JABM
JOURNAL of
ACCOUNTING - BUSINESS & MANAGEMENT

Web 2.0 for Knowledge Management in Organizations and Their Effects on Tacit Knowledge Sharing and Perceived Learning

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Abstract

Web 2.0 is a set of Internet-based applications that harness network effects by facilitating collaborative and participative computing. In this research we study the relationship between the use of Web 2.0 in KM and its effect on the tacit knowledge sharing and perceived learning. We also study the effects of KM context variables on these relationships. Our findings shows that use of Web 2.0 for KM can positively affect tacit knowledge sharing and perceived learning.

Keywords: Web 2.0, knowledge management, case study, individual, tacit knowledge, perceived learning.

I. INTRODUCTION

Knowledge management (KM) is the process through which organizations generate value from their intellectual and knowledge-based assets (Levinson, 2006). Currently, organizations utilize Internet-based technologies as KM tools to manage organizational knowledge. A new generation of Internet-based collaborative tools, commonly known as Web 2.0, has increased in popularity, availability and power in the last few years (Kane & Fichman, 2009).

Web 2.0 is a set of Internet-based applications that harness network effects by facilitating collaborative and participative computing (O'Reilly, 2006). Web 2.0 has the potential to deliver rich peer-to-peer interactions among users, enable collaborative value creation across business partners and create dynamic new services and business models (Ganesh & Padmanabhuni, 2007). Web 2.0 technologies include wiki, blog, RSS, aggregation, mash ups, audio blogging and podcasting, tagging and social bookmarking, multimedia sharing, and social networking. Rich user experience is a critical aspect of Web 2.0 and plays an important role in encouraging collaborative information exchange. Web 2.0 attracts a large number of participants by enabling rich interactions between them. These interactions have significant impact on customer-driven innovation, maintaining market orientation, addressing customer concerns and development of the product-service mix (Eccleston & Griseri, 2008). Web 2.0 technologies, through rich peer to peer user interactions to support collaborative value creation, combine the best elements of traditional KM such as suitability for business environment and avoid many of disadvantages like limited opportunities for simultaneous collaboration (Wagner & Majchrzak, 2006).

Traditional KM tools, such as expert systems, essentially capture the explicit knowledge of a single expert or source of expertise in order to automatically provide conclusions or classifications within a narrow problem domain. This is in stark contrast to the Web 2.0 KM paradigm (Lee & Lan, 2007) which enables knowledge communities to share knowledge of a more practical or experiential nature to enable individuals and groups to arrive at their own conclusions (Richards, 2009). To capture tacit knowledge an effective

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way is to enable knowledge creation through conversation (Von Krogh, 2000). Web 2.0 technology like wiki facilitates such required conversational KM through social interactions (Wagner, 2006). For example, through wiki multiple people with different expertise and different roles can interact "socially" and work towards a common goal (Mindel & Verma, 2006). Hence, Web 2.0 has great potential to solve one of the great challenges of KM-capturing tacit knowledge and converting it into explicit knowledge (Wagner, 2006). Conceptually, Web 2.0, with its ability to combine traditional KM tools' features with social computing where knowledge is evolved through social interactions (Parameswaran & Whinston, 2007), has been identified as an effective KM paradigm (Mindel & Verma, 2006; Fitch, 2007).With such capability Web 2.0 technology has the potential to address many of the challenges for KM of the organizations (Wagner, 2006; Minocha & Thomas, 2007).

Realizing this potential for effective KM, a few leading IT organizations have adopted Web 2.0 for KM at individual level. We conceptualize an individual in an organization as a person who works in that organization. Based on this delineation, we describe individual-level, Web 2.0-based KM as KM activities that rely on Web 2.0 to reach and support the individuals in an organization; these individuals do not necessarily belong to any particular group and/or project. Such individual-level KM can be initiated by the upper management of an organization for all the individuals working in that organization, regardless of group or project. For example, if the upper management of an organization creates a wiki to help individuals working in that organization learn a new technology or work process, then, according to our conceptualization, the organization has adopted a KM initiative that are categorized as an individual-level KM. Web 2.0-based KM also includes Web 2.0-based KM activities, initiated by any individual within an organization, for others working in that organization, regardless of being part of any particular group or project. For example, if an individual working in an organization creates and maintains blog(s) to share his knowledge with everyone working in that organization, according to our conceptualization, this KM initiative is categorized as an individual-level KM. In the existing literature, there is no clear understanding of the effect of using Web 2.0 for KM at individual level in organizations. Hence, in the beginning phase of our study we want to understand the uses of Web 2.0 for KM at individual level in organizations. Essentially, our research is guided by the following research question:

What are the effects of using Web 2.0 for knowledge management at individual level on tacit knowledge sharing and perceived learning?

In the second phase of our research, based on the existing literature on KM and our findings in the exploratory stage of the study, we propose a set of propositions. These propositions signify the relationship between the use of Web 2.0 in KM and its effect on the tacit knowledge sharing and perceived learning.

In last phase of this research, we adopt a qualitative positivist case study based interpretive research approach to confirm the relationships between the use of Web 2.0 technology and KM, and its effectiveness. Our approach essentially helps us to examine the proposed relationships as well as identify noteworthy interesting aspects pertinent to the propositions through interpretation of the qualitative data. To ensure the rigor of this phase pf our research, we adopt the guidelines suggested by Dube and Pare (2003) and Shanks (2003).

II. EXPLORATORY CASE STUDY AND PROPOSITIONS DEVELOPMENT

2.1. Role of Individual-Level Context Variables

Grover and Davenport (2001) conceptualize the KM context as surrounding an environment consisting of technology, culture, structure and strategy, in which KM activities are embedded. It is important to understand the context of KM since its activities are essentially influenced by context.

To understand the surrounding KM environment and its effect on the individual, Kulkarni et al. (2006) studied supervisor and coworker support for KM, as well as their incentive for participating in it. Incentive refers to the formal appraisal and recognition of efforts by knowledge workers for furthering knowledge sharing and reuse (Kulkarni et al., 2006). Through empirical study, Kulkarni et al. (2006) found that incentive can positively affect individuals' participation in KM activities.

Kankanhalli et al. (2005) and Bock et al. (2005) also found that extrinsic rewards such as increased pay, bonuses, job security, or career advancement can positively affect individuals' KM participation.

Along with extrinsic motivators such as incentive, Kulkarni et al. (2006) found that supervisor and coworker support positively affect an individual's KM participation. Kulkarni et al. (2006) conceptualized supervisor and coworker support as attitudes toward knowledge sharing and use within an employee's work team, which consisted of coworkers and immediate supervisors.

In our exploratory study, we found that only organization A has a formal reward mechanism in place for participating in KM activities. While organizations B and C have no such formal reward mechanism, active participation in KM activities by individuals is recognized by the management in a rather informal fashion. Such recognition helps individuals to advance their career within their organizations.

There are different Web 2.0-based KM activities that are not mandatory. Web 2.0-based KM has room for many voluntary activities such as maintaining one's own blog or contributing to a wiki page. Hence, based on the findings of Kulkarni et al. (2006), we infer that different incentives, as well as supervisor and coworker support, will positively affect individuals' participation in Web 2.0-based KM activities, and that this will, in turn, positively affect individual-level outcomes. We want to examine the effects of these context variables. Hence, we add these context variables to the subsequent propositions as factors that positively affect the relationship between uses of Web 2.0 for KM, and different individual-level outcome variables.

2.2. Web 2.0 for KM and Tacit Knowledge Sharing

Tacit knowledge is deeply rooted in each individual's actions and experiences, as well as in his/her ideals, values, and emotions. Hence, it is difficult to formalize, communicate, or share (DeSouza, 2003). Sharing knowledge means both contributing to and using available knowledge (Kulkarni et al., 2006). Because of the subjective and intuitive nature of tacit knowledge, such sharing is very difficult to achieve through any systematic process (DeSouza, 2003). While tacit knowledge exchange among workers could be enhanced through the use of information technology, overall it requires a more "people-centric" approach by means of which individuals can have more "dialogue" between them instead of merely distributing and receiving information (DeSouza, 2003). Nonaka and Takeuchi (1995) also emphasize the process of socialization for sharing experiences and exchanging tacit knowledge, and DeSouza (2003) has shown empirically that informal dialogues can increase tacit knowledge sharing. Such dialogue can be encouraged through deliberate,

planned interactions (DeSouza, 2003). We believe that Web 2.0 for KM can facilitate the required dialogue, socialization, and informal interactions for the following reasons:

First, Wagner (2006) has shown empirically that wiki can be used effectively for conversation-based KM, by means of which individuals create and share knowledge through question-and-answer dialogue. However, Wagner (2006) has not specifically investigated whether wiki can positively affect tacit knowledge sharing.

Second, facebook-like web 2.0-based social networking platforms are designed and set up to facilitate the informal interactions and dialogues between individuals in relatively informal environments (Poynter, 2008). In our exploratory case study, we found that organization B is using facebook-like social networking platforms quite extensively in order to facilitate informal socialization between individuals working within their organization. In fact, organization B has created its own social networking platform. Upper management of organization B encourages all employees to actively participate in this social networking platform . Organization A is also working on creating its own social networking platform. Interestingly, while an existing literature blog has not been identified as a tool for informal socialization and knowledge sharing, we found that in all three organizations, blogs are in use to facilitate rather informal interactions between different individuals within the organizations. In such instances, not only the owner of the blog provides his insights on a topic, it also simultaneously facilitates an informal "dialogue" between the owner and the readers through questions and answers, which are required for effective tacit knowledge sharing.

Therefore, we assert that web 2.0 for KM can provide the required informal conversational knowledge-sharing environment for effective tacit knowledge sharing and posit that:

P_1: use of Web 2.0 technology for KM in an organization positively affects tacit knowledge sharing between individuals working in that organization.

P_{1a}: incentive for participating in KM activities positively affects the relationship between use of Web 2.0 technology for KM in an organization and tacit knowledge sharing between individuals working in that organization.

P_{1b}: supervisor's and co-workers' support for participating in KM activities positively affects the relationship between the use of Web 2.0 technology for KM in an organization and tacit knowledge sharing between individuals working in that organization.

2.3. Web 2.0 for KM and Perceived Learning

Alavi et al. (2002) define perceived learning as changes in a learner's perceptions of skill and knowledge levels before and after the learning experience. Ausubel (1968) suggests that structuring the sub-process of learning can be enhanced through advance organizer, which provides additional information such as explanations, principles, background, and supplementary material, as well as the support to properly structure that information, which is form, flow, presentation mode, sequence, and organization. Alavi et al. (2002) posit that such an "advance organizer" for KM should provide easy-to-use capabilities for sharing information in various forms, such as spreadsheets and multimedia documents, access to additional information through search and filtering features, and structured information exchange among group members through threaded discussions and workflow models.

By analyzing wikis, we can infer that standard wiki has the capability to provide all the required features to be considered an "advance organizer". Wiki can facilitate information sharing in various formats and provide a search engine to find required information. It also has a structured organization of knowledge, and incorporates threaded

discussions. In our exploratory case study, we found that all three organizations are using wiki quite extensively for KM at different levels. In fact, organizations B and C have developed their own "enhanced" wiki technology, which has more functionalities, such as a wider range of file format support, for knowledge sharing.

Alavi et al. (2002) posit that the use of such an "advance organizer" can facilitate an "advanced" environment for learning for individuals and, therefore, individuals' perceived learning will be higher. As Web 2.0 technology, especially basic wiki and its enhanced versions, provide the required functionalities of an "advance organizer" for KM, we posit that the use of Web 2.0 for KM in an organization will positively affect the perceived learning of the individuals working in that organization.

P_2: use of Web 2.0 technology for KM in an organization will positively affect perceived learning of the individuals working in that organization.

P_{2a}: incentive for participating in KM activities positively affects the relationship between use of web 2.0 technology for KM in an organization and perceived learning of the individuals working in that organization.

P_{2b}: supervisor's and co-workers' support for participating in KM activities positively affects the relationship between use of web 2.0 technology for KM in an organization and perceived learning of the individuals working in that organization.

III. METHODOLOGICAL GUIDELINES FOR THE POSITIVIST QUALITATIVE CASE STUDY

We deploy a qualitative positivist case-study approach to test the propositions. Our adoption of positivism is consistent with the views that are held by scholars in the fields of organizational studies (Eisenhardt, 1989; Lee, 1991), and information systems (Lee, 1989; Orlikowski & Baroudi, 1991; Sarkar & Lee, 2002, 2003), and follows a similar path. "Hypothetico-deductive logic" is central to the world of positivist research today (Lee, 1999), which essentially is a synthesis of three traditions: empiricist, rationalist, and critical rationalist (Sarker & Lee, 2000, 2002). There is an empiricist influence in our positivist approach that is reflected in the rigor of our research process, drawing mainly on Yin (1994). The rationalist and the critical-rationalist traditions are reflected in the use of pattern matching to deductively test falsifiable statements derived from the literature (Sarker & Lee, 2000, 2002).

In our qualitative case study, we interviewed three individuals from each organization. We include individuals who have been working in their respective organization long enough; that is, since the pre-web 2.0-based knowledge management (KM) era, to observe and understand the effects of traditional KM, as well as web 2.0-based KM. We included individuals from top management as well as individuals who are not part of the top management in order to create a holistic picture of web 2.0-based KM effects.

As the last phase of this research is principally positivist in nature, using clearly define methodological guidelines we satisfy the four criteria of rigor (Shanks, 2002): construct validity, internal validity, external validity, and reliability (Lee, 1989; Yin, 1994). In the following section we describe how we address the requirements of the positivist case-study method

3.1. Proposition Testing

3.1.1. Use of Web 2.0 for KM and Tacit Knowledge Sharing

We found support for the proposition that the use of web 2.0 technology for KM in an organization can positively affect tacit knowledge sharing between individuals working in

that organization. The interviewees were unanimous that the use of web 2.0 for individual-level KM increased tacit knowledge sharing between employees of the organization.

While interviewees thought that use of web 2.0 at the individual level increased knowledge sharing, they found it difficult to identify specific observations of tacit knowledge sharing. Nevertheless, the interviewees did mention instances of knowledge sharing, which essentially highlighted tacit knowledge sharing. We found that tacit knowledge sharing through web 2.0 based tools is particularly prevalent in troubleshooting. Individuals learn knowledge from experiences of solving clients' complaints and such knowledge can be categorized as tacit knowledge. We found that this type of tacit knowledge is shared through web 2.0 based KM tools and this knowledge helps other individuals to address and troubleshoot problems faced by their clients. For example, an interviewee from organization C describes how:

> … our group needed a fast solution for that client. But, our group was struggling. We posted our problem description in the central wikiC to see if anyone in our organization had solved a similar problem before. In no time, someone actually suggested a solution based on his experience of working on a similar project and we solved our client's problem.

An interviewee from organization B shared a similar incident of tacit knowledge sharing from contributor's perspective,

> A new tool called "driver" came in. I had my own knowledge about that tool. So I contributed to the wiki to how to use "driver" to make others life easier. These wikis are open-ended. So when you contribute to these wikis, anybody can see it.

We also found that employees share tacit knowledge to solve internal technical problems. For example, one such example was found in organization C's support for Mac computers and the Mac platform. Officially, organization C does not endorse Mac computers and platform for individual use, so if an employee decides to use Mac officially s/he does not get service from Mac sellers. Still, many employees in organization C use Macs for different official works. So they developed a wiki-based community to share solutions to different problems associated with Macs. A few expert Mac users initiated this community and eventually other employees started to participate. As described by an interviewee from organization C,

> Our organization is going to pay for a Mac if you decide to have one. But they tell you that there is not going to be any further service. At first I was a little hesitant but at the same time I wanted to use a Mac. So, I went for it couple of years back and came to know about this community. Since then I have been religiously following this wikiC-based community for Mac users. It was initiated by a few expert Mac users. Now all the Mac users not only get help from it, they share their own experience of troubleshooting in Mac to help others. I have also shared my experience there. Over time it has become so effective that it has become an unofficially "official" support center for Macs in our organization.

Such examples underline the success of web 2.0 based KM in facilitating tacit knowledge sharing among individuals in an organization.

Tacit knowledge is an important source of competitive advantage for organizations (Frappaolo & Wilson, 2003). However, defining tacit knowledge is a difficult task as tacit knowledge is deeply rooted in each individual's actions and experiences (DeSouza, 2003). One of the major challenges for KM is to convert tacit knowledge to explicit knowledge in a way that it can be passed along to others (Carroll et al., 2003) as tacit knowledge exchange

among workers requires a more "people-centric" approach "dialogue" between individuals instead of merely distributing and receiving information (DeSouza, 2003). Our results indicate use of web 2.0 at the individual level KM has a positive effect on the tacit knowledge sharing by creating an environment of informal interactive information sharing among individuals. This finding suggests that web 2.0 based KM at individual level can increase sharing of tacit knowledge among employees of an organization. Capturing tacit knowledge is a concern for the management and our findings has implications for management to identify the potential of web 2.0 in promoting tacit knowledge sharing between individuals.

Our results also indicate that it might take time for wiki-like web 2.0 technology to flourish and become effective in the facilitation of tacit knowledge sharing. We also found that an initiative from experts within an organization to share their expertise can eventually lead to more participation and tacit knowledge sharing by other individuals in that organization. For example, the Mac support group wiki was initially started by few experts, and then other individuals contributed knowledge to the wiki. Hence, to promote tacit knowledge sharing among employees, we suggest that management should take a more proactive le in setting up a web 2.0 based platform where individuals feel comfortable and motivated to share knowledge.

3.1.2. Use of Web 2.0 for KM, Tacit Knowledge Sharing and Context Variables

We found moderate support for the proposition that Incentive for participating in KM activities positively affects the relationship between the use of web 2.0 technology for KM at the individual level and tacit knowledge sharing between individuals working in that organization. Interviewees thought that incentive plays a positive role in tacit knowledge sharing between individuals in the web 2.0-based KM environment. However, interviewees also mentioned that the role of the incentive might not be noteworthy for all the individuals, as many individuals share tacit knowledge because they are excited about the subject matter.

In our study some interviewees thought that incentives, especially informal incentives such as recognition of contribution leading to better performance review, play a positive role in facilitating tacit as well explicit knowledge sharing between individuals in web 2.0-based KM. Incentives could be via very formal routes such as monetary, or via rather informal routes such as recognition, which can lead to better performance review. Incentives encourage individuals to share their earned knowledge. For example, an interviewee from organization B stated regarding his feeling towards incentive for sharing knowledge,

> Whenever your supervisor is doing performance reviews, one part is how much you have contributed to the wikiB. In there you can mention that you have started a wiki/blog and showed how to do some neat stuff with Java to make other people's life easier. Let me give you another example. We used to use Lotus note for email. One of the problems with Lotus note was that it used to crash sometimes and in order to make it work again we had to restart the system. It was kind of time consuming to restart the machine, load all the programs, and losing data. But, now one person came out with a solution, posted it on the wiki, that if you download this small program then Lotus note will not crash. Now this person will mention that this was his contribution to the wikiB which can help him to earn better review (i.e. annual performance review).

In addition, we found that while incentives have a positive effect for some people, there are individuals who share their earned knowledge just because they are passionate about the subject matter. For those people incentive isn't a significant motivating factor for sharing knowledge. As stated by an interviewee from top management in organization B,

> At one time we tried giving some cash amount for their contribution. But we found   that to be expensive. But even without the cash we found that some people are very passionate about their work and they provide their experience of working in projects just because they are passionate about your work.

Our results show that incentives do not always significantly affect tacit knowledge sharing of individuals. However, incentives, especially informal incentive such as recognition for contribution, can motivate some individuals to share tacit knowledge. This finding essentially informs the management that they should not rely solely on incentive mechanism to increase tacit knowledge sharing among individuals. Nevertheless, it is important that the management creates a culture of recognizing employees' knowledge sharing as an informal incentive mechanism.

Another context variable we studied is supervisor's and co-workers' support. We found support for the proposition that supervisor's and co-workers' support for participating in KM activities positively affects the relationship between use of web 2.0 technology for KM in an organization and individuals' tacit knowledge sharing. The interviewees thought that encouragement and recognition by supervisor motivates employees to share tacit knowledge.

In our study, we found that supervisors' and co-workers' support for participating in web 2.0-based KM activities can increase tacit knowledge sharing. In web 2.0 based KM, in many cases individuals' knowledge sharing, especially tacit knowledge sharing, happens due to the voluntary contribution of the employees. Hence, it encourages individuals when their co-workers and supervisors notice the contribution they have made through knowledge sharing on web 2.0 based KM. For example, an interviewee from organization C stated regarding his feeling towards incentive for sharing knowledge,

> It always feels good to be recognized and appreciated for your work. This is no different. And this (i.e. recognition) is something you look forward to.

Our results show that supervisors' and co-workers' support can play a positive role in tacit knowledge sharing by individuals. Our finding informs the management that the supervisors can increase tacit knowledge sharing in web 2.0 based KM through recognition and appreciation of the individuals who enthusiastically share knowledge. Hence, the supervisors have to take an active role in identifying and appreciating the individuals who actively participate and share knowledge in web 2.0 based KM to enhance the sharing further.

3.1.3. Use of Web 2.0 for KM and Perceived Learning

We found support for the proposition that the use of web 2.0 technology for individual level KM in an organization can positively affect the perceived learning of individuals in that organization. All the interviewees responded that the use of a web 2.0 KM has helped them in their learning.

Interviewees mentioned two major reasons for their positive response. First, interviewees thought that the use of web 2.0 for KM provided access to knowledge that was not previously available from internal sources before. For example, there are experts in their organization in different subject matters. However, in big organizations it was not always possible to identify these experts and seek help from them. web 2.0 technology, such as wikis and blogs, has provided a platform where a knowledgeable person can share h8.3

Future research is/her knowledge help others to solve problems. In some cases, these experts maintain their own blogs on their area of expertise. On these blogs, they provide materials that help others learn new things about the area. They also provide solutions to specific problem(s) other employees are facing through Q&As on blogs. In addition, these experts often provide their email address on their blogs so that an individual in their organization could directly contact them about a problem pertinent to their area of expertise.

Second, web 2.0 provides learning convenience. All interviewees were very enthusiastic about the ease of learning in a web 2.0-based KM environment. web 2.0 can reduce the typical training workshops that employees attend on a fixed date and time through podcasting and other multimedia approaches. Our interviewees mentioned that due to this web 2.0 based approach the number of formal training sessions reduced significantly in their organizations. Interviewees preferred this approach to training over the conventional face-to-face training workshops. For example, an interviewee from organization C described,

> I have missed many training sessions because I was out of town or had to reschedule other things to attend the meetings. Now all those hassles are gone. I can just watch the podcasts, download the power point slides, and all other related materials. Job done! Because of that the number of formal face-to-face training sessions in our organization has gone down significantly.

In a similar tone, when we asked about the reason(s) for preferring web 2.0-based training, an interviewee from organization B stated,

> We can do it at our own time and own pace. For example, if there is a formal training session and you cannot attend that due to some other meetings or so you would have missed that. Now from podcasting you can learn that on your own pace and ease and not worrying about other people.

Perceived learning can be defined as changes in a learner's perceptions of skill and knowledge levels before and after the learning experience (Alavi et al., 2002). Results of our case study point out the positive effect of web 2.0 based KM on individuals' perceived learning. We found that use of web 2.0 based KM at the individual level in an organization can increase the perceived learning of the employees.

3.1.4. Use of Web 2.0 for KM, Perceived Learning and Context Variables

We found support for the proposition that incentive for participating in KM activities positively affects the relationship between use of web 2.0 based technology for KM in an organization and perceived learning of the individuals working in that organization. The interviewees responded positively that in the web 2.0 based KM environment, incentives such as positive performance reviews could increase the perceived learning of the individuals.

In the studied organizations individuals are always encouraged to learn new tools and/or technology. We found that in organization B there are incentives for learning new things. This incentive usually comes in the form of a better performance review. An individual is awarded a better annual performance review for learning new things and this review in turn helps an individual to attain salary increase, promotion and/or internal hiring. In organization B, dependency on formal face to face training for learning new things has significantly decreased due to the web 2.0 based KM. In the web 2.0 based training, there is no fixed time and place for attending a training session and learning new things. Individuals have to take initiative themselves to devote time and energy to use the web 2.0 based materials to learn new things. Hence, incentives such as a better performance review become an effective motivating factor for the employees to learn new things.

Moreover, by learning new things using web 2.0 based materials when an individual earns better performance review that in turn positively affects an individual's perceived learning through establishing the importance of his learning. For example, an interviewee from organization B described,

> I use those (i.e. web 2.0 based training materials) to learn new things, and you get rated on how many tools u have learned each year … Moreover, everyone can see your profile on wikiB and facebookB. So anyone can see who is using it and how. It makes you look good.

Results of our case study pointed out the positive effect of web 2.0 based KM on individuals' perceived learning. The finding of this proposition testing suggests that the perceived learning could be enhanced further through providing incentive for web 2.0 based learning.

It is important for organizations to make sure that their employees learn new things to remain competitive (Vemić, 2007). We found that in the studied organizations web 2.0 based KM has been successful in training employees in newer tools and/or technology, and employees gained more perceived knowledge when their learning is valued through incentive. Our result informs an organization's management that if they are moving towards web 2.0 based trainings for their employees then they should have an incentive mechanism in place to augment the individuals' web 2.0 based learning.

Together with that, we found support for the proposition that supervisor's and co-workers' support for participating in KM activities positively affects the relationship between use of web 2.0 technology for KM in an organization and perceived learning of the individuals working in that organization. The interviewees responded positively that in the web 2.0 based KM environment supervisor's support for using web 2.0 based KM to learn new things could increase the perceived learning of the individuals.

The studied organizations are gradually relying more on the web 2.0 based training. As in the web 2.0 based training an individual has to take the initiative to use the web 2.0 based materials to learn new things, supervisor's support, encouragement and recognition play positive role in an individual's perceived learning. We found that a supervisor could effectively motivate an employee to learn new things through web 2.0 based KM. Moreover, recognition and appreciation from a supervisor for learning new things could positively affect the learning experience. For example, an interviewee from organization B stated,

> We have these 1to 1 meetings with our managers. So when something new comes out. Managers say guys check this out (using web 2.0 based learning materials). So we get a 10-day period of time to install and try those. …..…..
> ….. Managers appreciate when you learn those new tools and share your opinion.

Timothy et al. (2006) found that employees' learning through training becomes more effective when employees recognize that they would have some accountability for learning with their supervisors. Our finding confirms the same effect of a supervisor's support on employee learning when training is facilitated through web 2.0-based KM. Hence, our finding essentially informs the management that the supervisors should take initiative in encouraging employees to learn new things using web 2.0-based KM and that will make this relatively new method of training employees more successful.

IV. CONCLUSION

Web 2.0 has gained widespread popularity at the consumer level. However, it is still not well-understood how web 2.0 can be effectively used for KM by enterprises. Our research addresses one aspect of this gap in the literature by studying the effects of using web 2.0 for KM on tacit knowledge sharing and individual's perceived learning.

Employee training is very important for the organization to sustain competitive advantage (Vemić, 2007). Our results informs the management that individual level web 2.0 based KM is a more effective substitute for traditional face-to-face training sessions and can positively affect individual's perceived learning. We found that the studied organizations have successfully reduced the number of formal training sessions and increased the perceived learning of the employees through with the web 2.0 based trainings. Hence, we believe our result should persuade management to gradually rely more on the web 2.0 based KM for employee training to increase the perceived learning of individuals. Our result also shows that web 2.0 can be an effective KM tool to capture tacit knowledge which has always been a challenge for the organizations.

Together with this, our research also identifies the effects of KM context variables. This finding should help the organizations to create appropriate KM context where web 2.0 based KM could be more effective.

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