

A Comparison Study on the Use of Knowledge Management Systems and Enterprise Microblogging Systems for Organizational Knowledge Sharing

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ABSTRACT

Knowledge Management System (KMS) has been widely used by many knowledge-centric organizations to manage their organizational knowledge activities and to improve knowledge sharing among employees. However, it is essential to study the utilization rate of the system in the company. In this research, the KMS and two different enterprise microblogging systems are studied to determine which systems is able to facilitate better knowledge sharing within a company. We studied these systems' background information, features and functionalities to compare and contrast their benefits and usefulness toward the organizational knowledge management needs. Detailed documents examination and interview with the employees were conducted to collect data to analyze the rate of KMS utilization, benefits and usefulness. Two microblogging systems were introduced to the employees and their attractive features and benefits offered by the microblogging platforms were presented to the employees in order to study and determine their usefulness and rate of utilization in the company. The data collected was analyzed and a comparison table was created which described the similarities and differences in term of features and functions of all three systems. In this research, it was found that the enterprise microblogging systems offer attention-grabbing features and functions which are identical to other social networking systems like Facebook and Twitter had effectively improved the rate of utilization and hence increases the knowledge sharing in the companies. The research outcome had shown that enterprise microblogging systems have the potential to improve knowledge sharing activity within a company compared to a KMS.

Field of Research: *Knowledge management systems, enterprise microblogging systems, microblogging, knowledge sharing.*

1. Introduction

Many companies that adopted Knowledge Management Systems (KMS) are evolving to become knowledge-centric organizations. The objectives of being a knowledge-centric organization are to better manage their knowledge within the company and to better promote knowledge sharing among employees. Due to high failure rate in many KMS implementations Barnes (2011); Chan *et al.*, (2005); Alavi *et al.* (2001); McAdam *et al.*(2001); Wong and Aspinwall (2005), some organizations have decided to use enterprise microblogging systems Dell.O.C *et al* (2011); Parameswaran M. *et al.*(2007); Grit J. W. (2009) as another means to improve knowledge management and knowledge sharing in the organizations. This research studies the strengths and weaknesses of a classical KMS against two enterprise microblogging systems: Yammer and WorkVoice, using a case study company to formulate a set of guidelines for any knowledge management and sharing activities undertaken by practitioners and researchers.

The objectives of this research are to study and understand the features and functions that most employees use in the organization. A classical KMS and two enterprise microblogging systems are analyzed in this research. Their features and benefits will be documented. The features and

functions of the KMS and microblogging systems are compared and contrast to determine which type of system possesses better and useful features so that it could be best adopted in a company to improve knowledge sharing among employees.

2. Related Works

There is a large collection of research articles that discussed about using KMS tool for knowledge sharing and creation activities. Powers (1999) demonstrated the knowledge-sharing culture in Xerox through grassroots as a foundation for the knowledge sharing among employees in the company. Xerox Corporation is a multinational company which establishes its identity as the document company. This company specializes in producing photocopying machines. As the company grows, there is a need to commit to company-wide knowledge management to stay competitive. Xerox adopted Eureka, a knowledge base system, which allows the company to share, create and reuse intellectual knowledge capital in the company in all its branches worldwide. According to Powers (1999), Xerox demonstrated that knowledge sharing has been very useful to the company and many successful cases have been witnessed through knowledge sharing effort undertaken by the company.

Xerox conducted an interview on 60 knowledge workers outside of the organization to understand the benefits and productivity gained from the knowledge system. The analysis of the interview exercise reveals that most companies use knowledge management system for knowledge sharing or to transfer best of practices with peers in the companies. The analysis confirms that the implementation of Eureka in Xerox is beneficial to the company.

Eureka allowed the employees to contribute content to the system on their own time and it has more than 25,000 records in the system now. It is evidently shown that solutions in the system when shared with someone else in another state help to solve problems effectively. For example, to handle a customer's complaint or service request on Xerox products at the Xerox customer service department, due to large number of possible problems on the products, identify and solve each problem is very time consuming and hence create lengthy downtime at the customer service department. With Eureka, employees at Xerox could just look up for the similar problem that occurred before and find a potential solution in the Knowledge Management System (KMS) quickly. Furthermore, if the employees were to discover a new solution for the problem, they could post it up in Eureka and this might be able to help other employees in the future. In short, Eureka has enabled Xerox to save labor and product costs.

At the early stage of the Eureka implementation, Xerox was afraid that their employees who participate in this exercise do not gain anything from it which may end up wasting time and money. Therefore, it took sometime before employees at Xerox realize the importance of this system.

There are always problems that come with the use of a KMS. However, if the problems are not identified, there would not be a solution or approach that could be developed. Mantas (2008) conducted a research on Greek-based Enterprises that struggled to adopt the Knowledge Management and Learning Organization approaches, he was able to identify the dark side of the knowledge management. In his research, negative elements of knowledge management were identified based on a pilot survey. This research identified the problems that the company faced with their KMS.

The pilot survey interviewed ten executives and ten managers who are working in Greek-based enterprises from different business sectors such as Hospitality, Education, Retail, Advertising and Magazine Publishing. Interviews were carried out with these executives and managers to understand the issues and concerns of their knowledge management framework in the business. The interviews were conducted to gather their views, opinions and suggestions on the KMS. Findings of the

investigation found that the main problem regarding the KMS is the lack of knowledge on KMS and misunderstanding of knowledge interpretation. For example, employees stop on their knowledge related activity and just focus on their routine task whereas managers involves in knowledge related activity such as attending seminar only when they are required to.

The competitiveness among employees in their daily work life is also one of the barriers that discourage information sharing among employees, stated Mantas (2008). Besides that, hesitation on information sharing is also due to fear of criticism and lack of self-confidence. This has seriously prevented knowledge sharing activity from blooming in a company.

Zhang *et al.* (2010) found that employees that used Yammer post content very differently compare to content on Twitter based on his investigation. The contents that Twitter users post are usually about daily routines or activities whereas the contents post on Yammer are usually about work. Employees that use Yammer are always looking for answers or solutions to their work related problems. Furthermore, the expert seekers always attract the attention of other experts which are unknown to them in the company and these experts may provide solutions to these seekers. In addition, employees believe that Yammer allows the employee to publish news and company events at the corporate level so that those without the Yammer community may view. Communicate collaboratively is much easier and effective than sending emails to every employee.

In Wigand *et al.* (2010)'s work, he claimed that the increasingly use of social media by the population of his target research community has led to a number of companies adopting microblogging as the platform for communications and business activities. It was found that microbloggers used the microblogging platform to find out what others are doing but they also used it to create professional social network, build relationships with stakeholders and clients as well as sharing information, news and also collaborating projects. One of the most popular and widely use microblogging sites would be Twitter. Twitter allows public users to view and post short messages on the site called 'tweets'. Some companies post information on the site to inform the public Twitter followers. Communication between stakeholders and clients across countries could be done easily in the form of 'tweets' as 'informal voice' among employees. Therefore the use of social networking systems in companies has proven to be effective to raise the interest of employees to share information effectively.

According to the author, the United States (U.S.) government agencies and public officials have also adopted microblogging system as a means to communicate collaboratively. The adoption of Web 2.0 technology such as Twitter at federal, state and local levels has encouraged short conversational text to be exchanged between the senders and receivers so that information could be shared bi-directionally. Furthermore, a major benefit of using microblogging would be the ease of accessibility as these microblogging sites could access be on the users' mobile devices such as PDA and smart phones.

In summary, organizations use microblogging systems to manage, store and share knowledge effectively is clear and conclusive. Sufficient related works reviewed have evidently supported that organizations' decision to use enterprise microblogging systems as a tool to improve knowledge sharing among employees within the company is an achievable direction.

3. Methodology

A detailed observation on the employees' knowledge related activities in the case company was conducted for about a week prior to the interview and questionnaire survey activities take place. The objectives of conducting this observation are to have a better understanding on the case study's

workplace and the environment which may be a contributing factor to the use of KMS in the case company.

This is followed by a preliminary interview session with the employees. The interview questions were separated into two parts; the company's nature of business and processes, and the features and functions of KMS. The interviewees were given one week to prepare prior to the interview session. The interviewees are chosen from all departments where each department has at least three (3) candidates which consists of junior , mid rank and senior staff member from the department. In total there are five (5) department involve in this investigation study. Survey questions were also developed to investigate on factors that motivate (or de-motivate) the employees on the use of the KMS system and the employees' posting pattern was studied in this exercise.

4. KMS Investigation

The KMS that was implemented in the case company is called Practice of Knowledge Management (POKM). It was developed using Lotus Note software with the goal to capture and store data which include operational policy and procedures and day-to-day operational documentations. The top management of the company initiated the project because they see the need of knowledge creation and sharing in the company in order to keep the company competitive among other competitors globally.

The KM project has a mission. It intends to cultivate a self-driven continuous learning, sharing and innovation towards operational excellence contributing to customer responsiveness. It also determines to create a learning environment for employees to work in a much productive ways, jealous free attitude to share the knowledge among peer colleagues. It was found that most of employees are not willing to accept the KMS at the early stage of the KMS implementation. Employees are found to be reluctant to change their current working norm. They resist to accepting new working behaviour. As a result, the organization uses Key Performance Indicator (KPI) to encourage employees to invest their contribution to knowledge creation and sharing.

The KM project consists of ten team rooms. Team rooms are portals where employees share or discuss on a specific topic of interest. Some of the team rooms are Lesson Learned, IT Tips, Frequent Asked Questions (FAQs) and Solutions. The K-tools facilitates the use of the KMS among employees. Employees use the KMS's features and functions to share information, post entries, queries, seek help from experts and carry out knowledge creation and sharing activities. From the interview, it was found that POKM excel in different areas of services and focus areas. For example, in term of project management and consultancy, new projects and initiatives are able to solicit new ideas from others even they are from different business units in the company.

It is apparent that the KMS in the case study company was developed to improve the competitiveness of the company. Therefore the strategy that it adopted focuses on internal processes, capturing, storing and managing knowledge within the company. The system is meant to provide better customer responsiveness by facilitating sharing of information within the company and to provide prompt and accurate solutions to customers.

The KMS also offers a number of features to the employees. Some of the K-tools features are knowledge portal, search, innovation or suggestion box, lessons learning directory, post learning directory, Frequently Asked Questions (FAQs), IT Tips, email knowledge base, eStandard Operating Procedure and eCommunities of Practice (eCOP) to provide the knowledge management needs of the company. Table 1 shows the KMS features currently available to the KMS users.

Table 1: Functionalities of KMS Features

Features	Functionalities
Knowledge Portals	It contains a database with different topics of discussion where employees can view and share information.
Search	It offers a comprehensive search function in IT Tips team room to search for documents and also allows the employees to drill down their search into different categories.
Innovation or Suggestion Box	It provides a proper process flow for obtaining ideas and implementation plans and also result based on a specific theme.
Lessons Learning Directory	It allows employees to document the lesson learned for every mistakes or error done along with the solutions by capturing tacit knowledge which is derived from employee's experiences.
Post Learning Directory	It provides a simple training library to capture the training, seminar, conference and workshop attended by the employee and also used to preserve the post training sharing sessions conducted by the employees.
Frequently Asked Questions (FAQs)	It contains general information that staffs will usually search for which is similar to the "Help" feature of a website where it consists of a list of questions that are most frequently asked together with their answers.
IT Tips Feature	It contains knowledge bases where employees share their project experience so that staffs with similar projects can refer in regards to troubleshooting issues.
Email Knowledge Base	It enables capturing of collaboration emails for a critical issue and proposed solutions or actions for a particular issue. Managers too can use it to generate report statistics.
eStandard Operating Procedure (eSOP)	It captures the Standard Operating Procedure (SOP) with proper process flow, approval and standard template across the company.
eCommunities of Practice (eCOP)	It offers the capability to document the knowledge where experiences are exchanged and ideas are generated in a similar processes or practice areas.

The case study company benefits from the KMS as it helps the employees in their daily work related tasks. The system allows the employees to perform better. It allows new knowledge and ideas to be created and shared among employees in the company. The benefits that were obtained through the use of KMS are discussed as below.

One of the benefits provided by the KMS is the availability and accessibility of information to the employees. The excessive amount of information stored in the KMS has made the KMS a data repository where the ease of data accessibility to the employees has enabled them to search and refer to the information they need in order to perform their work more productively. Solutions and lessons learned entries are posted in the KMS. This cut down mistakes from employees and hence they produce better quality work. In some occasions, employees also share minutes of meeting, research papers, consolidate progress report which greatly reduces meeting time and also speed up communication among different parties in the company. Moreover, managers are able to make rapid and reliable decisions. Through the eStandard Operating Procedure (eSOP), employees can speed up solving their problems as they are able to follow standard guidelines more effectively.

In addition, the KMS has speed up the work delivery too. Based on the findings collected from the interviews, employees commented that the materials in the KMS are easily downloadable from the system. This has speed up their works partly due to less dependent on their colleagues for help operationally. As for the IT tips feature, it provides guidance for IT related issues. For example,

employees who involve in any IT related project that need to refer to a step-by-step configuration guide tips, these tips are readily accessible to them and their clients in an easily understandable format. These interviewees explained that this has enabled fast delivery of services and hence cut down their workload.

Another benefit realizes from the KMS is the quality of information in the system. In many occasions, employees share useful articles which have brought useful knowledge to other employees to improve quality of work and services. For example, an employee is able to improve customer relationship management as the employees can communicate better with different types of customers from knowledge gained from the articles shared. Their communication skills have also evidently been improved. Many employees have also learned new skills such as presentation skills, communication skills and also other soft skills. The findings have also shown that quality information shared has increased the job satisfaction among employees since this has made work easier, more efficient, and effective as well as speedier work delivery to their customers.

The ability to trace back the historical events and materials and locate archived documents is also another benefit of the system. Employees are able to store their works in the KMS and refer back to them in the future for better project management. The user-friendliness of the system is also another reason that keeps the employees continuous using the system to search and reuse the information to complete their works. The system has been quite well organized and categorized in groups and section portals with proper titles for each topic that are relevant to the contents of the topics. This allows employees to easily find what they need in the KMS to perform their works. This also helps the employees to cut down time needed to look for solutions; hence increase the quality of services provided to other colleagues and clients.

Lastly, the KMS system is an enabler for new ideas and innovative solutions to the clients. Through the eCommunities of Practice (eCOP), employees are able to gather, share and discover new solutions together which was previously not possible to work together as a team to learn from each other. Employees can refer to other completed projects that were posted in the KMS by their colleagues and adopt more effective methods for their projects. The documents and solutions reuse through the system has greatly benefitted the employees. In addition, employees who are top contributors could be identified based on the amount of posts and quality of information shared in the KMS. Recognition and awards could be given to the employees to motivate them to perform better within the company and this can also be used as a motivator to motivate others to put in their commitment towards their work and the KMS. Employees too will be more productive and willing to share whatever information which is needed by other colleagues hence forth.

5. Enterprise Microblogging Systems Related Studies

In this research, two popular and widely used enterprise microblogging systems: Yammer and WorkVoices, are investigated and discussed. Their features, functions and benefits to the organizations will be explained. The usefulness of each feature offered by the microblogging systems and the appropriateness of the systems for organizational usage are also explained.

5.1 Yammer

Yammer is an enterprise microblogging system that is investigated in the case study to understand the employees' posting behavior and adaptability of using a microblogging system. The study intends to provide a more thorough understanding in order to determine the usefulness of a microblogging system compare to a KMS. The usefulness and attractiveness of Yammer's feature is used to decide on how it will promote knowledge sharing in a company. Companies with a legit email address of a

specific domain are able to sign up for Yammer which allows a private and secure social network to be created to start work related communication collaboratively with peers in the company. Yammer offers a wide variety of services to the company such as collaborating projects, sharing of ideas and information, asking questions and receiving feedback and seeking helps from experts within the domain and with external communities. Users who use Yammer are able to receive constant updates from the system and communicate with other employees in real-time using any desktop or mobile computing devices anywhere and anytime. Companies which have adopted Yammer are Deloitte, 7-Eleven, and Ford Motor Company.

Some of the reasons that Yammer is chosen over Twitter is that Yammer is designed for business-oriented environment where Twitter is more for social and leisure where information is meant to be publicly shared. Information sharing in Yammer is intended to be widely available to others within the company behind the firewall. The information is well organized into groups and topics. Managers and employees too can make rapid decisions by retrieving information from Yammer easily. Hence, Yammer provides a platform for new insights to be discovered, discussions and collaboration which would make the company a better workplace. It also allows the users to have more time by communicating with each other in real-time in reverse chronological order instead of sending and replying emails.

It is easy to set up a network within the Yammer for a company. An employee needs a valid email address of a domain to join the network. Once the network is created, all the employees of a company can register to become a member of the network. With a valid email or invitation from the administrator, employees can start taking part as a member of the network. Once in the network, the interface of Yammer looks very similar to Facebook. Therefore, users who are used to Facebook will find no problem adopting to Yammer. Yammer also provides FAQ section to help new users. Since the interface in Yammer is very user-friendly, inexperienced users can easily get used to it in a short period of time. Similar to Twitter’s “follow” feature, users can follow their co-workers who are in Yammer. Users can also follow on Topics, Groups, Networks and Files such as documents, videos, images and other attachments which their co-workers uploaded into Yammer. The users will be notified once there are changes to the items that they follow. This provides the needs that an employee need to carry out his/her job in the organization.

Some other Yammer features are as follow: creating groups, sharing of files, company directory, topics, administrative tools, mobile services, private messages, profiles, external networks, knowledge base and applications by third-party providers. Table 2 describes the features of Yammer.

Table 2: Functionalities of Yammer Features

Features	Functionalities
News and Knowledge Sharing Capabilities	It allows employees to start a conversation, posts links, files and attachments such as videos, pictures and documents. Employees are able to tag their coworkers with the “@”.
Groups	It allows private or public groups to be created for employee to join.
Company Directory	It contains a directory for the employees to connect with others employees from different department in Yammer.
Administrative Tool	It allows the admin have controls over the information shared over Yammer like the basic setting and control over their profile page such as password changes, profile changes, applications, networks and others.
Topics	It allows topics classification onto messages posted by tagging the content or messages.
Mobile	It allows portable connection to Yammer and collaborate with other employees through the use of mobile devices such iPhone, IPad, Blackberry

Features	Functionalities
	and others.
Private Messaging	It allows sending of messages to other employees privately.
Profile	It allows users to upload their pictures, personal details such as departments, emails, contact numbers, expertise and others on their page.
External Networks	It allows other parties such as clients, vendors and external parties which have different email domain to join in the network so that B2B communication may take place.
Security	It contains security measures and information security policy with its own set of requirements that are designed to achieve the standards which are required to protect the companies' data.
Applications	It contains application provided from third –party provider which could increase the functionality of Yammer Network. It uses an open Application Programming Interface (API) which allows easy integration of application from third-party providers and also into the companies' existing systems.

The benefits offered by Yammer convince the company operators that it is the appropriate enterprise microblogging tool that fulfills the needs of enterprises. With the ease of information sharing and groups formation facility, employees can work better and be more productive as information can be easily accessed and retrieved. Decision making activity and work progress status update are smoother, faster and more effective. Moreover, with the real-time collaborative communication feature, it reduces multiple email-sending to multiple users for any new updates. Yammer is able to publish news to all the followers effortlessly makes mass emails broadcast a nightmare of the past. This saves time and money because it eliminates mailing lists maintenance cost as well as firewall protection of the emails and its software.

The ability to reduce miscommunication and overlapping messages on Yammer platform using short text messages provide an avenue to quickly and easily information sharing among users. New hires are able to learn faster on Yammer since Yammer is a knowledge repository that allows information to be stored and easily accessed by retaining knowledge and wisdom of the experienced employees in the past. This has greatly reduced the cost of training. With more employees participating in Yammer, more information and insights will be generated which makes the company a better work place and this would increase the company's productivity and revenue. Employees will learn more skills and are able to seek expert help which are previously unknown to them. Customers, partners and vendors worldwide are able to collaborate on different projects and share information globally. There has significantly reduced the need to travel for meetings and transference of information which saves time and money.

In addition, Yammer enables the discovery of new information and ideas that would normally be buried in emails. With tones and junks of email flooding into the employees' computer, the employees would not have time to go through everything in a detailed manner and conduct analysis on it. With Yammer, discussion between employees will occur periodically as they will be constant updates of information. Employees' talent could also be uncovered through Yammer. Managers who regularly log on to Yammer can identify employees who take initiatives to share information they know and from that managers know who are the skilled employees and may assign them to work on specific projects which require the employees expertise. Managers can also further develop and polish these experts and maximize their potential.

In summary, Yammer has brought many benefits to enterprises as it facilitates and manages the use of knowledge effectively which in return would lead to the productivity and revenue improvement

of the company. However, participation, frequent use and awareness of the important of the tool by the employees are also crucial to ensure the success of its use.

5.2 WorkVoices

In addition to Yammer, WorkVoices is another well accepted enterprise microblogging system that provides collaborative communication service to employees in organizations. WorkVoices provides a closed social network within the company to allow employees to share knowledge. WorkVoices offers a fast and easy means of communication to find co-workers, to gather and disseminate knowledge, to ask questions related to projects, to store documents and to keep each other updated with the daily tasks. Using WorkVoices, employees can “follow” other employees and communicate with each other in real-time or search for a specific subject that had been previously discussed to help them in their work.

Looking for experts or specific documents are easier through WorkVoices as employees can browse through the profiles of other co-workers to find the most suitable person to help them in their work. Therefore, employees can directly get connected to their co-workers and share their knowledge regularly. This helps to better manage knowledge and co-operation among colleagues within the company. In addition, the interface design of WorkVoices is very similar to Twitter. However, WorkVoices has some additional features such as users can reply to the entries their co-workers posted. Unlike Yammer, WorkVoices is easier to get started as it does not require a company email domain. Any email address could be used to create a network where others can join.

WorkVoices is also a free microblogging system for enterprise usage. It offers a number of features and functions for a company to share, manage as well as disseminate knowledge within the company. Some of the features are similar to Yammer. They include enterprise microblogging, creating groups, sharing of files, company directory, administrative tools, mobile service, private messages, profiles and applications. Although these features are similar to Yammer, WorkVoices’ features do have their own uniqueness. Other features offered by WorkVoices that are different from Yammer are creating events, tagging and joining networks. All these features have been tabulated in Table 3.

Table 3: Functionalities of WorkVoices Features

Features	Functionalities
News and Knowledge Sharing Capabilities	It allows user to share information and attach documents, images and videos to entries they posted. The entries can be separated into different categories such as all posts, questions related, private messages, request from co-workers and their own entries.
Groups	It allows users to create different groups in their network. Groups can be in public or private.
Contacts	It allows employees in the company to set up the organization structure and details in the network. The users can use the import functions to import the company directory into WorkVoices using the LinkedIn function.
Administrative Tool	It allows the employees to adjust the settings of the network so that there would be control over the network and information shared over the microblogging platform. Integration with Twitter, RSS and wikis are can also be set. Users can set the URL for the RSS so that users could receive updates via RSS.
Mobile	It allows portable usage of WorkVoices through mobile devices but is limited to be used only on Apple devices such as the iPhone and iPad.
Profile	employees can post their personal details such as experiences, expertise, skills and knowledge on the network.

Features	Functionalities
Applications	It provides desktop application where employees can install WorkVoices into their desktop. Integration with Dropbox, LinkedIn and Twitter account allows sharing or uploading files directly into WorkVoices.
Events Creation	It allows users to create a specific event. It also has the event RSS feed and Twitter integration. Therefore, the event will be forwarded in Twitter as well as appear in the RSS feed. Attachment of documents can also be included in the events.
Tagging	It allows tagging of subject to the entries they posted.
Joining Network	It allows anyone to create their own network and users can select the network they wished to join. Therefore, clients, partners and suppliers may create their own network and the employees can join in the network to share knowledge.
Services	It provides customization of WorkVoices, changing of the interface and template of WorkVoices. Integration with the company existing corporate processes and systems into WorkVoices. It also offers technical expertise as well as guidance by demonstrating the use and advantages WorkVoices as well as providing training and consulting service to users.

Like many other enterprise microblogging systems, the benefits that WorkVoices brings to the company could lead to business and technical advantages to the users. Firstly, WorkVoices is able to strengthen employees' relationships in the company as communication in real-time allows employees working in disperse locations to collaborate with each other. Therefore this reduces email usage. As physical meetings are no longer required in order to share knowledge or having discussion, employees are able to save time and cost. In addition, it is also cost saving since the use of WorkVoices is free unless the company requires lot of customization to the system or if it requires training support from WorkVoices. Through knowledge sharing via WorkVoices, organizational knowledge could be shared with all employees in the company with those who joined the network. Furthermore, from the profiles of each user, employees' expertise and knowledge become visible to other knowledge seekers. The effectiveness of knowledge sharing could improve the feedbacks efficiency from co-workers. Therefore, there would be an increase of social cohesions between employees and department as everyone is involved in WorkVoices.

Moreover, WorkVoices has some extra technical advantages over other systems. As WorkVoices is run on an in-house system and is fully web-based, it is easy to implement in a company. The setup of a social network is as simple as creating an internal network where employees can sign up to the network using their own email address. Furthermore, it offers integration with other social media sites such as Twitter, wikis and SharePoint as well as easy integration with existing systems. According to WorkVoices (2011), security of WorkVoices has never been a problem since the information posted in WorkVoices uses Secure Socket Layer (SSL) connection in which the protocol transmits documents through the private Internet channel. WorkVoices takes information security very seriously. Therefore the information shared within WorkVoices is encrypted first before it is being transmitted over the Internet making the company's information safe. In addition, if the system were to crash, the WorkVoices servers backups all user's data to an offsite location. Hence, data is not lost.

Lastly, WorkVoices also stresses the importance of its users. As an enterprise microblogging platform, it is easy to use and user-friendly. Therefore, it is easy to integrate into users daily activities. Employees who are not tech-savvy also find that WorkVoices is easy to post knowledge online. It is available in multiple languages. Employees would be able to easily communicate with co-workers within the company, overseas partners, clients at different project sites. There would be less email traffic with the use of WorkVoices as emails can be forwarded into WorkVoices as a post which could

grab the attention of other employees. There is no need to send out emails to everyone within the company anymore.

We concluded that WorkVoice is another useful microblogging platform that one may want to consider for enterprise knowledge sharing and status update in a company. However, constant participation from the users is the only way to ensure that it yields benefits and promote knowledge sharing among employees. If users are skeptical of the use of the system, WorkVoices would not be able to serve its purpose. Therefore, users' mindset needs to be changed so that knowledge sharing could take place in the company.

6. Comparisons between KMS and Enterprise Microblogging Systems

In this section, compare and contrast between a classical KMS and two other enterprise microblogging systems will be presented. Table 4 shows the similarities of the knowledge management system and enterprise microblogging systems in terms of features and functionalities.

Table 4: Comparisons of Similar Features between POKM, Yammer and WorkVoices

Features	POKM	Yammer	WorkVoices
News and Knowledge Sharing Capabilities	√	√	√
Search	√	√	√
Attachment of documents, pictures and videos	√	√	√
Notification	√	√	√
Company Directory	√	√	√
Groups	√	√	√
Knowledge Base	√	√	√
Security	√	√	√
Frequently Asked Questions (FAQs)	√	√	√

Based on the illustrations in Table 4, there are a number of similarities that POKM, Yammer and WorkVoices share. These features provide the capabilities to handle and manage knowledge within the organization. These features support knowledge sharing, searching of files, and attachment of files.

Firstly, all the three systems have the capabilities to share news and knowledge. This is a major requirement for being a system that supports knowledge creation and sharing. With these features, employees are able to share knowledge among colleagues within the same system. Without this feature, it would be the same as the traditional method of knowledge sharing. This is like an employee finding another employee or expert personally that may be slow and ineffective. The search function is another feature that is offered by all three systems. Employees use this feature to search for documents, media files and topics using keywords. Although all the systems provides this feature, however, POKM provides a more comprehensive search function compares to Yammer and WorkVoices. POKM's search function allows employees to search in detail by providing conditions such as date and author. On the other hand, Yammer and WorkVoices search function only provides a simple search function where users enter a keyword and a drop-down list appears which are related to the keyword. However, features offered by all three systems are considerably quite user-friendly.

In addition, another similarity among all these three systems is the ability to attach files such as documents, pictures, videos and other files in their post entries. This is a useful feature as users can share articles and presentation together with their post to their colleagues. In addition, the systems also have the notification feature. This feature is able to notify users when there are updates in the

system such as new entries which was posted by their colleagues. These three systems allow employees to select the option to notify the employees via email if there are any updates in the systems. Moreover, the systems also have a company directory feature. This feature allows users to find other users which are in different parts of the company. In POKM, employees can find other employees in different section portals or group and join them. In Yammer, it has the same feature and employees may choose to “follow” other employees. In WorkVoices, however, it uses the LinkedIn application where the employees can import the company’s directory directly from the company system into WorkVoices.

Another similarity that POKM, Yammer and WokVoices have in common is the “group” feature. POKM has a wide variety of groups where employee can join. These groups may consist of different portals, different departments, different discussion and different topics for employees to join. Similarly, Yammer and WorkVoices also allow their users to create groups which could be either a private or public group. Knowledge bases is another feature that is important to the users and it is a must have feature in any KMS. Without this feature, knowledge will have no knowledge repository or knowledge bank as a storage device for a KMS system. In POKM, its knowledge bases are separated into different portals and sections where employees store their works, documents and posts. This provides a good knowledge base classification so that employees would know where to search for specific information. In Yammer, it consists of one huge knowledge base where employees can search all the information they have access to. In addition, Yammer’s knowledge bases also show the activity streams of colleagues whereas both POKM and WorkVoices do not have this feature. It will show the groups that their colleagues join and the posts that their colleagues posted to. Basically it shows the activities of their colleagues in Yammer. This helps to keep the employees updated and this may pique the interest of other employees to join these groups. In WorkVoices, the knowledge bases are divided into different categories of section where users can view their own personal posts, all posts and questions. The knowledge base is a very useful feature as employees can track back the history of their own posts as well as their co-workers’ posts to search for solutions to a problem that occur at later stage of their projects.

The security is another feature that is also important. It secures the information and knowledge shared among employees within the system. POKM was developed on Lotus Note software and information is stored in the Lotus Note database. Therefore, POKM uses the security feature of the Lotus Note system. Yammer, on the other hand, uses its own standard, protocol and system security features. Each system has its own security feature to protect the contents of the system itself. WorkVoices uses the SSL connection to secure the information in the microblogging platform. It encrypts the information transmitted in the Internet and it also provides backup of the users’ data in WorkVoices’s servers. Table 5 shows the summary of security features between the three systems.

Table 5: Summary of types of security features used in POKM, WorkVoices and Yammer

Types of Microblogging	POKM	WorkVoices	Yammer
Types of Security Features	Lotus Note Security	SSL connection	Security policies and also SSL connection

Table 6 shows the differences between the classical knowledge management system and enterprise microblogging systems in terms of software features.

Table 6: Comparisons of Different Features between POKM, Yammer and WorkVoices

Features	POKM	Yammer	WorkVoices
Portals	√	X	x

Features	POKM	Yammer	WorkVoices
Innovation or Suggestion Box	√	X	x
IT Tips Feature	√	X	x
Lessons Learning Directory	√	X	x
Post Learning Directory	√	x	x
eStandard Operating Procedure (eSOP)	√	x	x
eCommunities of Practice (eCOP)	√	x	x
Profile	x	√	√
Topics	x	√	√
Private Messaging	x	√	√
Mobile	x	√	√
Administrative Tool	x	√	√
External Networks	x	√	√
Applications	x	√	√
Events	x	√	√
Additional Services	x	x	√

POKM provides the employees with web portal or team room features to conduct discussions and sharing of information with other employees in POKM's environment. It is similar to the "group" feature provided by the enterprises microblogging system but in a much simple version. The system also has separate section or web portal for "group" such as "Innovation box" and "IT Tips". "Innovation box" provides suggested solution for users and "IT Tips" provides tips about IT related issues which could help employees in their day-to-day jobs. In addition, POKM also have different directories on "Lessons Learning" and "Post Learning" to hold materials in these categories. "Lessons Learning" offers a directory where employees post information regarding the mistake they made and the solutions as an example for their colleagues whereas "Post Learning" encompasses of information on training, seminar and other sessions which employee has attended. Although all these features are useful and they are being organized in separate portals (or sections), it provides a structured taxonomy. However, users who like to search or post information in these portals need to go to these portals which could be quite troublesome. There are occasions where employees might not know where to categorize or where to search and deposit the information, they end up not getting any posting done at all.

Although Yammer does not feature such as directories or portals to manage "group" of information, it provides "topics" to their subject categories. Employees would either post on the "group" page or in the main news feed page. This makes it easy to use and once employees post an entry, they could assign a topic to their post such as "Lessons Learned IT" or "General" issues. Other employees could search their topics of interest by using the topic's keyword. All the related information would appear if they are found. Besides that, employees could also "Follow" a certain topic so that they are able to check regularly on the information posted on those topics. This is much easier than having to post single information to many portals or groups. When posting an entry, assigning a topic to it is much easier; this makes searching of information easier for their colleagues. On the other hand, WorkVoices has the "Tag"-ging feature which is quite similar to Yammer's "Topic" feature. By "Tag"-ging a keyword to a post, employees can search for the post(s) easily by entering a specific keyword. One could tag an entry to more than one "Topic" (or "Group") so that it is easier to identify the entry.

We found that POKM tool has two additional features: eStandard Operating Procedure (eSOP) and eCommunities of Practice (eCOP). The eSOP provides standard procedures for employees to carry out their tasks. This is a step-by-step procedure. This allows employees to perform their task

correctly. The eCOP is similar to a forum where employees with similar interest can come together to discuss the problems and solutions that are relevance to their works. However, Yammer and WorkVoices use “Group”s to provide same kind of features dynamically. In Yammer and WorkVoices, there are some unique features which may attract the interest of the users. For example, the “Profiles” feature in Yammer and WorkVoices provide facility to employees to enter detail information about themselves such as their academic qualifications and pictures. The POKM don’t provide profile facility for its users. With correct profile data about the employees, colleagues would know expertise of other employees so that they can look for them for help. This is a very useful feature for knowledge seekers. Although both Yammer and WorkVoices have different interfaces for their profile pages, they serve the same purpose.

Some features in Yammer and WorkVoices such as private messaging, mobile, administrative tools and external network features are not available in POKM. With the private messaging feature, employees are able to send private messages to other employees which are not unavailable in POKM. This is a good feature since not all post will be shared among all employees. In addition, the mobile feature is very useful as employees can download Yammer into their mobile devices hence they could share and manage knowledge in a portable way. The employees could check and update information anytime and anywhere. Though this feature is still limited for WorkVoices, it does have a mobile application for Apple products such as iPhone and IPad. For Yammer, it provides mobile applications for Blackberry and Android mobile devices too. This feature is not available for POKM which makes it less attractive.

Table 7: Summary of mobile features used in POKM, WorkVoices and Yammer

Types of microblogging	POKM	WorkVoices	Yammer
Types of mobile devices	Not Available	Apple devices	Apple, Android, Windows, BlackBerry devices

In addition, features such as administrative and external network are useful for knowledge management. POKM is only good for internal use. It does not support external collaboration with external parties. Therefore, with Yammer’s external network, employees in the company are able to communicate and share knowledge with customers, suppliers, vendors and other external parties. WorkVoices, on the other hand, also have the external network feature. It also allows employees to join other networks created by external parties. Though Yammer’s external network is better as employees within the company creates the external network for external parties to join, whereas WorkVoices allows anyone to create an external network which may result in many different networks that may not be main networks that employees like to focus on. Without this feature, POKM is a less attractive system for external collaboration in a larger social networking culture. If the employees are able to collaborate with clients, the speed of solution delivery and quality of service would be more efficient and effective. With the administrative tools in the hand of the system management team, Yammer can provide a more secure platform for the both internal and external collaborations. It allows customers, clients and employees to have separate social networks to share information. Customers can’t access to employees’ network and vice versa. Clients will not be able to obtain sensitive data pertaining to the company’s operation that belong to another network. WorkVoices’s administrative tools also provide administrative features so that management team can control users and information being shared. It also uses RSS feeds and integration with wikis and Twitter.

The “Application” feature allows the users to install additional third party applications onto the Yammer platform. Users can download the mobile version of Yammer system to be installed on mobile devices to make knowledge sharing easier. Furthermore, as Yammer uses an open API, integration with the existing system is literally easier. In addition, Yammer also has a number of

applications which could be integrated as plug-ins. For example, posts from Twitter and SharePoint emails could be directly sent into Yammer as news feed. Therefore, employees do not need to open many social media sites to check on different updates as Yammer integrates everything into one platform. WorkVoices also have third party applications that are downloadable and installable on WorkVoices platform. Other applications that could be integrated with WorkVoices are SharePoint and Twitter. It would be beneficial if POKM could include this as an improvement to strengthen its knowledge sharing capability and to increase the flexibility of the system

Table 8: Summary of application features used in POKM, WorkVoices and Yammer

Types of Microblogging	POKM	WorkVoices	Yammer
Types of application	Not Available	Desktop, integration and third-party application	Desktop, integration and third-party application

Lastly, WorkVoices and Yammer have a Events management feature that allows employees to create events by input the date, time, subject and also attaching documents for a specific event. The event will notify all the related users as it is reaching the event date. This is useful so that employees will not forget an important meeting. Such event tracking feature is handy to its users. Moreover, WorkVoices also provide additional services to its clients such as customization, training, consultation and system implementation.

Yammer and WorkVoices have their own unique features and interfaces. Other insignificant features are not explained and elaborated in this discussion. Some of these petty features include notification, categorization of entries, polls, and announcement which may be quite useful for some.

7. Analysis of Investigation Results

Based on the detailed features and functions discussion presented in the last few sections, it has clearly shown that these three systems have a number of features and functions that are common. Even though they may have some differences, each of these systems has its own features and functions that are unique to facilitate knowledge management and knowledge sharing for organizations.

Firstly, Table 4 shows that POKM has all the functions and features that are essential for a Knowledge Management System (KMS); they are knowledge sharing capability, search function, notification, company directory, groups and others. Moreover, the system possesses multiple portals for the users to share information and knowledge in different categories such as IT Tips, Lessons Learning, Post Learning and so on. Basically, POKM has all the basic components that qualify it as an application for knowledge management and knowledge sharing through portals that store different types of information and knowledge being created and shared in their own directories.

On the other hand, Yammer and WorkVoices are enterprise microblogging systems that provide more attractive features for knowledge sharing and activity status tracking. These two systems incorporate social media concepts which allow much more interesting ways to share knowledge with each other. Based on the analysis of these two sites, Yammer and WorkVoices allow the users to create profile pages of their own, assign topics to entries posted and sending each other private messages. These features are not available in POKM currently. However, these features may offer users more creativity and attract more users to use the system. This would enhance the usability of the system and promote more knowledge sharing activity within the company through the use of the systems.

In addition, both enterprise microblogging systems also provide mobile application as a feature to promote easier information and knowledge sharing anytime anywhere. The administrative tool is an essential feature that provides security and control over the use of the system as confidentiality and privacy of information being shared within the network is also a pressing issue in many companies. Moreover, Yammer and WorkVoices allow companies to create external network to connect to external parties although both may provide different ways to accomplish this goal. But POKM only allows internal sharing of knowledge. The beauty of collaborative intelligence in a typical internal social network is limited because experts may come from within and externally of a company. This shows that Yammer and WorkVoices allow the network to grow internally and link externally so that knowledge sharing is not limited within a company only.

Yammer and WorkVoices also offer a number of add-on or plug-in applications that can be used together with the system. Some of these applications are from third-party software providers and the company may also choose to integrate their own applications into Yammer and WorkVoices. This is very useful for the company as it will enhance the interest of the users and the company's existing application can also be integrated into it. Moreover, both of the microblogging systems also support events management which is useful for setting up of meetings, discussion sessions and special events to be shared with members who join networks created in the company. Finally, in WorkVoices, it also provides customization services to those who are interested.

In conclusion, Yammer and WorkVoices offer more attractive and useful features compare to POKM. These features are useful to be used for knowledge management and knowledge sharing. Although POKM provides a structured taxonomy for knowledge sharing, the system might be dull and unattractive. Furthermore POKM seems a bit too formal and inflexible in all its KM features whereas Yammer and WorkVoices promote informal and real-time conversation and sharing of information. This explains why users would opt to use microblogging systems which offer more flexibility and comfortable interfaces. By comparing Yammer and WorkVoices, Yammer is a more preferable microblogging system as it is more popular and widely accepted by many global companies statistically.

8. Conclusion

In short, enterprise microblogging systems offer a lot of attractive and useful features compare to a classical KMS. The KMS of the case study company is a basic knowledge management system for users to store and retrieve information in a structured approach but microblogging systems use flexible and dynamic design such as groups and topics which are more interesting and robust. Unlike KMS which is only used for internal knowledge management and sharing purpose, microblogging systems allow wider collaboration with other third parties which would enlarge and enrich knowledge sharing activity borderlessly. Conclusively, this shows that enterprise microblogging system evidently is better than classical KMS in terms of its knowledge creation and sharing features that support collaborative intelligence across wider boundaries.

Acknowledgement

I declare that this research is of my own work and has not been submitted in any form for another degree or diploma at any university or other institute of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references given.

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