Framework For Implementing KMS Based On SNS In Vietnamese SME

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ABSTRACT:

In knowledge society, knowledge management (KM) is increasingly considered the best strategy for improving the competitiveness of any enterprise. However, implementing a knowledge management system (KMS) successfully is a difficult problem for many enterprises, especially for small and medium enterprises (SMEs) because of their lack of resources for R&D and innovation. Currently, Vietnamese SME becomes the majority and very important for the development of Vietnam economy. Based on case study, some difficulties for KMS implementation in Vietnamese SMEs are found, such as: lack of support and resources for KMS projects, complication of technologies for KMS, ambiguity of KMS concepts and processes. Recently, social network service (SNS) becomes not only a powerful tool for communicating, interacting, or marketing, but also an ideal platform for implementing a KMS. In this paper, an integrated KM framework based on SNS is suggested to help Vietnamese SMEs solve their problems and strengthen their competitiveness in the global knowledge economy. Moreover, a prototyped KMS based on SNS is also implemented for a consulting company of Vietnam to illustrate the solution. The demo KMS based on SNS shows the feasibility of utilizing SNS for implementing a KMS in Vietnamese SME in practice.

Keywords: *KM framework, KMS, Implementation, SNS, Vietnamese SME*

1. Introduction

Nowadays, small-and-medium enterprise (SME) is the majority (90%) of the world's enterprises and Vietnamese SME increasingly becomes the dynamic of the economic development of Vietnam (Tran et al., 2007). In the knowledge era and global knowledge economy, SMEs have to adapt themselves to survive and to grow. Because the wave of the knowledge era has equally affected all organizations, knowledge management (KM) becomes as important for SMEs as for big enterprises.

However, implementing a knowledge management system (KMS) successfully is difficult for many enterprises, especially for SMEs in developing countries like Vietnam. In order to successfully implement a KMS, a suitable organizational structure, knowledge structure, KM strategy and an appropriate technology must be clarified and applied for facilitating knowledge management processes. According to Vu H.D. (2008), the number of failure cases of KMS implementation in Vietnamese SMEs is very high. It is mostly because of the lack of a framework for KMS implementation and a suitable technology for KMS. Therefore, an integrated KM framework and a new technology for KMS are required for Vietnamese SMEs to ensure the success of KMS implementation.

With the development of web 2.0 technology, social network service (SNS) becomes a powerful platform for communicating, collaborating, marketing, and knowledge sharing. Recently, SNS is increasingly believed a suitable platform for implementing a new KMS and creating a new kind of organizational structure, which facilitates knowledge creating and sharing.

Therefore, the main purpose of this research is to suggest a framework for Vietnamese SMEs to implement a KMS successfully. To get this goal, firstly, real conditions of Vietnamese SME is

studied, secondly, opportunities for using SNS in solving problems of KMS implementation is explored, then, a new KM framework based on SNS will be proposed, and finally, a prototyped KMS will be implemented for testing the solution. The structure of this research is as follows: (2) Definitions and related works; (3) Case study of KMS implementation in Vietnamese SMEs; (4) SNS for solving problems of Vietnamese SME; (5) KM framework based on SNS; (6) Prototyped KMS based on SNS; and (7) Conclusion and future works.

2.   Definitions And Related Works

2.1.   Definitions

According to the definition of Vietnamese Government, SME or small-and-medium enterprise is differed from big enterprise by its size of total capital and the average annual number of laborers. In this research context, for simplification, SME refers to enterprise with less than 300 full-time employees.

Social network service (SNS): a representative of new generation of web technology (web 2.0), in which it focuses on building online communities of people who share interests and activities, or who are interested in exploring the interests and activities of others (Smith, 2006). The most powerful characteristic of SNS is the ability to integrate various applications for supporting online interaction between people in the network.

2.2.   Related Works

From our previous researches (Pham & Hara, 2009; Pham, 2010; Pham & Hara, 2011), key lessons for Vietnamese enterprises in implementing KMS are as follows:

> ➢ A preparation phase is needed for improving the current ICT maturity of Vietnamese enterprises up to level 4 (web-based) or 5 (knowledge-oriented) before implementing a KMS. (Pham, 2010)

> ➢ For a successful KM solution in Vietnamese enterprises, Technology capabilities (Techno-ware and ICT-ware) should be improved first, and then Knowledge capabilities (learning, culture, communication and innovation). Besides, KM approach should focus on improving employee satisfaction (intangible factors) because of its direct effect on KM and labor productivity. (Pham & Hara, 2011)

> ➢ Using SNS of web 2.0 for KM can ensure the success of KMS because of its ability in combining 2 main KM strategies and integrating various technologies for KMS. (Pham & Hara, 2009)

Those lessons are very important in solving any problem of Vietnamese SMEs in implementing a KMS and establishing an integrated framework for KMS implementation. This integrated framework will guide Vietnamese SMEs how to prepare for and implement a KMS in practice.

Furthermore, in order to build an integrated framework for KMS based on SNS in Vietnamese SME, modifying a previous framework for KMS implementation is a necessary. In this paper, a KM framework of Kim et al. (2006) is used to explore and it is summarized in the table below. This framework is chosen because of its simple style and systematic order. Moreover, it is grounded on various frameworks and applicable for many enterprises in practice. This framework can help Vietnamese SMEs get a common understanding about KMS. However, it should be revised to take advantages of SNS and to be applicable for Vietnamese SMEs in practice.

Table 1: A Framework For KMS Implementation (Kim Et Al., 2006)

Phase	Sub-phase	Guide line
Strategy	Clarify organization strategy	Understand firm's goals and CEO's vision
		Obtain a firm support from CEO
		Set strategic priority
		Analyze the relation b/w goals and KM
	Define KM strategy	Set a strategic priority for KM
		Define structure of knowledge and organization
Structure	Organize organization	Minimize the change of organization structure
		Specify responsible people or teams
	Organize knowledge	Evaluate and percolate knowledge
		Analyze the location of knowledge
Culture	Share needs & value of KM	Involve whole KMS users
	Create KM culture	
Process	Analyze work process	Balance work load on teams or people
		Adopt bottom-up approach
	Define knowledge activities	Customize knowledge activities with work process
		Synchronize knowledge activities with work process
System (KMS)	Define the range of KMS	Build activity based KMS
	Customize KMS	Support knowledge activities as well as work process
	Implement KMS physically	
Adjustment	Monitor KMS	Monitor physical usage and recognition of users
	Evaluate KMS	Build criteria of its own for evaluating KMS
	Refine KMS	

3.   Case Study Of KMS Implementation In Vietnamese Smes

3.1.   General Information About KMS Implementation In Vietnamese Smes

According to Vu H.D. (2008), Vietnamese SME is increasingly being supported by the government, such as: an office on SMEs development was established; some government decrees on the assistance in the development of SMEs were issued, etc. In this context, the application of KM in the SMEs sector will be promoted to ensure the sustainable development of this sector. The government of Vietnam has taken effective steps towards implementing knowledge-based development (KBD): development of Information-Communication Technology (ICT) infrastructure, support for knowledge assets development, greater expenditure and incentives for R&D. However, successful case of KMS implementation in Vietnamese SMEs is still rare.

According to my previous research (Pham, 2010), the ICT maturity index (ICTMI) of Vietnamese enterprises is at the average level (Substantial). For SME sector, the highest ICTMI belongs to enterprises with about 100-200 employees. In comparison with other factors of ICTMI, human resource is at the lowest level for most of enterprises. In the data sample, there is no SME reached level 5 (knowledge-oriented), and only 25% of SMEs reached level 4 (web-based). Whereas, there are more than 50% of big enterprises reached level 4 or 5.

Besides, based on data analysis of another research (Pham & Hara, 2011), KM level of Vietnamese enterprises is at an average level (3.5) in the scale of 1-5. Figure 1 shows the KM level of Vietnamese enterprise by field and type.
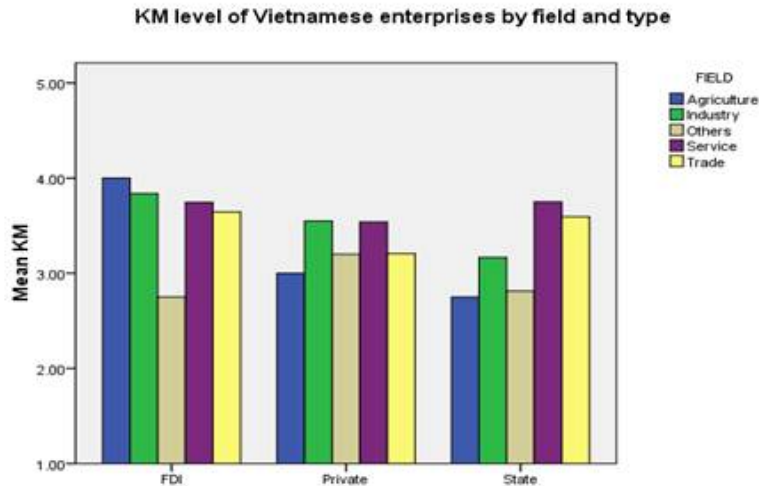
Figure 1. The KM Level Of Vietnamese Enterprises
(Graphed Based On Data Of Pham & Hara, 2011)

Above figure shows that half of the enterprises in the survey data started their KMS project. Therefore, to compete with other enterprises effectively, Vietnamese SMEs should start a KMS project for strengthening their competitiveness based on their knowledge and innovation ability. Contrast with current hesitancy of Vietnamese SMEs in implementing a KMS, above results and figure indicates that business environment in Vietnam is increasingly ready for a KM solution and they should apply KM solution as soon as possible. To start a KMS project at this time, an integrated framework for implementing a KMS is very necessary. Successfully implementing a KMS will help them effectively compete with other enterprises and sustainably develop in the future.

3.2. Case Study Of KMS Implementation In Vietnamese Smes

In order to understand difficulties of KMS implementation in Vietnamese SMEs and their main causes, three cases of KMS implementation in Vietnamese SMEs were analyzed, including BR&T Consulting Ltd., Huflit Center, and Lam Dong DST. (see appendix 1). In case 1, difficulties of BR&T Consulting Ltd. fall into developing stage, while in other cases of Huflit Center and Lam Dong Department of Science & Technology (DST), most of difficulties fall into operating stage of KMS. In general, through those cases, difficulties of Vietnamese SMEs in implementing a KMS can be summarized as in the following table.

Table 2: Difficulties Of KMS Implementation In Vietnamese Smes

Case	Developing stage	Operating stage
Case 1 – BR&T Ltd.	Lack of common understanding about KMS Lack of preparation for KMS implementing. Lack of resources for KMS project. Loss of long-term support from top leader.	
Case 2 – Huflit Center	KM strategy and business strategy are not aligned.	Unfamiliar with using computer. Unwilling to share knowledge and afraid of losing power when sharing knowledge. Dissatisfaction of search function of KMS.
Case 3 – LamDong	Too high expectation from KMS. Knowledge structure is not defined.	KMS is too complicate to learn & use.

DST		Experts are not available and ready for knowledge sharing. Hard to measure the value of knowledge.

3.3. Approach For Solving Above Difficulties

Analyzing above problems by developing stage, most problems are caused by the lack of common understanding about KMS (organizational reasons). Without a common understanding about KMS, other difficulties will appear, such as: knowledge structure is not clear, business strategy and KM strategy cannot be aligned, conflict will occur easily, expectation cannot be controlled, and finally, loss of support from the top manager. Analyzing by operating stage, most problems are caused by the lack of a suitable technology for KMS processes, which is easy to learn and utilize and capable of bridging communication gaps and integrating various existing applications (technological reasons). Without such technology, other difficulties will appear, such as: the system is too complicate to learn, dissatisfaction with some functions of KMS, inconvenience in sharing knowledge, and finally, worry about losing power due to immeasurable contribution. In summary, two main reasons of above problems are: (1) Lack of a common understanding of KMS; and (2) Lack of a suitable technology for KMS, which is easy to learn and utilize.

In this paper, an integrated framework for implementing KMS based on SNS, which includes guidelines for changing business environment and implementing KMS based on SNS, is a solution for above problems. This integrated framework is useful for all Vietnamese SMEs in implementing a KMS in practice, because it covers those lessons from previous researches and related studies in this paper. The following figure summarizes above difficulties and the solution for them.
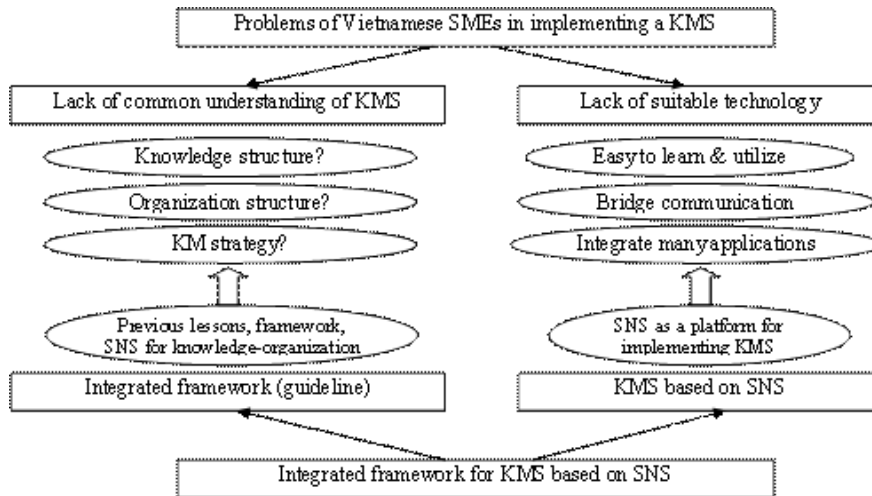

Figure 2: Solution For Problems Of Vietnamese Smes In Implementing A KMS

4. SNS For Solving Problems Of Vietnamese SME

Firstly, to solve the technological problem, SNS is needed because of its ability in bridging communication gaps, integrating various applications and its convenience in learning and using. According to Avram G.. (2005), SNS is very simple and easy to use and it could provide a useful complement to existing knowledge repositories. Besides, from the result of our research (Pham & Hara, 2009), SNS can be used as an integrated platform for supporting KMS processes and bridging communication gaps in knowledge sharing. Therefore, an integrated framework for implementing KMS based on SNS will be a solution for above problems, in which SNS is the key.

Secondly, to solve the organizational problem (misunderstanding about KMS between project members), SNS is needed because it can help answer above questions of KM about knowledge structure, organization structure for KMS and KM strategy. Using SNS in implementing a KMS, three main aspects of implementing a KMS, including knowledge structure, organization structure for KMS, and KM strategy, will be clarified. Directions of using SNS as a base for knowledge structure, organization structure and KM strategy are summarized as follows:
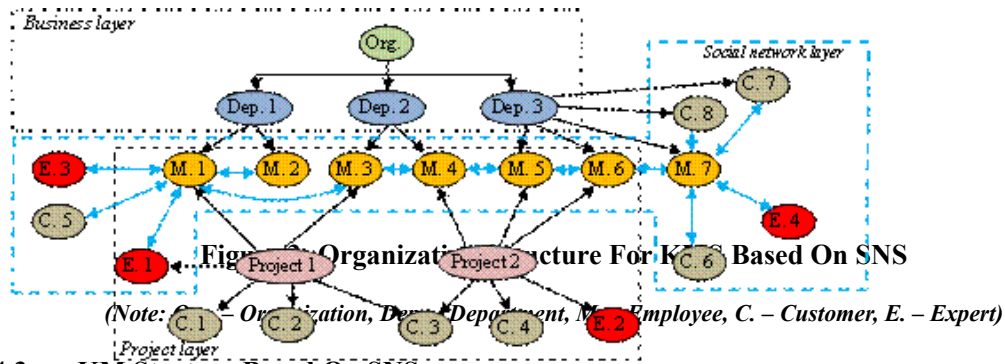
4.1.   Knowledge Structure Based On SNS

According to Bontis (1999), knowledge or intellectual capital includes: human capital, structural capital and relational capital. Previous approaches of knowledge management focused on (1) turning human capital and relational capital into structural capital, and (2) managing structural capital. But, structural capital is realized not enough for KMS and other capitals can hardly be turned into structural capital. SNS is found to be a suitable platform for this requirement because through friend network and communicating tools of SNS, it is capable for managing all kinds of intellectual capital above. For example, human capital can be managed by list of profiles and communicating tools for direct interacting; structural capital can be managed through knowledge base, wiki, blog, file, project-oriented document…; relational capital can be managed through friend network, activity log, chat, message, comment, and link to useful resources… Therefore, based on SNS, knowledge can be visualized and organized in three forms: tacit knowledge (human capital), explicit knowledge (structural capital) and knowledge flow (relational capital).

Tacit knowledge is expertise, skill, insight, belief… of an expert, which only exists in the human brain. Explicit knowledge is validated knowledge, which is codified and stored in a knowledge base. Knowledge flow is knowledge in a dynamic form, which exists in the knowledge cycle, when tacit knowledge is turn into explicit knowledge or vice versa. The last kind of knowledge is very useful for sharing knowledge throughout the enterprise and suitable for interacting and creating new knowledge.

4.2.   Organization Structure Based On SNS

According to Nonaka & Takeuchi (1995), a new organization structure for knowledge creating cycle in company must be a hypertext organization, in which both the efficiency of a bureaucracy and the flexibility of a task-force organization are enabled. However, without a suitable technical platform, this kind of organization is difficult to be implemented in practice.

SNS is an ideal technology for making above organization structure becomes true by adding a middle layer (social network layer), which can help connecting people and sharing knowledge between them from both business layer and project layer. Therefore, based on SNS, organization structure should be reorganized including three layers: business layer (business process oriented), project layer (group work oriented) and social network layer (human relationship oriented). In which, social network layer is a new contribution of social network and can be used as a middle layer connecting 2 other layers of an organization. In this structure, each department, project, employee, customer and partner is a node in the organizational social network. Employees, partners and department connect in a hierarchical structure. Project members connect in a team-work structure. Partners and employees of different departments/ projects connect with each other in social network structure. This structure is illustrated in the following figure.

Figure 2. Organization Structure For KC Based On SNS

(Note: O. – Organization, Dep. – Department, M. – Employee, C. – Customer, E. – Expert)

4.3. KM Strategy Based On SNS

From our previous research (Pham & Hara, 2009), a suitable KM strategy must be a combination of two main KM strategies, which are Codification and Personalization strategy. These two main KM strategies are separated by two kinds of knowledge (explicit and tacit, respectively) and should be combined to make a more effective strategy for KM. Based on that study, technology for this combination should be SNS. Besides, a Combination KM strategy can help not only balancing tacit knowledge and explicit knowledge of an enterprise but also encouraging knowledge flow between those two kinds of knowledge. This strategy will also facilitate the knowledge creating cycle in the enterprise as Nonaka's SECI model (Nonaka & Takeuchi, 1995). Therefore, depending on enterprise type, Vietnamese SMEs should apply a Combination strategy for implementing a KMS based on SNS, in which knowledge flow plays an important role in balancing tacit knowledge and explicit knowledge of organization.

5. KM Framework Based On SNS

The previous framework for KMS implementation in table 1 is a good starting point for establishing an integrated framework for KMS based on SMS. However, some of following disadvantages should be improved to be applicable for Vietnamese SMEs in practice:

> ➢ It is difficult for Vietnamese SMEs to apply this framework in practice because phases are not arranged in time order.

> ➢ Lack of a preparation phase, which is necessary for Vietnamese SMEs because their current ICT maturity is not ready for KMS.

> ➢ Specific technology for analysis and implementation is not clarified, which is very important for Vietnamese SMEs to standardize their business processes and to successfully implement a KMS.

> ➢ Main aspects of KMS implementation, such as: knowledge structure, organization structure for KMS, and KM strategy, are not clearly specified in this framework.

Problem (a) and (b) can be solved by dividing above framework by time scale (before, during and after implementing a KMS), in which preparation is the first phase for KMS implementation. From previous result (Pham, 2010), the first step for SMEs in implementing a KMS must be measuring their ICT maturity, which is useful to know where they are and what they should do. Then, a suitable plan can be made for improving ICT maturity of Vietnamese SME toward a knowledge-oriented enterprise.

Problem (c) can be solved by applying a business process modeling system (BPMS), e.g. ADONIS (Hall & Harmon, 2005) or BPMN (OMG, 2010), which is useful in monitoring and analyzing the business process. This tool is also very important in standardizing the business process, and aligning business strategy and KM strategy of Vietnamese SMEs. Besides, SNS will be used as a

platform for KMS implementation because it helps ensure the success of a KMS and increase employee satisfaction.

Problem (d) can be solved by using SNS as a key for structuring knowledge and organization. From previous section, SNS is proven to be a useful means for visualizing knowledge structure, re-organizing organization structure for KMS, and contributing to a better KM strategy. Using SNS as a base for the integrated KM framework also helps solve previous problems of KMS implementation in Vietnamese SMEs.

As a result, to be used in practice, above KM framework should be revised according to above lessons. In summary, an integrated framework for implementing a KMS based on SNS in Vietnamese SMEs must have the following characteristics:

> Framework must be arranged in time order (initial phase, analysis and design, implementing, operating).

> Including a preparation phase (initial phase), which measuring the ICT maturity of Vietnamese SMEs (Pham, 2010).

> A BPMS should be used as a tool for analyzing and standardizing business processes (Pham & Hara, 2011).

> Based on SNS, knowledge structure should be a combination of tacit knowledge, explicit knowledge and knowledge flow (4.1).

> Based on SNS, a new kind of organization structure including business layer, project layer, and social network layer is recommended (4.2).

> A Combination KM strategy, which balancing tacit and explicit knowledge based on SNS, is recommended (Pham & Hara, 2009).

Based on previous framework and above characteristics, an integrated framework for KMS based on SNS is created. This framework can solve above problems of KMS implementation in Vietnamese SMEs and ensure the success of KMS implementation in Vietnamese SMEs. This integrated KM framework is applicable for all Vietnamese enterprises, but it is more suitable for Vietnamese SMEs because of its characteristics derived from previous lessons of Vietnamese SMEs. The integrated framework for KMS based on SNS can be illustrated in the following table.

Table 3: The Integrated Framework For Implementing KMS Based On SNS

Step	Phase	Sub-phase	Description
Initial	Preparation	Assign KMS leader Measure the ICT maturity Plan for implementing KMS	KMS leader or CKO will establish KMS team and is responsible for all following phases of KMS project. Analyze strong and weak points about current ICT infrastructure, application, HR and ICT policy. Make a roadmap for improving ICT maturity in according with KMS implementation.
Analysis & Design	Strategy	Clarify organization strategy Define KM strategy	Understand firm's goals and CEO' vision; Get support from CEO; Align firm's goals and KM goal. Combination strategy is recommended.
	Structure	Organize organization	Apply hypertext organization, which including 3 layers: business, project, and social network layer.

		Organize knowledge	Three kinds of knowledge are: tacit knowledge, explicit knowledge, and knowledge flow.
	Culture	Share needs & value of KM Create KM culture	Involve whole KMS users; Encourage knowledge sharing by policies & award system. Train employee computer skills, self-learning skill, and networking skills for sharing knowledge.
	Process	Analyze work process Define knowledge activities	Use BPMS to monitor and balance work load on teams or people; Adopt bottom-up approach. Customize and synchronize knowledge activities with work processes
Implementing	System (KMS)	Define range of KMS Customize KMS Implement KMS physically	Build activity based KMS using SNS as a platform. Support both knowledge activities and work processes Set up the KMS; Test the system in each department; Deploy KMS in the whole enterprise.
Operating	Adjustment	Monitor KMS Evaluate KMS Refine KMS	Monitor physical usage and recognition of users Update criteria of ICT maturity for evaluating KMS Recurrent update KMS according to new demands, evaluation results and new technology features.

6.   Prototyped KMS Based On SNS

In order to illustrate above solution of KMS based on SNS in Vietnamese SME, a prototyped KMS based on SNS will be implemented for a Vietnamese SME, which is BR&T Ltd. Company. BR&T Ltd. Company is established in 2003 in Ho Chi Minh City (HCMC) of Vietnam with about 50 employees. The main business of BR&T includes (1) organizing training courses in business management, and (2) providing business consulting service for Vietnamese enterprises. Realizing the important role of KMS in sharing knowledge, BR&T decided to build up a KMS in 2006. However, the project ended in failure (see appendix 4 for more information). The main purpose of BR&T in building a KMS is to manage its knowledge in various consulting projects and to improve the effectiveness of consulting activities by sharing case-based knowledge.

6.1.   System Requirements for 2011

Based on documents of BR&T about its old KMS project and the integrated framework of KMS based on SNS, the core requirements in function and non-function are made as follows:

Table 4: BR&T's Requirements Of A KMS Based On SNS

Functional requirements	Non-functional requirements
Storing information about experts and their experiences.	Convenient for learning and using.
Building a knowledge base of solved problems for reusing.	Adaptable, friendly and good looking user interface.
Communicating and collaborating tools for problem solving.	Support rich content information, such as: audio, video, map...
Knowledge sharing tools between consultants.	

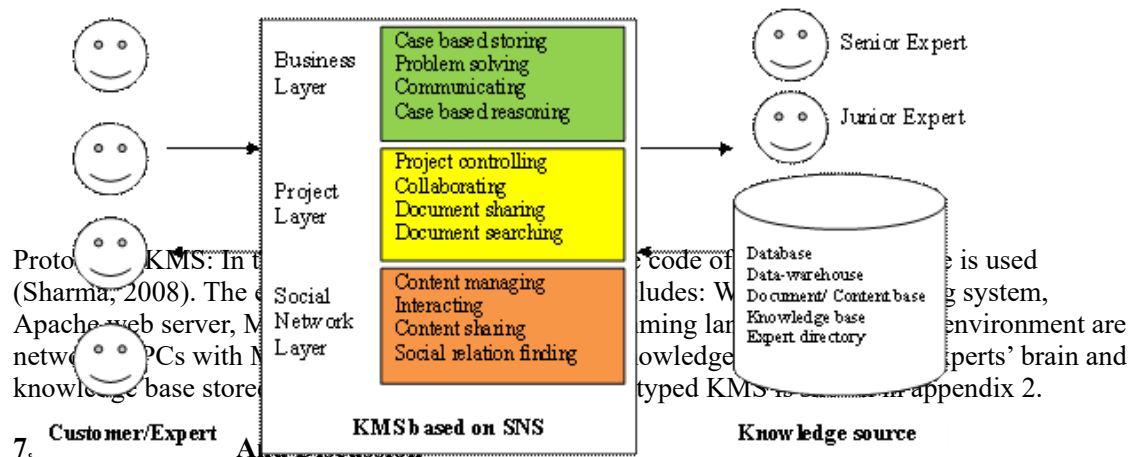|	Knowledge base can be accessed from anywhere and anytime.
Search function for finding expert, information and knowledge.	
Tools for managing experts, problems, and related information.	
Administrator tools for monitoring users and protecting security.	

6.2. System Analysis And Design

Main business processes of KMS based on SNS are summarized as follows:

Table 5: Main Business Processes Of KMS Based On SNS

Customer	CKO/ Manager	Junior Expert	Senior expert	Partner
Search for a problem in public case base		Search for a problem in case base	Search for a problem in case base	Search for a problem in public case base
Search for an expert in public expert directory		Search for an expert in expert directory	Search for an expert in expert directory	Search for an expert in public expert directory
Request consultant service and pay for this service.	Set up an agreement. Assign expert for solving a new case			Sign agreement for problem solving
Join the project for problem solving with some experts	Connecting experts and customers by: phone, chat, e-mail, notice board...	Join the project for solving problem with senior expert	Manage a project for solving problem in a period of time	Join the project for solving problem in case of being invited
Providing more information, feedback…	Payment for outside consultant based on agreement.	Collaborate with group members for solving problem	Control project progress for solving problem for a case.	Collaborate with group members for solving problem
Send feedback information	Package a finished case into case base. Rank experts/ cases.	Update profile	Give mark for other members Update profile	Update profile
Share experience with others in SNS	Post information in notice board. Update Q&A base.	Share experience with others in SNS	Share experience with others in SNS	Share experience with others in SNS

Architecture of KMS based on SNS : The architecture of demo KMS includes 3 layers (business, project, social network layer) and is illustrated in following figure.

Proto... KMS: In t... code of... is used (Sharma, 2008). The ...ludes: W... g system, Apache web server, M... ming lan... environment are netw... PCs with N... owledge... perts' brain and knowledge base stored... typed KMS... appendix 2.

7. ... A... Discussion

By testing the demo KMS in BR&T and getting feedbacks from their employees as well as discussing about this framework with several Vietnamese managers, who are going to implementing a KMS, some advantages and disadvantages of the framework and the demo KMS based on SNS are summarized in the following table.

Table 6: Advantages And Disadvantages Of Integrated Framework And Demo KMS

	Advantages	Disadvantages
About integrated framework	- It helps them to have a clear image about KMS and the implementation process. - This framework can be used in initial meeting for getting support for KMS project. - Through this framework, they know about useful tools for KMS implementing, such as: BPMS and SNS. - Social characteristics of a KMS based on SNS will create knowledge sharing culture and attract younger employees in using and sharing knowledge.	- Ideas about organization structure based on SNS can hardly be implemented. - Some concepts in the framework need to be explained more to be applied in practice. - Role of CKO and KMS project members are not clearly specified in this framework. - Step 'Analysis and Design' includes many parallel phases, which makes it difficult for KMS project controlling.
About demo KMS	- Open architecture of SNS, which allows new features to be integrated, is helpful for them in developing a KMS gradually. - The demo KMS can be built in a short time with open source code. - Prototyped system based on SNS seems to be easy to learn and use for them.	- Prototyped KMS just illustrates knowledge creating and sharing in BR&T rather than in general cases. - The initial knowledge base must be set up in advance for attracting users. - Knowledge policies and reward system must be applied during the deployment.

Through the demo KMS, one of the most important advantages of KMS based on SNS is realized that knowledge flow (relational capital) can be managed and derived. All relations of an employee will be visualized and can be searched through friend network, which is considered a part of that employee's department capital. So that, when someone quits his/ her job, new one who takes that job can set up new relations based on those relationships quickly. On the other hand, SNS also helps sharing knowledge between employees of different departments and different projects directly (tacit knowledge) and indirectly (explicit knowledge).

Furthermore, using SNS for KMS, emotion of employees can be visualized through their activities, comments and friend networks. This factor is very important in monitoring and controlling employee satisfaction, which mutually affects KM and determines the labor productivity of knowledge work (Pham & Hara, 2011).

In practice, to measure the successfulness of KMS based on SNS, following critical success factors must be frequently evaluated and carefully considered by CKO/ KMS project leaders:

System:

➢ Improve technology capability (techno-ware, ICT-ware).

➢ Improve internal communication.

➢ Make business operations more effective.

➢ Access to knowledge resources quickly and easily.

Organization:

➢ Support from top leader for KMS project.

➢ Facilitate knowledge sharing culture through business processes.

➢ Alignment of organizational strategy and KM strategy.

People:

➢ Improve employees' creativity and learning capability.

➢ Improve collaboration and effectiveness of group work.

➢ Improve employee satisfaction.

➢ Improve labor productivity.

Although most problems of KMS implementation in Vietnamese SMEs can be solved with this integrated framework, some problems relating to KMS operating stage cannot be solved completely as follows:

➢ Unwilling to share knowledge due to the worry of power losing.

➢ Hard to measure the value of knowledge and the contribution of expert.

Above problems can be solved by a combination of technical and managerial solution. Several directions for solving above problems are: (1) encouraging knowledge creating and sharing through regulation, award, or incentive, (2) measuring value of knowledge based on peer review system, or frequency of assessing, (3) measuring contribution of expert based on experience, number of solved problems, and role in problem solving. Besides, according to Nakajima et al. (2006), based on analyzing blog thread, important bloggers can be identified by topics or comments. The similar method can be applied for measuring the value of knowledge and the contribution of experts.

Although SNS can be an ideal technology for KMS implementation, below disadvantages must also be considered in applying SNS in practice:

➢ Useless content shared through SNS will prevent the productive output.

➢ Some possible problems in security and intellectual property protection.

➢ Adding new features to SNS can cause difficulties for users.

➢ Compulsory SNS in company will probably take the fun factor away.

Above disadvantages cannot be solved completely, but they can be dealt with by the following directions:

➢ Making rules about information accessing and knowledge sharing;

➢ Allow users to control their privacy or to decide their knowledge sharing level;

➢ Organizing training courses for users whenever new functions are installed;

➢ Encouraging employees to use the KMS based on SNS rather than forcing.

8. Conclusion And Future Works

In general, based on previous lessons and case studies, this paper proposes an integrated framework for implementing KMS based on SNS in Vietnamese SMEs. Using this integrated framework, Vietnamese SMEs can make them ready for KM solution and overcome difficulties in implementing a KMS. The proposed integrated framework includes various ordered steps (initial phase, analysis and design, implementing, operating) and can be used as a guideline for conducting a KMS project in Vietnamese SMEs in practice.

Through this integrated framework, practical method in applying KM based on SNS in Vietnamese SMEs for improving their competitiveness is established. Following its instruction, Vietnamese SMEs can know what to do and how to turn themselves into knowledge-oriented enterprises in the future. It helps them actively compete with other competitors based on their knowledge strength and plan for future development in the knowledge society.

Besides, in this integrated framework, SNS is introduced not only as a suitable technology for KMS, but also as an important element in designing knowledge structure, organization structure for KMS, and KM strategy. Based on this framework, a demo KMS based on SNS is also implemented for a Vietnamese SME, which shows that the integrated framework for KMS based on SNS is feasible.

However, there are still some limitations of applying this integrated framework in practice. For example, requiring a suitable corporate culture, which is not easy to establish; applying a compulsory SNS does not attract employees' participation; conflicting between protecting private intellectual property and encouraging public knowledge contribution; and ensuring the security of organizational information.

Some implications for future works are summarized as follows:

➢ Measuring the value of knowledge and contribution of expert for a better assessment system;

➢ Applying this integrated framework for implementing KMS based on SNS in several Vietnamese SMEs for testing and evaluating the solution in practice;

➢ Expanding the scope of this integrated framework for applicable in those SMEs of both developing and developed countries.

9. Acknowledgments

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10.   References

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Appendix 1 – Cases Study Of Vietnamese Smes

Case	Description	Lesson learnt
Case 1: BR&T Consultancy Ltd. Company	BR&T Ltd. Company is established in 2003 in Ho Chi Minh City (HCMC) of Vietnam with about 50 employees. The main business of BR&T includes (1) organizing training courses in business management, and (2) consulting for Vietnamese enterprises in doing business. Realizing the important role of KMS in sharing knowledge, BR&T decided to build up a KMS in 2006. The main purpose was to manage its knowledge in various consulting projects and to improve the effectiveness of training and consulting by sharing knowledge. KMS implementation was planned	The failure of this project is due to: (1) lack of a preparation for KMS implementation; (2) KM strategy & knowledge structure are not clearly specified; (3) difference in knowing

	to be conducted in 1 year (7/2006 – 7/2007). At first, a KMS team was established from IT staff and the director directly managed this project. In a few months later, the project was conducted normally as any IT project. But then, some problems appeared during implementing process:(1) system requirements must be changed vastly because of its not clearly statement; (2) some team members could not continue their jobs in this project; (3) prototyped system was very different from the original idea of leader. The project was not completed on time and finally, it was cancelled because of some changes in director board and the lack of resources for it to continue.	of KMS between project members; (4) high expectation from a KMS of leader; (5) lack of resources; and (6) loss of long term support from top manager.
Case 2: Huflit Foreign Language Center	Huflit Center is established in 1997 in HCMC of Vietnam with about 40 employees. The main business of Huflit Center includes (1) teaching, training students in foreign languages, such as: English, French…, and (2) organizing examinations for national certification in foreign languages. In order to create an environment for knowledge sharing between teachers and students, as well as to manage its knowledge in form of question and answer (from store of lectures and tests), Huflit Center decided to buy and customize a KMS. This system included a web-based forum for teachers to interact with students and with each other and an application for creating new examinations from knowledge-base. This system was customized and deployed in 6 months (1/2006-7/2006), but when running in practice, it was ended in failure. Some main problems are: (1) teachers were not familiar with using computer and lack of culture for sharing knowledge, (2) interaction between teacher and student through this system was very weak, (3) dissatisfaction with some functions of system, such as search function, and (4) KMS strategy and business strategy are unaligned.	The main reason for failure must be in the lack of a preparation for implementing and deploying KMS. Moreover, focusing much on technology rather than organizational aspects is not a good approach for a KMS. In fact, a suitable culture for communicating and knowledge sharing is more important in this case.
Case 3: Department of Science - Technology (DST) of Lam Dong Province	Department of Science-Technology of Lam Dong Province is a branch of Ministry of Science-Technology of Vietnam. One of its purposes is to encourage enterprises in Lam Dong province to innovate and to apply modern management methods and technologies in doing business. In 2007, it had a project to create a virtual network of experts in agriculture and forestry field to help those SMEs in Lam Dong province (mostly in above fields) to solve their problems and to improve their competitiveness. In getting this goal, it tried to build a KMS for storing an expert directory and facilitating communication between real experts and local SMEs through this network for solving problems. Solved problems will be stored in Q&A knowledge-base for searching and reusing. The project finished on time in 2008, but 1 year later, it was considered a failure. Some main problems are: (1) Number of SMEs used this system in practice was very low even after training courses, (2) Most of experts were from HCMC and didn't actively use this system to answer the question online, (3) Hard to measure the value of knowledge and contribution of expert, (4) The case based knowledge was so poor compared with too high expectation from it.	SMEs are too busy with their daily activities to learn a complicated KMS. Technology for this KMS is not suitable and unable to attract the participation of both SMEs and experts in problem solving. In fact, knowledge base of this KMS was so poor and experts were not available to help SMEs.

APPENDIX 2 – INTERFACE OF KMS BASED ON SNS

Dashboard of demo (http://localhost/elgg/) - After logging in, users can see the Dashboard, where most of useful tools are shown. Dashboard is divided into 3 groups of functions (Business layer, Project layer, Social Network layer). All tools can also be called from menu Tools. Profile page (picture at the left corner) allows users to update their own profile (personal information, hobbies, skills…), their knowledge (ideas, writings, messages, videos…) and their friendship (friends, groups, activities…). Those things can be shared with their friends by changing privacy setting to public/ limited mode. Mail and Chat function allow users to communicate with each others in this system. Besides, users can configure their environment display, notification method or privacy policy to their contents by using menu Settings. Menu Administration is shown only for admin/ CKO to monitor, configure and make change to functions, users, policies and displays for the whole system. Search box is used for searching in knowledge base based on tag system (expert directory, case base, and knowledge flow).
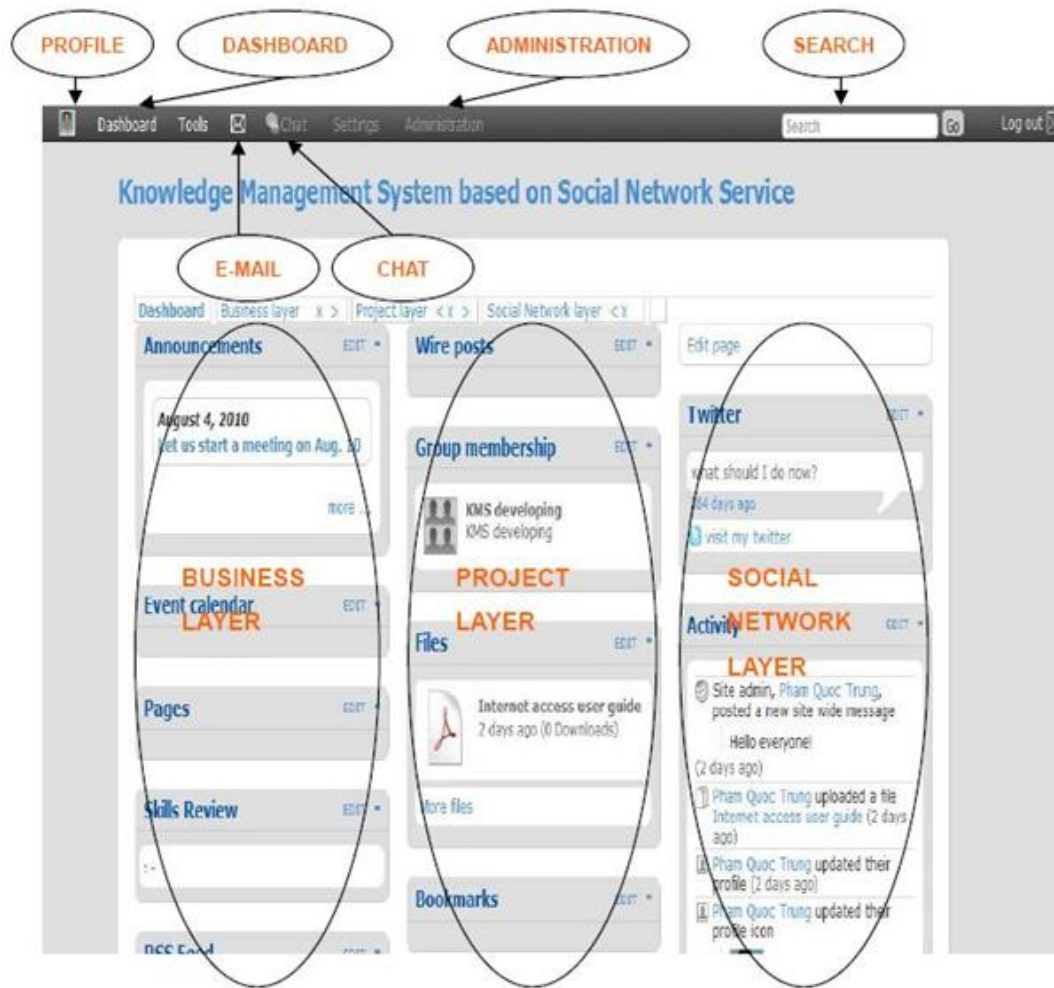
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