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Using “Yams” for Enterprise Knowledge Sharing among Knowledge Workers from the Perspective of a Task Categorisation-Knowledge Sharing Systems Fit

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Abstract. Emerging digital technologies play a key role in the development of enterprises. Their uses demand a transition on the part of knowledge workers, however. Web 2.0 is an emerging communication technology that supports collaborative knowledge sharing in corporate learning paradigms, changing tailor-made, expensive and high learning curve digital systems to simple but well-accepted ones [1, 2]. These platforms revolutionise how participants share, communicate and create knowledge in a corporate setting [3]. The use of Web 2.0 to support Knowledge Sharing (KS) has been extensively investigated [4, 5]. Studies that use a task-technology fit model on systems such as decision support [6] and eLearning [7] demonstrate that a good fit between tasks and digital technologies is able to improve performance of knowledge workers. This research reports the outcomes on the fit between task categorization and knowledge sharing systems. The task categories and Web 2.0 functions used in knowledge sharing practices were consistent. The outcomes highlighted that intuitive design, ease of use and a low learning curve were able to elicit both tacit and explicit organizational knowledge. Text analysis demonstrated that new knowledge was created, exchanged and shared. The study concluded that knowledge sharing activity and the fit between Web 2.0 functions and task categories were consistent and significant.

Keywords: Knowledge sharing, task categorization, knowledge sharing systems, text mining, Web 2.0.

1 Introduction

The use of social computing systems for knowledge creation and sharing has shown a sharp increase according to Alexa (alexa.com) in the last two decades. Many social computing platforms such as Facebook and Xanga have been used extensively for both personal and commercial reasons to publish leisure, lifestyle, technical and engineering related journals. Recent studies also show that Weblogs have been adopted for teaching and learning, knowledge creation and sharing, customer satisfaction and retention exercises by many companies worldwide. One of the most recent developments is the adoption of weblogs as the most preferred knowledge management system due to its ease-of-use and social phenomenon [3]. In the last five years, researchers have started to shift their focus from people-centred or

motivational-centred research to technological features-centre research work in their quest for a more manageable and measurable knowledge creation and sharing goal.

The discovery of hidden knowledge in social media systems such as Facebook and Twitter has become an important source of knowledge for companies and non-profit organizations. Research conducted in the last few years has shown that design of new products and launching of marketing campaigns were crafted and based on feedback and comments mined from unstructured data posted by customers. Understanding customers' needs and critiques before investing into commercial activities saves a large amount of money and the outcomes harvested from the investment are more encouraging. However, mining text information is not an easy task. Text data is ill-structured and hence proper tools are required. In addition, the amount of data produced by Web 2.0 systems are usually dynamic and this makes text mining a challenging task indeed. In this research, an enterprise microblogging system, Yammer, is chosen and implemented for a shared services company. An enterprise microblogging system runs behind the firewall. Compared to Twitter, which is a public microblogging system exposing the 'twitts' to their followers openly, an enterprise microblogging system requires that the participant belongs to a specific company domain. This research identified the usage pattern and communication topics from the posts by employees of a case study company.

The participating company in this research uses Yammer to contribute and share knowledge; topics of discussion among participants were mined and the tasks category-knowledge sharing system fit was studied. Based on the microblog entries, topics of discussion and communication behaviour were investigated too. The concept map that links between topics allows the researchers to draw a more accurate and interesting picture of knowledge contributed and shared among participants. Based on the analysis, the text mining tool also shows the fit between features of an enterprise microblogging system to different categories of task carried out by the participants when they communicate and share knowledge.

Even though most of these companies realize the need to be strategically competitive in a globalized commercial environment, tacit knowledge is one of the important assets to retain. However, many companies have even understood and adopted the process of conversion between tacit and explicit knowledge [8]. In view of the need to properly understand the challenges faced by these companies and the adoption of Web 2.0 platforms such as Weblogs, this research intends to investigate the features and functions of Web 2.0 used to carry out participants' tasks, while their posts provide evidence of enterprise knowledge sharing activity. These outcomes allow a better understanding of the fit between different categories of task and Web 2.0 functions toward the exchange activity of knowledge among participants. Alejandro *et al.* [9] pointed out that technologies are facilitators within collaborative learning spaces for learners. In addition, Kaiser *et al.* [4] also highlighted those technological features of weblogs such as blogrolls, permalinks and trackbacks which essentially are the keys promoters for successful knowledge creation and sharing by quoting the Open Source Software (OSS) case in his study. The research objectives of this project are: to explore whether collaboration and communication promote strong engagement; whether knowledge can be mined from posts; and whether Web 2.0 functions and task categories fit facilitates better than knowledge activities.

2 Web Technologies

Social computing systems such as Facebook and Twitter are new technology enablers for many young and technical savvy users. Since Coakes *et al.* [10] and Bausch *et al.* [11] coined the term ‘web’ and ‘log’ or ‘weblog’ in December 1997, weblog technology has evolved from a first generation which features first-person dairies. Second generation weblog technology features weblog community features such as “permalinks” with improved word processing features. Third generation weblogs would consists of Bulletin, commentary, individual profiles, Eprops, Permalink, Skins, Syndication, Blogring, Chatterbox and Archival elements. Comparisons between all these weblogs are shown in Table 1.

Table 1: Weblogs and their features

| Types of Weblog | Features and Usage |
|------------------------------|---|
| Bulletin | Disseminating messages |
| Commentary | Allowing members to add comment on weblogs |
| Individual Profiles | Allowing community members to read what the author has blogged about |
| Eprops | Is a way of letting the author know you like his/her post. Some websites offer unlimited Eprops |
| Permalink | Individual permanent URL to their weblog post |
| Skins | Readymade templates for users to change blog outlook |
| Syndications | Notification features where it prompts the readers about their favorites weblogs being updated |
| Metro/ Community/Blogring | A group of bloggers from the same geographical region or shared or similar interests |
| Chatterbox | Allowing real time interaction between bloggers and visitors |
| Private Blogs | Blogs which are only accessible to certain people |

3 Related Works

Related works on knowledge sharing, text mining, knowledge sharing on Web 2.0 sites and task-technology fit are reviewed and discussed.

3.1 Text mining

Zhong *et al.* [12] found that modern computational technology approaches such as the Natural Language Processing (NLP) technique are used to mine the meaning behind text documents so that they are easily understandable. This approach allows the text mining engine to discover relationships and patterns that exist in text files. Microsoft is one of the companies that use text mining to conduct their analysis for their online reporting application, NetScan. According to Mailvaganam [13], the NetScan

software uses a combination of reporting, Online Analytical Processing (OLAP) and Data Mining applications to analyze the posts from Usenet. Microsoft uses NetScan to analyze their Usenet posts, frequencies, e-mail addresses of posters, trend analysis, values of the messages posted and eventual creation of a better search engine for the company. NetScan analyzes the posts to obtain meaningful information. In order for NetScan to perform this, it uses text mining features to achieve its objective. This feature allows NetScan to classify and cluster the Usenet posts and generate a predictive model using a decision tree technique to evaluate the posts that are useful. Hence, it is apparent that text mining can be used to determine the usefulness of the content of a system with proper analysis.

3.2 Knowledge sharing

A range of studies have been carried out by researchers by considering people factors [14, 15, and 16] in the quest for more effective and successful knowledge creation and sharing in an organizational environment. However, recent research [8, 17, 18, 19, 20, 21, and 3] also find that social computing systems such as weblog have been very successful in improving knowledge creation and sharing among bloggers.

3.3 Task-technology fit

IP, Fun and Wagner [18] looked at social networking systems as a medium for young people and organizations, interviewing 33 young bloggers using a fit model to evaluate their needs and the technology features offered by weblogs. There is clear evidence which shows that social computing is shifting away from traditional technologies such as email. The latest social computing development such as Web 2.0 has shown progressive impact on organizational computing. Commercial organizations intend to take advantage of the bloggers' social computing skill to address their customers' as well as organizational information processing and knowledge management needs. The author suggested grouping the users into four categories based on their usage intensity. The author found that different groups of users would use a different set of weblog's features. The author used Task-Technology and Needs-Technology Fit models to explain the relationship between different groups of users and their needs using these two models. With this, the author attempted to relate to the organizational needs of users for knowledge creation and sharing. Other Task-Technology Fit studies reviewed include Zigurs *et al.* [16], Maruping *et al.* [22] and Goodhue *et al.* [23].

3.4 Knowledge sharing on Web 2.0 sites

Yang and Chen [3] found four contingency factors based on two cases: Microsoft Longhorn Blogosphere (Case A) and the European Research Institute (Case B), using weblogs as the social networking tool to study knowledge creation and sharing activities for organizations as a novel social and organizational phenomenon. The

authors also strongly believed that creation and sharing of knowledge in organizations is more of a social phenomenon rather than an individual and cognitive process. The four contingency factors are: process of implementation (CF1); the rule of membership (CF2); the type of work supported by ICT (CF3); and the distribution of knowledge (CF4). Figure 1 shows that considering intrinsic and extrinsic motivational stimuli with the two cases studied, information obtained can be used to explain the four contingency factors. The results in Figure 1 concluded that successful weblog implementation can be achieved in a corporate setting for the purpose of knowledge creation and sharing through a set of stimuli strategies with the application of the contingency factors in a technology-mediated environment.

Alejandro *et al.* [9] compared several information technological tools that offered the most efficient way of knowledge construction in the education world. Construction of knowledge through social interaction helps students to create and manage the new knowledge that is being delivered to them. His comparisons on several commonly used ICT tools in education covered: clickers, collaborative editing, Facebook, Google Jockeying, Instant Messaging, Social Bookmarking, Videoblogging, Virtual Meeting, Virtual Worlds and Wikis. He concluded and recommended that Virtual Meeting, virtual worlds and wikis were still the few best tools to be used in education.

Du and Wagner [8] also strongly agreed that learning with weblogs is able to enhance and create active learning among students. Students are able to perform better by uploading their coursework in public to be criticized by other students; hence this has improved student performance. Du and Wagner's [8] research also found that active learning is able to form knowledge sharing and collaboration group work among students. Their investigation on the effectiveness of weblog and its impact on the performance of different learner levels has concluded that a web based learning log can be a predictor of learning performance and this enhances a traditional learning log.

Other works reviewed also demonstrated that weblogs are a collaborative distributed tool which promotes constructivism learning among bloggers. Ras *et al.* [20] showed that using weblogs promotes knowledge sharing and learning in information spaces where journals are maintained through weblogs as an input for both an experience base and information element base learning from experiences. Hsu *et al.* [17] interviewed 212 bloggers in their work and based on the theory of reasoned action, the authors found that the model proposed by them had evidently shown factors such as ease of use, enjoyment, knowledge sharing (altruism and reputation) that were positively related to attitude toward blogging. Social factors and attitude toward blogging also significantly influenced a blogger's willingness to continue to blog.

| Motivational stimuli | Case A - MLB | Case B - ERI | Contingency factors and their characteristics in the respective Case | |
|----------------------|--------------|---|---|--|
| Intrinsic motivation | Enjoyment | - Implementation inspired by bloggers - High degree of novelty - Voluntary weblogging - Feelings of self-efficacy → Experiences of enjoyment | - Arranged implementation - Low degree of novelty - Vocational weblogging - No feelings of self-efficacy → No experiences of enjoyment | - Bottom-up (Case A) vs. top-down implementation (Case B): CF (1) - External (Case A) vs. internal weblog (Case B): CF (2) - Voluntary (Case A) vs. vocational work (Case B): CF (3) - Excellent (Case A) vs. marginal feasibility of codification of contents (Case B): CF (3) |
| | CoP | - Common goal: software development - Relationships emerge virtually → Existence of community spirit | - No common goal: diverse projects - No relationships emerge virtually → No existence of community spirit | - Shared goals (Case A) vs. individual interests (Case B): CF (3) - Online (Case A) vs. offline networking (Case B): CF (4) |
| Extrinsic motivation | Reputation | - Desire to stand out from the crowd - Voluntary weblogging → Establishment of reputation online | - Webloggers are already experts - Vocational weblogging → No establishment of reputation online | - Legitimation required (Case A) vs. established expert (Case B): CF (2) - Voluntary (Case A) vs. vocational work (Case B): CF (3) |
| | Reciprocity | - Altruistic generalized reciprocity - Active webloggers are likely to receive feedback in return → Dynamic reciprocal exchanges | - No altruism and prosocial behavior - Webloggers do not expect to get feedback in return for past help → No dynamic reciprocal exchanges | - Organizational support (Case A) vs. no organizational support (Case B): CF (1) - Shared goals (Case A) vs. individual interests (Case B): CF (3) |

| | | |
|---------------------|--|---|
| Contingency factors | CF (1) Process of implementation: | Motivational stimuli vary due to differing approaches on the implementation of weblogs associated with varying organizational support towards its usage in knowledge sharing and creation |
| | CF (2) Rule of membership: | The intended audience of weblogs influences motivational stimuli to a great extent |
| | CF (3) Type of work: | Characteristics of job design as well as work environment exert an influence on motivational stimuli |
| | CF (4) Distribution of knowledge: | Differences in media choice for collaboration and networking purposes entail motivational implications |

Fig. 2: Intrinsic and extrinsic motivational stimuli with the two cases

4 Research Methodology

The research reported here was conducted using two approaches: microblog entries were collected from a chosen group of employees who were involved in a project for a 30-day period in the case company; and text analysis was used to analyse the microblogs. This was followed by an interview session conducted with the participants of a chosen project on their tasks and Web 2.0 system's functions that they used as they exchanged and shared knowledge with their peers to carry out their project activities.

First of all, an active project that consists of members from all the departments that participated in the project was identified. This was followed by a briefing to set the objectives appropriately. Yammer was chosen to be implemented for a period of 30 days by all the members of a project team. Training and features of Yammer were also provided. All the entries and comments posted by participants were extracted into a Microsoft (MS) Excel file. The MS Excel file contained the raw post data. In this research project, the SAS Text Miner system was used to analyse the microblog entries so that unstructured text that consisted of the employees' opinions could be identified and analysed. By analysing these entries, the text mining software was able to identify topics of discussion, importance of these topics, related sub-topics and knowledge generated by participants from their discussions and problem-solving activities. The outcomes of the text mining allowed ease of knowledge retrieval from topics of importance and easy-to-understand topic linked maps visually highlighted knowledge contributed and shared by the employees on Yammer. During the interview session with all the project participants, a list of related questions on task categories and Yammer's functions were asked.

5 Yammer Microblog: Text Mining and Analysis

SAS Enterprise Miner software was used to carry out text analysis. Figure 2 depicts the patterns of the post entries of the employees on the Yammer microblogging system. The visual output of their usage patterns is shown in the form of a bar chart indicating frequency of post by author. Figure 2 also shows the frequency of entries posted by different authors. The chart shows that one of the project members, Phoebe Than, is the most active participant among all the other participants in the microblogging space. She has posted the most entries in this exercise. She had contributed a total of 61 entries. One of the possible explanations is the fact that she is the project manager of the chosen project and she is very supportive of the use of microblogging system as a tool to update status and share knowledge with her other peers. She had taken the initiative to devote herself and her time to willingly share a lot of information pertaining to the chosen project with other members on the chosen social networking platform. Her contribution as a knowledge creator and sharer also ensured that the research project yielded the anticipated outcome.

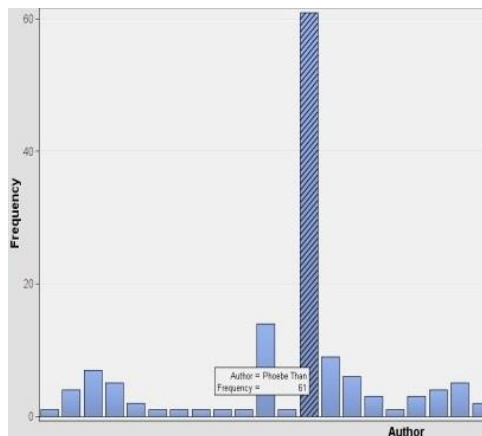


Fig. 2: Author with the highest frequency of postings

In Figure 3, different terms and their frequency from the posts are illustrated. Every box in the diagram is a term measured by its frequency and the weight of the term within every post being made. The box which is highlighted shows the term “+server” has the highest frequency count. In this example, it has a total of 52 counts that appear in the data collected from the entire test period. However, the weight of the term is only 0.56547 which shows that the importance of this term is at an average level. The higher the weight the more importance the term has from the entire corpus of the posts. This shows that the entries posted in the project are mostly related to the issue on “server”. A question that one may need to answer in the future work is to study the low weightage value for terms that were identified as terms of slightly above average levels from the participants.

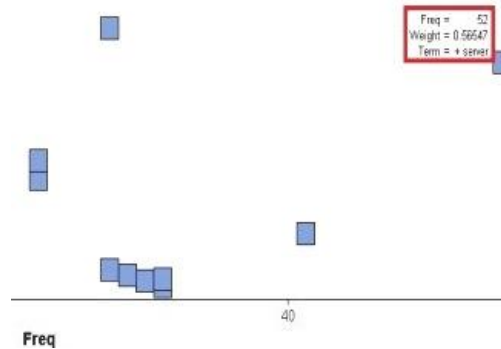


Fig. 3: Terms with the highest frequency

In Figure 4, the term “license” has the highest weight with a value of 0.9. This means that the importance of this term is the highest among all other terms being talked about among members of the project although the frequency of this term is only five in the entries posted by the users. This means that the current project is currently handling “license” or legal issues. It is consistent with the findings of the interview content conducted at the end of our research work.

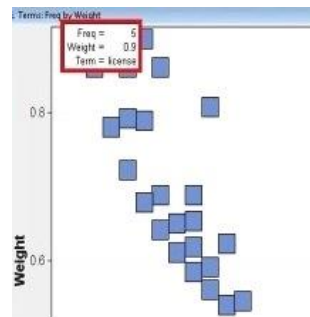


Fig. 4: Terms with the highest weight

In Figure 5, a concept map is used to show the topics which are related to the term “ITSSC”. Related topics of discussion could be expanded into a second level of the map to understand the sub-topics. For example, in Figure 5, the term “setup” is expanded and it shows that “setup” is relevant to the infrastructure department and it is also related to the setup of “server”. Furthermore, the term “Putra” when it is expanded, shows that it is related to “Sunway”, “Project” and “Hotel”. This explains that several topics of discussion among participants are all related to the Putra Place project. Furthermore the lines that connect between any two terms were presented using different thickness. The lines connecting the “Putra” and “Hotel” is the thickest which means that the frequency of discussion communicated by project team members on these two terms is the highest. Another observation indicated the term “Hotel” was closely related to “Pyramid”, “email domain” and “implementation”.

These connections are consistent because our interview data towards the end of the testing period showed that the text analysis matched the interview findings.

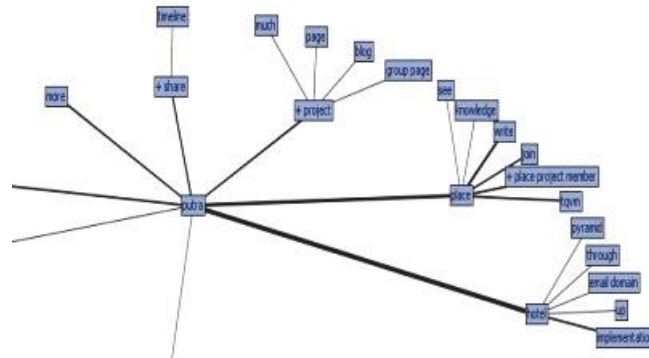


Fig. 5: Concept Map on the Term “ITSSC” and Related Sub Topics

Figure 6 illustrates another significant term, “legal privileges”, and its relevant concepts. Since the project is now discussing the legal issues with its clients, conversation between the members are also mostly focused on legal precaution that is of high concern among members in the project. Hence, it can be seen in the concept map that the patterns of this topic and other topics that are well related to legal matters such as “unauthorized”, “+prohibit”, “liability”, “virus damage” and “legal” terms. Furthermore, the thickness of the lines connecting these terms is almost the same, which shows that the frequency of these terms appearing together is almost the same. In addition, as the term “legal” was expanded to the second level, it visually expands to other related terms such as “consent”, “companies”, “disclosure” and “responsible”. The concept maps reveal the conversation patterns on the subject “legal privileges” through topics and sub-topics among the members of the project.

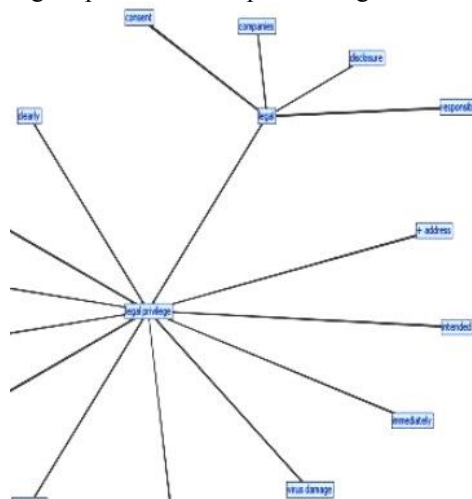


Fig. 6: Concept map on the term “Legal Privileges”

The concept map in Figure 7 shows that “Putra” is another key topic discussed by the team members. The concept map shows that the term “Putra” is closely related to the term “hotel” where the line thickness explains their relationship. And based on the text analysis, the second more relevant term is “place”. This shows that most of the related entries are about the network and the knowledge of the network from the terms “join” and “knowledge”, as they are clearly highlighted in Figure 7. Another example would be the term “team”. As shown in the concept map, the term “team” relates to terms such as “sales”, “marketing”, “finance”, and “purchasing”. Based on text posted, it was found that there are few new groups that were just created by the users in this exercise. This clearly shows that the users actually make use of Yammer to create new groups for their own departments for ideas, status and topics of discussion.

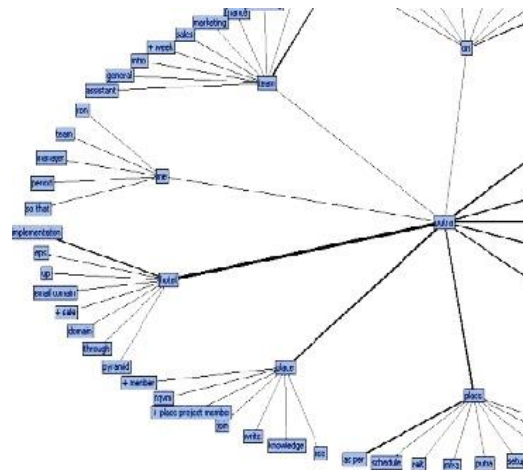


Fig. 7: Concept map on the term “Putra”

5.1 Information retrieval through text filtering

Information retrieval using text filtering was carried out in order to allow extraction of information on specific terms used by the participants. This is very useful in identifying specific information from a large amount of data such as data on social media systems. Based on the updated activity diagram, new findings for the information retrieval perspective are described in Figure 8.

By using the Text Filter (Figure 8), information can be easily retrieved. Therefore, through the Interactive Filter Viewer, the communication topics related to the author can be discovered. As shown in Figure 8, when terms such as “implementation” and “server” are entered as the retrieving criteria, the document on the screen shows all the text entries which contain terms with author detail presented visually. Furthermore, the software also shows the ‘Relevance’ column which indicates how relevant the term is to the entries. Based on the output in Figure 8, it shows that one of the respondents, Benny Leong, has the highest number of occurrences of these terms

in his entries in Yammer. Therefore, it is believed that in the project, Benny Leong is working very closely with server implementation.

| ENTRIES | SNIPPET | RELEVA... | AUTHOR | GROUPS | ID |
|---|---|-----------|---------------|---------------|-------|
| Some of the things we have done in the past 48 h to-date: - change of email domain and | ... there will be implementation for | 0.269 | Phoebe Than | All Company | 27.0 |
| Would like to share with you the timeline for EPS implementation (Phase 1) to Putra hotel. | ... timeline for EPS implementation (| 0.269 | Pai Shang ... | Putra Plac... | 33.0 |
| Found the external tape drive is connected to AD server and the AD server is installed with | ... connected to AD server and the | 0.269 | Benny Leong | All Company | 47.0 |
| Apart from the 7 servers below, there are 2 servers located in another departm - one is | ... one is keycard server 02 , and | 0.269 | Benny Leong | All Company | 48.0 |
| The following servers are located in MIS department -> **Server 1 - running HOS , KarSoft | ... > * Server 1 - running HOS , ... | 0.264 | Benny Leong | All Company | 80.0 |
| Hi... challenges to run the server in ESS: There is a 'dongle' connected to Micro(PDS) | ... to run the server in ESS : There is | 0.401 | Benny Leong | All Company | 81.0 |
| AD and File server are running in a same box. Used capacity on the file server is 200GB after | ... AD and File server are running in | 0.269 | Benny Leong | All Company | 82.0 |
| EPS implementation at Putra Hotel has officially kick off this afternoon! The meeting went well. | ... EPS implementation at Putra | 0.202 | Pai Shang ... | Putra Plac... | 84.0 |
| Neow Ling, please schedule a bi-weekly meeting with Benny, Eddie, Chan and Bernie on the | ... deploy a VPN server for the | 0.338 | Kevin Khoo | Putra Plac... | 86.0 |
| The following servers are located in MIS department -> **Server 1 - running HOS , KarSoft | ... > * Server 1 - running HOS , ... | 1.0 | Benny Leong | Putra Plac... | 87.0 |
| AD and File server are running in a same box. Used capacity on the file server is 200GB after | ... AD and File server are running in | 0.405 | Benny Leong | Putra Plac... | 88.0 |
| Apart from the 7 servers below, there are 2 servers located in another departm - one is | ... one is keycard server 02 , and | 0.537 | Benny Leong | Putra Plac... | 92.0 |
| good input. If you have the inventory file, you can upload it here too. At the end, my idea is to | ... have 1 VPN server running for UI, | 0.338 | Kevin Khoo | Putra Plac... | 94.0 |
| Putra Mall -> EPS-XDC Interfacing implementation just started this week, target to go-live on | ... > EPS-XDC Interfacing | 0.338 | Pai Shang ... | Putra Plac... | 106.0 |

Fig. 8: Retrieving an author based on terms

6 Task Categorizations and Fit Analysis

IP, Fun and Wagner [18] and Du and Wagner [8] pointed out that a clear set of social networking functions help to improve knowledge creation and sharing in a technology-mediated environment. Based on the data collected from our interviews, we found that different categories of tasks required a different set of functions for carrying out day-to-day tasks which involved plenty of knowledge creation and sharing activities. Analysis of the interview content also identified a set of task categories that are carried out by the project members of the team. The set of activities identified in each task is shown in Table 2. Table 2 is a set of non-exhaustive task categorizations identified from the interviews conducted with the members of the project.

Table 2: Tasks-task categories

| Tasks or activities of tasks | Task categorization |
|------------------------------|---------------------|
| Software design | Creative |
| Software documentation | Detail |
| Debugging | Creative |
| Programming | Creative |
| Customer support | Mechanical |
| Documentation | Mechanical |
| Schedule project | Creative |
| Administer project | Routine |
| Administer people resources | Routines |

Based on the 'Task Categories' in Table 3, a common set of non-exhaustive functions used by each task category is also identified.

Table 3: Task category characteristics-technology features

| Technology functions | Task categorization | | | |
|--------------------------|---------------------|--------|------------|---------|
| | Creative | Detail | Mechanical | Routine |
| Content management tools | X | | | X |
| Community building tools | X | X | X | X |
| Time structuring | X | X | X | |
| Search by category | X | X | X | X |
| Commentary | X | X | X | X |

The fit between different task categories and functions is tabulated in Table 3. From Tables 2 and 3, it can be concluded that the type of knowledge contributed and shared by participants to carry out different categories of tasks needs different functions. There may be some common functions that all may use, such as “Search by category” and “Commentary”. However, “Content management tools” and “Time structuring” are used only by some tasks.

7 Analysis of the Fit of Task Categories and Web 2.0 as the Knowledge Sharing System

The interview content and documentation obtained from the project team provide more accurate relationships between categories of tasks and technological functions that one uses in daily activities. These activities range from ‘change of font for a field or a label on a data entry screen’ to a complex task like ‘rewrite a commission calculation routine’. It is virtually impossible to compile all the activities and the most effective approach would be to group these tasks into ‘task categories’. By relating each ‘task category’ to each group of technological features, a high level relationship will be revealed. Based on these relationships, knowledge activities using a social networking system could further be investigated. The study of the fit of task categories and Web 2.0 functions for knowledge sharing can be deepened as more companies of different trades participate.

8 Analysis on Yammer Microblog Content

Outcomes of text analysis provided a number of useful insights on the microblogs posted by the project members. Concept maps were used to illustrate the most and least communicated topics among employees. Evidence of knowledge exchange activity is shown through employee collaboration. Knowledge contributions from authors are also analysed and identified; this highlights staff engagement on the Yammer social networking platform. As the project is almost at its completion stage, the discussion was found to have focused on legal issues. Therefore, the term “license” and “+server” were found to yield the highest weight and frequency respectively. The text analysis findings matched the outcomes of the interview

content; that is, the licensing issue of the project. This has evidently shown that objectives in this project have been accomplished. First of all, engagement from collaboration and communication is strong. Secondly, knowledge mined from posts is generated. Lastly, use of Web 2.0 functions to facilitate knowledge activities for employees of different task categories is shown. In short, the findings have shown that the project members do make use of Yammer to share knowledge on the progress of their project. Although the testing period was short and the data maybe insufficient, the findings show that information posted are mostly project related. Evidence also highlight that microblogging is useful for knowledge sharing within a company and if it is given more time than in this exercise and more participants actively involved in using the system, then findings can be more generalized.

9 Microblogging for Enterprise Education

The use of a microblog system for higher education institutions has been very successful. Nauman and Suku [24] investigated the adoption of Twitter in an Australian higher education institution using Davis's [25] Technology Acceptance Model (TAM) to predict Twitter usage. Their findings suggested that information sharing using Web 2.0 is encouraged but it is more about enjoyment and social presence and not merely about how useful or easy-to-use a technology is. However, exploring enterprise education using microblogs is still fairly limited in terms of research reviewed. For example, Chelms and Prasanna [26] suggested that learning in an enterprise setting shows that users with strong local topical alignment tend to participate in focused interactions, whereas users with disperse interests contribute to multiple discussions, broadening the diversity of participants. Riemer and Richter [27] explored communication patterns in a team that adopted Enterprise Microblogging. Their findings show that contextual differences and an open communication platform impact on user appropriation. They suggest that decision makers need to vest trust in their employees to use microblogs for productivity in corporate environments for learning purposes. Studies show that there are some moderately successful cases in enterprise education using microblog systems for knowledge sharing; but some still highlight barriers in their implementation besides needs to consider elements such as religion, culture and education systems. Using microblog systems for enterprise education through knowledge sharing has had some small successes but it is still an area that needs more research study.

10 Conclusion

Findings suggest that microblog activities exhibit acceptable levels of engagement and communication patterns among Yammer users. Text analysis highlighted terms with the highest frequency and weight which inform important issues that are most communicated among participants in the project. It is also shown that knowledge is exchanged between knowledge workers on these topics. Findings showed that participants use microblogs to share expertise; hence, the Web 2.0 tool is a useful tool

to collaborate, communicate and share knowledge at the organizational level. The fit between different Web 2.0 functions and different categories of tasks has facilitated effective sharing and exchanging of knowledge. In future studies, findings can be generalized when organizations of different trades and different cultural and educational backgrounds from different countries can be studied.

References

1. Smith, G.: Social Networking and the Transfer of Knowledge. *The Electronic Journal of Knowledge Management*, 7(1), 165–178 (2009)
2. Yamamoto, S., Kanbe, M.: Knowledge Creation by Enterprise SNS. *The International Journal of Knowledge, Culture And Change Management*, 8(1), 1-14 (2008)
3. Yang, S.J.H., Chen, I.Y.L.: A social network-based system for supporting interactive collaboration in knowledge sharing over peer-to-peer network. *International Journal of Human-Computer Studies* 66, 36-50 (2008)
4. Kaiser, S., Müller-Seitz, G., Lopes, M.P., Cunha, M.P.: Weblog-Technology as a Trigger to Elicit Passion for Knowledge. *Organization*, 14(3), 391–412 (2007)
5. Kim, H.N.: The phenomenon of blogs and theoretical model of blog use in educational contexts. *Computers & Education*, 51, 1342–1352 (2008)
6. Gu, L., Wang, J.: A Study of Exploring the "Big Five" and Task Technology Fit in Web-based Decision Support Systems. *Issues in Information Systems*, X(2), 210-217, (2009)
7. Klopping, I.M., McKinney, E.: Extending the Technology Acceptance Model and The Task-Technology Fit Model To Consumer E-Commerce. *Information Technology, Learning, and Performance Journal*, 22(1), 35-48 (2004)
8. Du, H.S., Wagner, C.: Learning with Weblogs: An Empirical Investigation. *Proceedings of the 38th Annual Hawaii International Conference on System Sciences* (2005)
9. Alejandro, C.S., Urena, J.D.F., Sanchez, R.C., Gutierrez, J.A.C.: Knowledge Construction Through ICT's: Social Networks. *World Conference on Educational Multimedia, Hypermedia & Telecommunication*, 1-9, 2330-37 (2008)
10. Coakes, E.: Storing and sharing knowledge, supporting the management of knowledge made explicit in transnational organizations. *The Learning Organization*, 13(6), 579-593 (2006)
11. Bausch, P., Haughey, M., Hourihan, M.: *We Blog: Publishing Online with Weblogs*. Wiley Publishing, Indianapolis, IN (2002)
12. Zhong, N., Li, Y., Wu, S-T.: Effective Pattern Discovery for Text Mining. *IEEE Transactions On Knowledge and Data Engineering*, 24(1), 30-44 (2012)
13. Mailvaganam, H.: Evolution of Analysis – Microsoft's NetScan and Project Aura. [Retrieved June 3, 2011, from http://www.dwreview.com/Data_mining/Microsoft_netscan.html] (2005)
14. Marylene, G.: A Model of Knowledge-Sharing Motivation. *Human Resource Management*, 48(4), 571-589 (2009)
15. Palmisano, J.: A Motivational Model of Knowledge Sharing. *Handbook on Decision Support Systems*, 1, 355-370 (2008)
16. Ziggers, I., Buckland, B. K.: A Theory of Task/Technology Fit and Group Support Systems Effectiveness. *MIS Quarterly*, 22(3), 313-329 (1998)
17. Hsu, C.L., Lin, J.C.C.: Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation. *Information & Management*, 45, 65–74 (2008)
18. IP, Fun, R.K., Wagner, C.: Weblogging: A study of social computing and its impact on organizations. *Decision Support Systems*, 45, 242–250 (2008)

19. Kaiser, S., Kansy, S., Mueller-Seitz, G., Ringlstetter, M.: Weblogs for organizational knowledge sharing and creation: a comparative case study. *Knowledge Management Research & Practice*, 120-130 (2008)
20. Ras, E., Avram, G., Waterson, P., Weibelzahi, S.: Using Weblogs for Knowledge Sharing and Learning in Information Spaces. *Journal of Universal Computer Science*, 11(3), 394-409 (2005)
21. Yu, T-K., Lu, L-C., Liu, T-F.: Exploring factors that influence knowledge sharing behavior via weblogs. *Computers in Human Behavior* 26, 32–41 (2010)
22. Maruping, L.M., Agarwal, R.: Managing Team Interpersonal Processes Through Technology: A Task-Technology Fit Perspective. *Journal of Applied Psychology*, 89(6), 975-990 (2004)
23. Goodhue, D.L.: Development and Measurement Validity of a Task-Technology Fit Instrument for User Evaluations of Information System. *Decision Sciences*, 29(1), 105–138 (1998)
24. Nauman, S., Suku, S.: Adoption of Twitter in higher education – a pilot study. *Proceedings Ascilite 2011, Hobart, TAS*, 1115-1120 (2011)
25. Davis, F.: Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-339 (1989)
26. Chelmiss, C., Prasanna, V.K.: An empirical analysis of microblogging behavior in the enterprise, *Social Networking Analysis Mining*, 3(3), 611-633 (2013)
27. Riemer, K., Richter, A.: Tweet Inside: Microblogging in a Corporate Context. 23rd Bled eConference eTrust, Implications for the Individual, Enterprises and Society, 1-17 (2010)