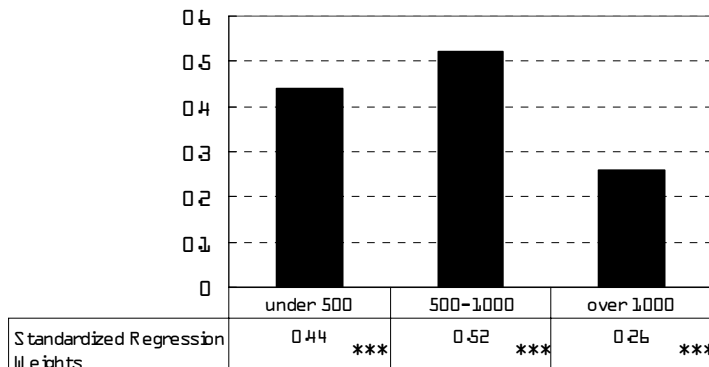
Source: Fujitsu Research Institute Questionnaire Survey, from February 2007 to February 2008. Dashed arrow means that it is not statistically significant.

Sharing experiences of failure and success is important for industrial knowledge management. A mistake would likely be repeated by other workers, and enterprises have to prepare countermeasures so employees will not commit the same mistakes again. Also, employees can learn from success experiences and see how to follow suit if the cases are shared.

4.2 Differences from Enterprise Size (Number of Employees)

The result shows that the most effective size is 500-1,000 employees. Table 7 compares standardized regression weights and its significance level.

Table 7: Comparison of standardized regression weights among sizes (as of February 2008)



***.01% significance level

Table 8: Fit Index of Each Size

Size	AGFI
Under 500	0.79
500-1,000	0.53
Over 1000	0.74

5. Business Benefits

From the analysis results, we find that particularly enterprises with 500-1000 employees gain a strong effect on knowledge management that utilizes intranet SNSs. Introducing SNSs does not necessarily produce an effect on knowledge management.

In one case of a Japanese enterprise, as employees write diaries related to business and this information accumulates, they are essentially creating a database. As daily business reports are written, knowledge related to business accumulates on the diaries, and as time passes personal business resumes are created. A search for this kind of business knowledge can be done with the entire Blog as a search target, and consequently detailed information such as a statement from or an awareness of a customer recorded by a particular employee can be collected.

6. Conclusions

Knowledge for sharing in intranet SNSs should be considered carefully. Information about failure and success is a part of organisational knowledge. However, there are certain conditions when this knowledge performs effectively in a workplace.

Making individually dispersed and/or overlapping knowledge and work efficient in a visualized setting creates new values. Utilization of organisational knowledge and enjoying the “wisdom of crowds” has been a long-standing issue, and future efforts to incorporate this function “in house” are a distinct possibility.

It was found from the results of the positive analysis that the uploading of “failure and/or success” examples in informal settings on SNSs by employees who have problems leads to effective knowledge management, but it depends on the scale of the SNS and it is statistically significant.

7. Further Research

Regarding capital as a tangible asset, the average age of equipment as it relates to production capacity; in other words, “vintage” is a subject of debate. Similarly, is there “vintage” in social capital as an intangible asset? Further research is needed on what kind of process social capital, accumulated through utilization of intranet SNSs, follows as it deteriorates.

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