KEMI-TORNIO UNIVERSITY OF APPLIED SCIENCES

Experience of the use of collaborative tools on Knowledge Management

Case: MyMobileMyLife

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ABSTRACT

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The main objective of this thesis is to evaluate the effect of collaborative tools on knowledge management, using the organizational management process of the MyMobileMyLife 2010 as a case study. More specifically, it explains how knowledge is captured in collaborative environments with the use of collaborative tools, as well as suggests ways knowledge management can be improved in the 2011 edition of MyMobileMyLife. This thesis is commissioned by MKFC Stockholm College, Sweden.

The analysis of this qualitative single case study utilizes data gathered from four semi-structured interviews conducted amongst selected personnel from the collaborating organizations; MKFC Stockholm College, Sweden and Kemi-Tornio University of Applied Sciences, Finland. The theoretical framework guides the development of this thesis and enables one to link the findings to the context of this work it is based on knowledge was captured in the cause of MyMobileMyLife. In addition, it provides an insight to knowledge management, collaborative tools and how they are closely related.

The study results indicate that interviewees share similar and divergent opinions when using collaborative tools in online environments. The results show that collaborative tools can assist knowledge management, provided the tools being used are pre-determined and readily accessible to all members working within the same environment.

On the basis of my findings, I would suggest that pre-determined organizational policies that guide the use of collaborative tools be introduced to ensure knowledge is accessed by members in online environments. I would also like to suggest the utilization of single and de-centralized information portals, which would guarantee knowledge content can be accessed and captured by members of online communities.

Key words: collaborative tools, social media, knowledge management, online communities.

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1 INTRODUCTION

This Bachelor thesis evaluates the use of collaborative tools on knowledge management, using the experiences of social media software applied through a collaborative process for the 2010 edition of the MyMobileMyLife Workshop as a case study.

1.1 Background and Motivation

My motivation to research this topic is borne out of my inclination to social technologies and the relatively new concept of social media and an effort to understand its impact on organizations and humans alike. This motivation is also encouraged by MKFC Stockholm College, Sweden who has commissioned this thesis. They are the beneficiaries of the findings from this work.

In my attempt to document the impact of collaborative tools on organizational knowledge management, my research uses the experiences of developers from the 2010 edition of MyMobileMyLife Workshop-Festival. It uses these experiences to describe how knowledge was accessed and captured during the collaboration process between MKFC Stockholm College, Sweden and Kemi-Tornio University of Applied Sciences. My research will show the impact collaborative tools had on the organizational management process of MyMobileMyLife.

1.2 Methodology of the Work

The organizational planning process of MyMobileMyLife (MMML), which is used as the object of my survey, is a social media hub, which is open for everyone interested in developing new mobile solutions no matter what their level of education or knowledge in technology is.

The project commenced with online collaboration within MyMobileMyLife found in the Ning environment and was coordinated by two teams operating from two cities located in different countries-Tornio, Finland and Stockholm, Sweden. Activities were

coordinated with the aid of online technologies and knowledge was managed with the aid of collaborative tools.

The work of the MMML online community culminated in an international Information and Communications Technology for Development (ICT4D) Workshop. This was held in Tornio, Finland between 26 and August, 2010. The festival brought together members of the organized private sector and many corporate individuals with a stake in information communications technology that have overcome challenges in synergizing social media and knowledge management. It also brought together members of academia in this field, because the MMMLife development community and the festival were coordinated by e-learning institutions in the Nordic Region i.e. MKFC (Multicultural Popular Education Centre) Stockholm College, Sweden and Kemi-Tornio University of Applied Sciences, Finland.

My practical training placement in the summer of 2010 was with MyMobileMyLife Development Team. My job tasks included collecting and analyzing data for my research work under the tutelage of my research supervisor. Other tasks included:

- o Working in the collaboration and online communities based on the ideology of social media.
- o Helping with organizing the international workshop festival.
- o Getting acquainted with mobile applications and usage.

These tasks in the MMMLife 2010 project gave me a strategic advantage and placed me in a position where lots of resources were made available for my research work. My interview questions were answered by members of the development team of the MMML workshop-festival from both institutions; MKFC Stockholm College, Sweden and Kemi-Tornio University of Applied Sciences, Finland. The responses generated from these interview sessions are used to research the effect collaborative tools had on the organizational management process of the 2010 MyMobileMyLife Workshop while working in online and collaborative environments. The findings from the research also set a baseline for the 2011 edition of the same workshop.

1.3   Structure of the Work

The theoretical foundation for this work is built around how information was captured and knowledge managed during the organizational management process of the MyMobileMyLife Workshop Development Team, within a time-frame of June 1 – August 31, 2010. This thesis is divided into seven chapters.

The First Chapter begins with an introduction of the case company, background information as well as my motivation for writing this thesis. Chapter Two presents the research questions and further justifies why these questions are being researched upon. In Chapter Three, the research methodology used is explained in detail. It describes my research process and how data generated is analyzed to fully understand the impact of collaborative tools on knowledge management. Chapter Four provides a theoretical framework that guides the development of this thesis and enables one to link the findings to the context of this work. It shows how knowledge was captured and organized in the MyMobileMyLife Workshop and the impact of collaborative tools at the operational level, marketing level and research and development. Chapter Five analyses the responses from the interview sessions with select interviewees and shows how much collaborative tools impact online environments. Based on the analysis, Chapter Six presents development suggestions for the 2011 edition of the MyMobileMyLife Workshop. Finally, the conclusions and discussions of the conducted research are presented in Chapter Seven.

1.4   Keywords Definition

In the course of this work, the words listed below are used often;

Collaborative tools are application software that enables interaction in social media.

Web 2.0 referred to as social media are web applications that facilitate sharing and collaboration on the World Wide Web.

Online platforms and communities are virtual environments where people collaborate and exchange knowledge with the use of collaborative tools.

Knowledge is defined as a justified true belief.

Knowledge Management is defined as identifying and leveraging the collective knowledge in an organization to help organizations compete.

2   RESEARCH TOPIC AND QUESTIONS

2.1   Research Topic

The main purpose of my thesis is to evaluate the effect of collaborative tools in knowledge management, using the organizational management process of the MyMobileMyLife 2010 and also suggest ways knowledge management could be increased in the 2011 edition. In accordance to these research objectives, the following research questions have been developed:

- How is knowledge captured in collaborative environments?
    1) What kind of impact do collaborative tools have on the flow of information?
- How can knowledge management be improved in the 2011 edition of the MyMobileMyLife Workshop?
    1) How can collaborative tools assist in the workshop organization process?
    2) How can the use of collaborative tools help in collaborative environments?

2.2   Research Questions

I. How is knowledge captured in collaborative online environments?

There has been abundance of literature published about the perception of knowledge management and its close relationship to information and data, coupled with people's skills and competence. Nonaka & Takeuchi (2004) argue that knowledge codification is about connecting people with information to ensure structure, collaboration and knowledge domains. However, the emphasis on knowledge is based on the assumption that factors that militate against accessing and structuring knowledge are strategically important. (Alavi & Leidner 1999).

To answer this research question, I will analyze how group knowledge was managed and communicated across the several online environments in the course of our virtual meetings.

A. What kind of impact do collaborative tools have on the flow of information?

Since the advent of web 2.0 phenomenon commonly referred to as social media or collaborative tools, it has become possible to disseminate information dissemination within organizations (Smith 2009). The mode in which collaboration occurs within organizations is increasingly digitalized but a digitalization standard is yet in phase. It is essential to analyze if the advent of web 2.0 and collaborative tools pose a threat to the traditional means of transferring and documenting information which were done by storing word processed documents in physical files.

To answer this research question, I have analyzed the various modes in which information was disseminated around the development team members of the MMML workshop. I benchmarked which mode was the most effective based on its goal-specific purpose and response timeline. These analysis is found in Chapter Five.

II. How can knowledge management be improved in the 2011 edition of MyMobileMyLife Workshop?

After the 2010 edition of the workshop, feedback was taken through e-mail from amongst a cross-section of the participants. Some of them attributed workshop short-comings experienced to information being dual on different portals. These short-comings may be traced back to the development team having to work cross-border.

To improve knowledge management in the second edition of the MyMobileMyLife Workshop, I will determine which collaborative tools served its purpose best based on a general consensus from the interview sessions. I will present extensive suggestions on how the second edition can be improved. These suggestions are contained in Chapter Six.

A. How can collaborative tools assist in the workshop organization process?

To understand the practice of knowledge codification I considered how work was organized from a collaborative viewpoint. The examination of this question helped me understand how social media assist in codifying knowledge.

To answer this question, one analyzes the challenges and/or limitations the development team of the MMML Workshop encountered in their bid to enhance collaboration and inter-organizational communications. This will also help in understanding how group knowledge was managed and communicated across online communities.

B. How can the use of collaborative tools help in collaborative environments?

The concept of social media is constantly changing the way business is done. Organizations are evolving at an alarming rate. The manner in which information is stored is rapidly changing.

In answering this question, I determined the impact collaborative tools had on the collaborative efforts of developers from MKFC Stockholm College, Sweden and Kemi-Tornio University of Applied Sciences, Finland.

All my research questions are analyzed and the results presented with the use of my research methodology choice, which the next chapter discusses.

3   RESEARCH METHODOLOGY

This chapter discusses my research methodology and the approach I build my research upon. A methodology is an approach to the process of a research, encompassing a body of methods. Research data can be primary or secondary data. Primary data is data generated from an original source, while secondary data is generated from existing sources (Collis & Hussey 2009, 73). My primary data was generated via interview sessions with four members of the MyMobileMyLife Development. Secondary data for this research was generated from several books and non-printed sources listed in an alphabetical order in the reference section of this research.

My research methodology is from an interpretive approach because I attempt to understand the impact of collaborative tools on organizational knowledge management as assigned to it by members of the development team of MMML 2010 assigned to it.

3.1   Case Study

I make use of a single case-study research, thus the organizational management process of MyMobileMyLife Workshop Festival held in Tornio, Finland, from its planning stage to its eventual implementation in August, 2010. I use in-depth theoretical and empirical enquiries to build up my research because my case-study is based on a real life scenario with unclear boundaries between its case and context (Yin 1984, 13). My argument is built mainly on information generated in the process of interviewing and is buttressed by the use of literature; printed and non-printed sources all vetted by my thesis-supervisor.

This interpretive approach is well-suited for making qualitative researches like this (Ringel & Ringel 2010, 524-539) and providing a basis for the application of its ideas, as it puts forward a set of working-frame that will eventually serve as a reference-point of thought to eventually deal with these real-life challenges.

3.2 Observations

Observations are another type of research method. It involves looking and listening very carefully. There are two types of observations; participant observation and direct observation. The former is a more common type of qualitative data collection as well as the most demanding because it requires the observer to become a participant in the context being observed. Whereas, the latter form of observation does not require the participant to directly participant in the context. Instead, it requires the observer to be as unobtrusive as possible so as not to bias the observations.

For this work, I was a participant observer as it allowed me observe the organizational management process of MyMobileMyLife from a natural perspective. Doing this justified its purpose because interviews only show the views of the interviewees at one time. Through direct observation as I was able to observe their situations over time, thus, revealing changes.

3.3 Interviews

An interview is a study where the data and finding are based on direct researcher-to-respondent conversations, in person or by phone. A major advantage of an interview is the clarity in the respondents' viewpoint during interview sessions. I had my practical training placement as a member of the development team of the MyMobilemyLife in summer 2010, thus making me well aware of their working context, as I gained first-hand knowledge about the working culture.

Empirical data for my interviews was collected with the use of semi-structured and open-ended questions asked during interview sessions with four members from the development team of MyMobileMyLife. The interview questions are developed to query interviewees about their opinions and possible challenges encountered during the cause of their planning and information sharing.

The interviews were semi-structured with comparative and thematic questions, which pertain only to knowledge management and collaborative tools used. Their responses are matched and compared to one another. This type of interview type incorporates elements of both quantifiable, fixed-choice responding and probe in more depth certain

areas of interest. Semi-structured interviews are generally easy to analyze, qualify and compare. It allows interviewees to explain their responses and provide more in depth information where necessary. However, the temptation to spend more time on peripheral subjects, the danger of losing control of the interviewee, and the reduction in the reliability when using non-standardized approaches to interview each respondent are some of the disadvantages of semi-structured interviews. (Brewerton and Millward 2001, 70.)

Afterwards, I transcribe and code the responses before drawing conclusions. Before coding, I read through all of the comments made in response to the open questions and group them into meaningful categories, after which values are assigned to each of them to ascertain the response-area with the highest values. The advantage of coding helps ensure preconceptions and generalizations are avoided.

My interview questions are listed as an appendix, while specific analyses of the outcomes are presented in Chapter Five.

3.4   Limitations of the Study

The authenticity of my responses is based on the assumption that the respondents are honest and that the answers can be recorded in an exact and reliable way.

My established relationship with some of my interviewees may be a challenge also; there is a likely hood of bias in documenting their responses. To avert this, I made use of audio memos to ensure everything is well documented.

The authenticity of the primary data collected might be a limitation as the interview questions were in English. However, the English language is not the mother tongue of all my interviewees. A potential problem related to interviews done with a secondary language is that it carries a risk of misinterpretation. When interviews are conducted with a secondary language the interviewee might misinterpret the content or tone of the interview question. While some of them have a good command of English, others interviewees do not. Some cases arose where I had to repeat or coin my questions in another form to get responses; thus, causing these questions to lose their context.

Another limitation associated to the empirical part of this research is my interview format. One of the interview methods used in this research was an email interview, which also carries risk of misinterpretation. Furthermore, the emotional tone of an email can be hard to interpret for the interviewee. The answers gotten from the e-mail interviews were straight to the point and devoid of any emotion.

The generalization of my research findings is also a limitation. Due to the low number of interviews, the results of this study can not be statistically generalized and only apply in this particular case study. The findings gathered from this research give an insight on the impact collaborative tools have on the knowledge management process of two collaborating organizations. However, they are not representative on a general scale; therefore might not be relevant for other organizations.

Finally, collaborative tools being a relatively new concept make the amount of research available in this area quite minimal.

4 THEORETICAL FRAMEWORK

This chapter provides a framework that guides the development of this thesis and enables one to link the findings to the context of this work. It shows how knowledge was captured in the organizational process of MyMobileMyLife. This framework gives an insight to knowledge management, collaborative tools and how they are closely related.

4.1 Knowledge & Knowledge Management

Knowledge is created as a result of a constant interaction between two spheres (Räisänen 2010, 22.) as can be seen from Figure 1 below;
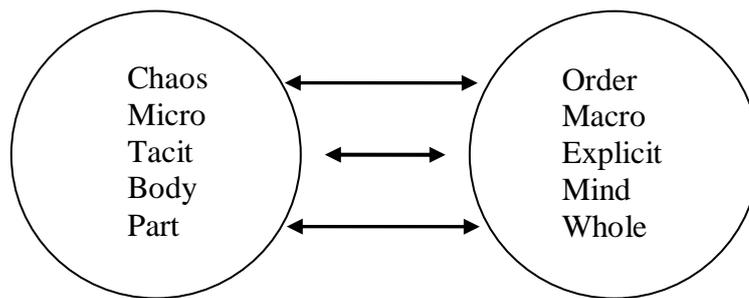
Figure 1. Knowledge creation by an interaction of two spheres (Nonaka, Toyama & Konno 2000, 6)

Nonaka et al (2000, 6) asserts that "knowledge is created in the spiral that goes through two seemingly antithetical concepts such as chaos and order, micro and macro, part and whole, mind and body, tacit and explicit, self and other, deduction and induction, and creativity and control." Much can be inferred from this percept about how knowledge was created during the organizational process of MyMobileMyLife

Räisänen defines knowledge from an IT perspective (2000, 15). He states that knowledge is usually defined by distinguishing between knowledge, information and data. Data are seen as raw numbers and facts, information as processed data and knowledge as personalized information. The important thing to note however, in this

classification is the distinction between knowledge and information. Knowledge should be something more than information; otherwise there is nothing new in knowledge management. (Räisänen 2010, 15). Nonaka et al (2000, 7) asserts that knowledge is defined as a justified true belief and it exists in two forms: explicit knowledge and tacit knowledge. The former type of knowledge can be expressed in words and numbers and shared in the form of data, scientific formulae, specifications, manuals and the likes. Explicit knowledge is readily transmitted between individuals formally and systematically. The latter type of knowledge is highly personal and hard to formalize, making it difficult to communicate or share with others. (Nonaka et al 2000, 7).

This justified belief suggested above (Nonaka et al 2000, 7.) is acknowledged as perhaps the most important factor for corporate competitiveness (Stenmark 2002). Organizational knowledge is at the crux of sustainable competitive advantage (Bontis 1999, 271). It is regarded as an organizational asset that enables sustainable competitive advantages across various organizations (Alavi & Leidner 1999). Alavi & Leidner (1999) also reaffirm Hackbarth's (1998 cited in Alavi & Leidner 1999, 113.) notion that knowledge management is purported to increase innovativeness and responsiveness. It is believed that he who masters the knowledge of an activity dictates its pace. This belief is justified and made more evident by the success indicators of several organizations; small, medium and large (Informationweek.com 2010). However, knowledge is distributed amongst many entities and its documentation is a very vital operational aspect in organizational management (Ylä-Anttila 2010).

There have been several publications about knowledge management (Alavi and Leidner 1999; 2001, Nonaka 2000, Stenmark 2002.) and even more arguments discussing its codification process. The notion that knowledge codification is essential is based on several opinions that knowledge can be managed, and it is still an area for discussion. Several knowledge scholars (Alavi and Leidner 1999; 2001, Nonaka 1998; 2000, Stenmark 2002) believe codification is the best way to ensure that knowledge is re-usable or transferable within an organization. Nonaka (2000, 7) suggests that knowledge codification is the best way to express knowledge that is difficult to interpret. Stenmark (2002, 8) reaffirms Polanyi's (1966 cited in Stenmark 2002, 8) notion of tacit knowledge as a backdrop against which all actions are understood. However, Stenmark (2002, 8) also affirms that tacit and explicit knowledge are mutually constituted and

should not be viewed as two separate types of knowledge. These statements have been the genesis of several arguments over the years and still lack a resolve.

The objective of Knowledge Management is to support the creation, transfer, and application of knowledge in organizations and it can be defined as identifying and leveraging the collective knowledge in an organization to help the organization compete (Alavi & Leidner, 2001). Alavia and Leidner (2001) also reaffirm Davenport and Prusak's (1998 cited in Alavi & Leidner 2001, 133) three aims of knowledge management being; (1) to make knowledge visible and show the role of knowledge in an organization; (2) to develop a knowledge-intensive culture by encouraging and aggregating behaviours such as knowledge sharing and (3) to build a knowledge infrastructure - not only a technical system, but a web of connections among people given space, time, tools, and encouragement to interact and collaborate. This research work describes the impact of collaborative tools on knowledge management as analysed from the experience of developers in the organizational process of MyMobileMyLife.

4.2   Collaborative Tools

Collaborative tools are application software that enables interaction in a social media hub, otherwise referred to as web 2.0.

Social media or Web 2.0 can be explained as web applications that facilitate sharing and collaboration on the World Wide Web (www). Web 2.0 refers to a perceived or proposed second generation of Internet-based services (O' Reilly 2005). The concept of social media is a rhetoric used to designate web services that receive the most of their content from their users, or web services that aggregate its contents from other sites. The defining purpose of social media is a concept that aims to bring people closer through collaboration (Jaminki 2010). Different social networking sites, wikis, communications tools and tagging enabled the development team of MyMobileMyLife to collaborate effectively in the process.

This collaboration process witnessed cooperation from two institutions of higher learning from different countries. The institutions worked across online communities which offer a chance to share knowledge because people could join the environment from anywhere and at anytime that fits their schedule, which is perfectly ideal for

geographically dispersed groups such as theirs. It became possible to deliver knowledge online without losing the context of the knowledge. Knowledge is not only information since it depends on context; some context may be lost in the process of knowledge codification. According to Albert Mehrabian words are only 7% of our communication, the rest is voice and body language. In other words, the work mode of the MyMobileMyLife Workshop ensured the context of the knowledge was captured as though it were a physical environment.

To ensure the context of the knowledge was effectively captured, the MMML developers used the collaborative tools, as illustrated in Figure 2.

Figure 2. MyMobileMyLife knowledge framework and objectives. (Modified from Bernoff & Li, 2008)

Table 1. MyMobileMyLife Knowledge framework including success metrics (Modified by Bernoff & Li, 2008)

Tools	Objectives	Success metrics
Operations • **Wikis** • **Forums & Communities** • **Google Docs**	Provide developers with tools that enabled assist one another. To document knowledge and ideas from weekly	Number of developers participating Increased efficiency Decreased volume of email Knowledge documented

	meetings	
Marketing • **Twitter** • **Facebook** • **Ning** • **Blogs**	To produce and promote marketing awareness & visibility	Number of enquiries generated from these environments Documented and accessible enquiries
Research & Dev. • **Moodle** • **E-mail** • **Google Analytics** • **Wix**	To direct the focal points of the workshop and gain customer insight. To develop and analyze traffic on our workshop website	Insights gained Concepts created Website developed Ability to monitor visitor traffic on workshop website
Customer Support • **Wikis**	To enable customers support each other	Number of members participating Increased efficiency Decreased volume of e-mails

Bernoff & Li (2008) described each tool and objective and assigned various criteria which were used to measure success, as can be seen from the table above.

4.2.1 Operations

On the operational level, the collaborative tools were chosen to ensure MMML developers and coordinators were able to assist one another. The tools used include:
- o Internet-forums & communities
- o Wikis
- o Google Docs

4.2.1.1 Internet Forum

An internet forum is an online discussion site where people can hold conversations in the form of posted messages about common issues. The MyMobileMyLife Team had a discussion forum on the Ning website which was aimed at getting people's opinion about the workshop.

4.2.1.2   Wikis

A wiki is a web application whose content is collaboratively added, updated, and organized by its users. As is the case with blogs, forums and other content management systems, a wiki's content is editable through a Web page interface. What separates wikis from blogs, forums and traditional content management systems is that wikis are inherently amorphous. The site's users create the content, define the relationships, and establish the links between the site's Web pages (MSDN Magazine, 2008).
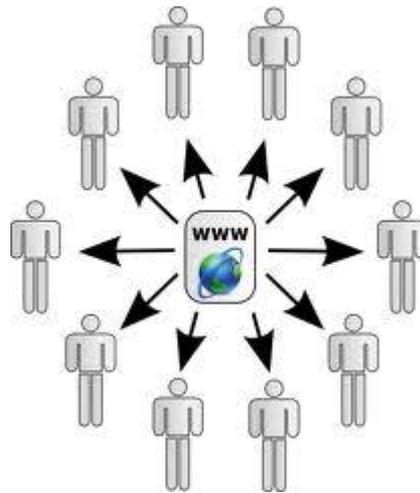

Figure 3. Illustration of MyMobileMyLife wiki structure

Minutes from the MyMobileMyLife weekly meetings were documented and archived in wikis created. Doing this ensured information was easily accessible and rightly referred to when needed. In other words, this was how knowledge was managed and made explicit.

4.2.1.3   Google Docs

Another tool used at the operational level was Google Docs. Google Docs is a free, Web-based word processor, spreadsheet, presentation, form, and data storage service offered by Google. It allows users to create and edit documents online while collaborating in real-time with other users. The MMML Development team used this tool to share content seamlessly and store presentations and guest lists without duplicating efforts. However, the language was in Swedish because the administrator was from MKFC Stockholm College. This language barrier made it impossible to

navigate around its user interface without difficulty; inadvertently slowing down the team's work pace.

4.2.2   Marketing

The objective of marketing for MyMobileMyLife was to produce and market the workshop's awareness. The team's online visibility was acquired via Twitter, Facebook, Ning and Blogs.

4.2.2.1   Twitter

Twitter is a social networking and micro-blogging website that enables users to send and read text-based posts composed of up to 140 characters, called *tweets*, which are displayed on the user's profile page as can be seen in Figure 4 below.
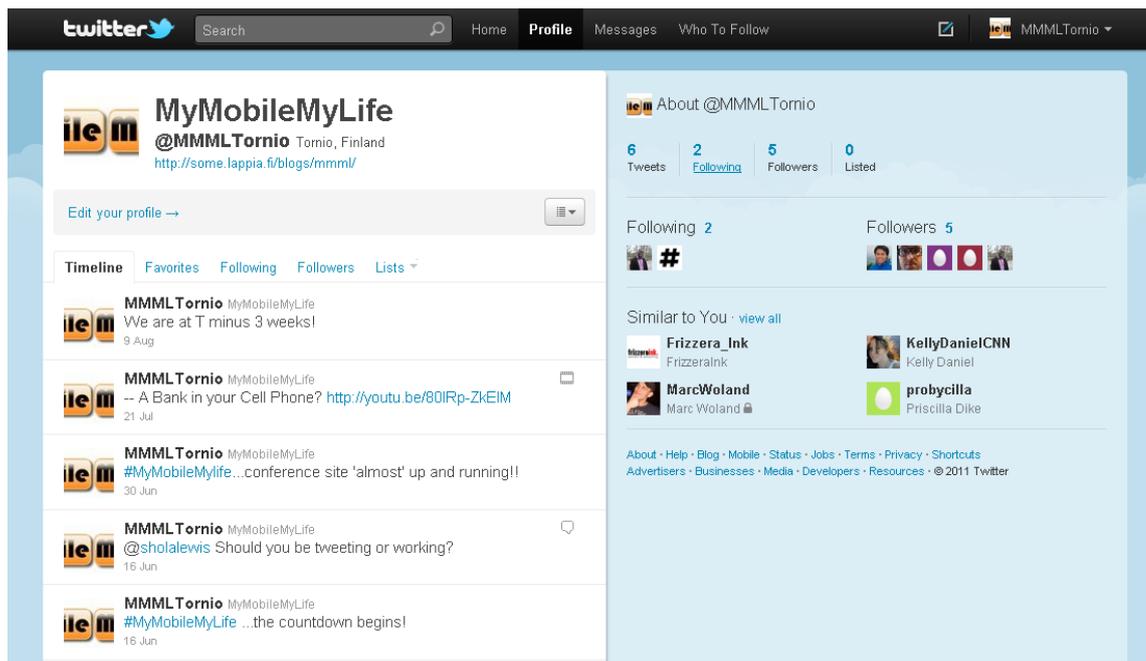
Figure 4. MyMobileMyLife Twitter screen dump

Through this medium, the MMML Development Team was able to post content related to the various mobile solutions being were worked on.

4.2.2.2 Facebook

Facebook is a social networking site that connects people with friends and others who work, study and live around them. As of January 2011, Facebook had over 600 million registered users making it the largest social networking site in the world (Business Insider 2011). Through the MyMobileMyLife Facebook page, the MMML Development Team was able to post information about the workshop and case-competitions as can be seen in Figure 5. It served as a useful tool to disseminate information to MMML's target audience.

Figure 5. MyMobileMyLife Facebook Page screen dump

Administration of the MMML Facebook page was a responsibility shared by developers from Kemi-Tornio University of Applied Sciences and MKFC Stockholm College making it easy to get immediate feedback and make periodic updates.

4.2.2.3 Ning

Another collaborative tool used for marketing was Ning. Ning is an online platform for people to create their own social networks. The MyMobileMyLife Ning environment was created by MKFC College to be a knowledge repository. It served as the primary information hub. General and specific information about the workshop, organizers and

case-competition was on this website. As a matter of fact, every other information channel was re-directed to the Ning environment for more information.

Figure 6 MyMobileMyLife Ning Page screen dump

One major challenge the MMML Development Team encountered with Ning was its administration. Unlike Facebook and Twitter, it was not de-centralized. Participants who registered and/or posted comments had to wait longer than usual to receive feedback. This was largely due to either of two factors:

- o Ning is a closed platform and requires a subscription,
- o The graphic user interface of Ning is not as friendly as other social media sites.

Its impact as a marketing tool was not as grounded as expected. However, the responses from my interviewees assert that if its management was decentralized then it would serve a larger marketing purpose.

4.2.2.4   Blogs

The MMML Development Team also made use of blogs. The term web-log or blog was coined by John Barger in 1997 and refers to a personal online journal that is frequently updated and intended for general public consumption. Blogs are defined by their format: a series of entries posted to a single page in reverse-chronological order. The MMML Blog, illustrated in Figure 7 below generally reflected the theme of the workshop. Topics mostly included various mobile solutions that can aid development.

Figure 7. MyMobileMyLife Blog screen dump

The MMML blog was managed by the developers and served as a reliable channel to disseminate useful information regarding what the workshop had to offer. The comments received were a testament to its impact in reaching their marketing objective.

Together these tools guaranteed the MMML workshop was visible on the World Wide Web. It ensured prospective attendants could access information about the workshop and make enquiries.

4.2.3   Research and Development

Research and development was done with the aid of Moodle, E-mail, Google Analytics and Wix. The main objective was to direct the focal points of the workshop and gain customer insight. The MMML Development Team used these collaborative tools to develop and analyze traffic on our workshop website.

4.2.3.1 Moodle

Moodle was used to for research and development. Moodle (abbreviation for *Modular Object-Oriented Dynamic Learning Environment)* is a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It is a free web application that educators can use to create effective online learning sites. It is used by thousands of educational institutions around the world to provide an organized interface for e-learning, or learning over the Internet (Moodle.org, 2011).
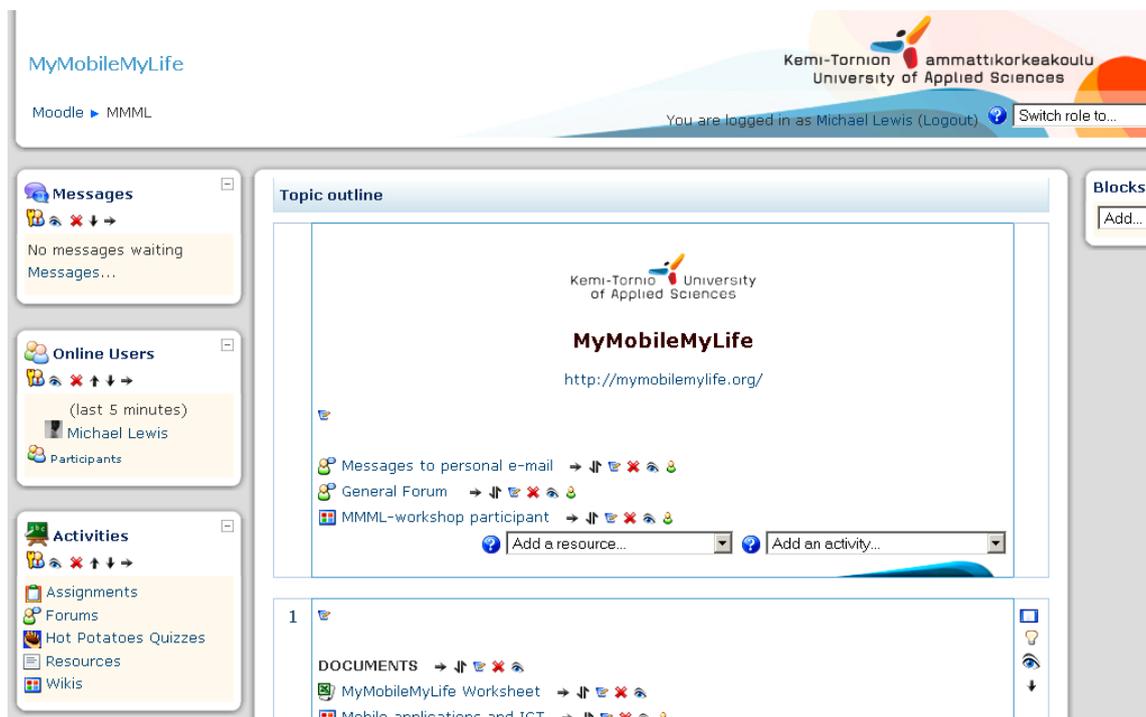
Figure 8. MyMobileMyLife Moodle page screen dump

Moodle allows educators to create online courses, which students can access as a virtual classroom. A typical Moodle home page includes a list of participants, comprising the teacher and students, and a calendar with a course schedule and list of assignments. Other Moodle features include online quizzes, forums, wikis where students can post comments and ask questions, glossaries of terms, and links to other Web resources. The Tornio MMML development Team created an exclusive Moodle environment for MMML trainees in Tornio. This environment served as the main working tool for them. It contained all meeting memos, passwords to every online environment that was being used, workshop materials etc. With this tool, collaboration and communication was made a lot easier. Information was well managed and documented in a way that was

readily and easily accessible. The developers in Stockholm made use of OPIT; a Finnish Learning Management System (ICT Works, 2011.) which is very similar to Moodle.

4.2.3.2   E-mail

Another collaborative tool that enhanced research and development was the use of E-mail, which is a system for sending and receiving messages electronically over a computer network, as between personal computers.

E-mails were more or a less the traditional means of communicating with not just one another, but also with the public. The team created a common e-mail for the workshop. This e-mail enhanced back and forth communications with guests, intended speakers, members of the press etc. Correspondences received via e-mail were guaranteed to be delivered to and were readily retrievable any time needed. The major advantage of using the MMML E-mail client is its effectiveness in providing quick answers to yes and no, type questions. It was possible for the MMML Team to distribute information quickly to many people for the time it takes to e-mail one person.

However, the efficacy of the e-mail in the organizational management process still had some short-comings. These included:

- o E-mails became time-consuming for answering complicated questions and misunderstandings arose because of cultural differences in the interpretation of certain words.
- o E-mail sometimes became impersonal or misunderstood.
- o The use of pronouns led to serious misunderstandings. Developers endeavoured to write the full description rather than abbreviate sentences with pronouns.

However, the team managed to overcome these challenges by reverting to other collaboration tools already mentioned above.

4.2.3.3   Google Analytics

Google Analytics (GA) was also used for research and development. GA is a free service offered by Google that generates detailed statistics about the visitors to a website. Implementing GA on to the MMML website was relatively easy, all the team

had to do was embed the analytics code to all web pages and the program did the analysis-which was viewed through an interactive dashboard on its graphic user interface.
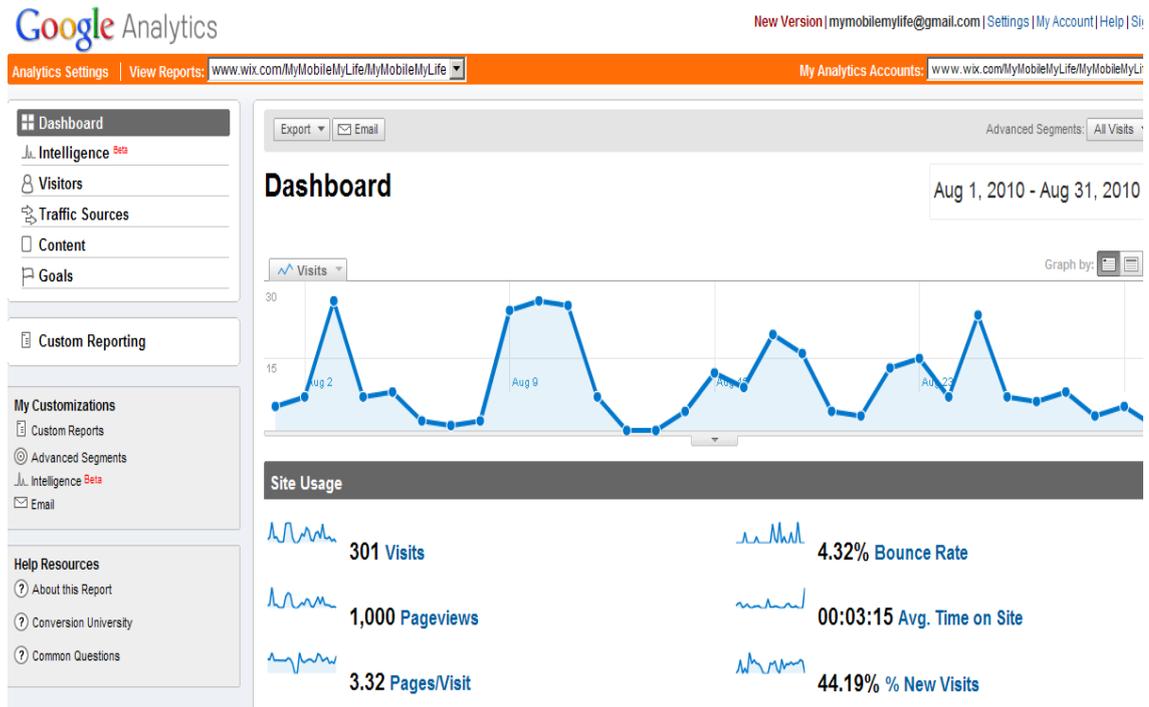
Figure 9. Screen-dump of MyMobileMyLife Google Analytics page analyzing internet traffic on the website

With GA the team was able to monitor and analyze traffic on the workshop website. This tool also showed the exact page every visitor on the website viewed. The page with the most hits meant viewers were attracted to such issues, while the pages with the least hits had to be re-organized to ensure viewing.

Overview of Google Analytics between August 1 and August 31, 2010 is illustrated in Figure 9 above.

The MyMobileMyLife workshop online visitor analysis is as follows:
- o   A total of 301 Visits
- o   A total of 1,000 Page-views
- o   An average of 3.32 Pages/Visit
- o   Viewers from 14 countries spread across 5 continents
- o   Traffic sources include 99.34% via Wix.com, 0.33% via direct traffic & 0.33% via search engines.

(Source: MyMobileMyLife Google Analytics Dashboard)

The statistics contained above are accurate and represent the traffic flow to the MyMobileMyLife web pages.

4.2.4 Customer Support

The idea of customer support was to encourage customers to support each other. To achieve this, the development team made use of customer communities and wikis. The impact of this idea increased the interest of participating members as was reflected from the comments made in the forums and customer communities.

It also decreased to some extent the volume of emails the development team had to respond to. A member was of the development team was charged with the task of responding to comments from customers on customer communities.

4.3 Relationship between Knowledge Management and Collaborative Tools

Attempting to fully underline a mid-point between knowledge management and collaborative tools may prove difficult. On the one hand, collaborative tools provide unexampled possibilities for sharing information and knowledge amongst colleagues closely bound by shared interests, which is what knowledge, is all about. On the other hand, these same collaborative tools threaten organizational control of information and increase the risk of loss of group knowledge because of the ease in which information can be disseminated. Knowledge management defines the goal then selects the appropriate tools, collaborative applications provide the tool with the hope that a common goal will emerge. Where knowledge management is often practiced by older professionals, collaborative tools are applications for the younger crowd.

5 IMPACT OF COLLABORATIVE TOOLS IN ONLINE ENVIRONMENTS

This chapter uses the analyses of the interview sessions to show the impact collaborative tools had on MyMobileMylife. These findings are presented as six sub-chapters contained in the latter part of this chapter.

5.1 Analysis of the Transcripts

From the responses given by the interviewees it can be seen that they shared similar and divergent working opinions in their responses to a number of questions.

5.2 Impact of Collaborative Tools in MyMobileMyLife

Collaborating from two different time zones is often cumbersome, but a larger part of their responses reveal that these two teams were able to combine effectively with the aid of specific tools. These tools are illustrated in Table 2.

Table 2 Collaboration tool order

	Inter-organizational Collaboration	Codification	Managing Group Knowledge	Accessing & Sharing Knowledge	Challenges & Limitations	Most Effective	Least Effective
Interviewee 1	NING	Google Docs, Blogger	skype	opit	NING	All	NING
Interviewee 2	Google Docs	Google Docs, Moodle	NING	Moodle	NING	All	NING
Interviewee 3	NING	Google Docs, Blogger	Blogger	All	NING	All	NING
Interviewee 4	Google Docs, iLinc	Google Docs, Moodle	Moodle	Moodle	NING	All	NING

5.2.1 Inter-Organizational Collaboration

The information and knowledge shared through the use of collaborative tools played a major role in inter-organizational communications as it was possible to keep track information received from everywhere. Ritanoro, Marja-Riitta and Khan, Alamdar used different tools to achieve this because there mother-organizations were subscribed to the

Ning service. The other interviewee's response could be attributed to their need to use tools that served their immediate purpose.

5.2.2   Codification

Knowledge documentation was an integral part of the workshop process. Both teams were able to achieve these with the aid of Google docs, which shared knowledge common to all developers from both countries. Blogs and Wikis were also used, but these choices were attributed to the need to share knowledge common to country specific teams i.e. Blogs for Stockholm team and Wikis for the Tornio team.

5.2.3   Managing Group Knowledge

To manage group knowledge, specific tools were chosen. Administrators from both teams were given administrator privileges to edit content. These tools included the workshop blog, e-mails and Moodle. However, Ning which is an online platform for people to create their own social network posed some set-backs because the service subscription stopped being free and developers were not used to its operations. According to Interviewee 3, when this happened, some of the functions were not available later in Ning mini causing developers to lose some information.

5.2.4   Accessing and Sharing Knowledge

To effectively access and share knowledge, the tools used justified their purpose. The Stockholm team used OPIT to access and share knowledge, which could be said to be internal. Whereas, The Tornio team in turn used Moodle which is very similar to Stockholm's OPIT and can also be said to have been used to access and share internal knowledge. Furthermore, it can be argued that the reason they recorded such success was because these collaborative tools were free for all.

5.2.5   Challenges and Limitations

From the transcripts of interview responses, it can be seen that all interviewees complained about challenges with the use of Ning. This is attributed to the fact that this particular collaborative tool was not free. Its administration was monopolized making it

very difficult for most developers to edit content. It was the sole responsibility of one developer, thereby putting a huge constraint on response time. Due to these factors, developers' use of the Ning tool was minimal. (Ritanoro, Marja-Riitta, Jäminki, Seija, Khan, Alamdar and Ezewuzie, Patrick)

5.2.6   Effectiveness of Collaborative Tools

It was a unilateral response that Ning was the least effective because of the reasons mentioned in the paragraph above. However, interviewees had different opinions about which tools were most effective in the process of collaboration. They agreed that the use of whichever tool used was justified because the information these tools generated were easily accessible and readily available to people everywhere.

6   DEVELOPMENT SUGGESTIONS

This Chapter provides development suggestions. It is preceded by discussing the role collaborative tools play in capturing knowledge in online environments, which answers my first research question. This will be followed by how knowledge management can be improved in MyMobileMyLife 2011, which answers my second research question. It is thereafter concluded with a summary of my study results.

6.1   Knowledge Capturing in Collaborative Environments

The table in Chapter Five shows how Group Knowledge was managed. All interviewees had a different experience concerning the use of collaborative of collaborative to manage group knowledge. Interviewee 1 informed that E-mails and Skype was used, Interviewee 2 informed that Ning was used, Interviewee 3 informed that Blogs helped manage group knowledge, while Interviewee 4 informed that Moodle was used.

This variance in can either be attributed to interviewees selecting collaborative tools that they were most familiar with or interviewees using tools that they have total control over its content and how it is structured.

It can be concluded that the best way to ensure members in collaborative environment share captured knowledge effectively is by giving them appropriate privileges to access its content without recourse to a singular person. Should there be an anomaly or content loss, it is advised to revert to the timestamps on each content entry and match it with the time-line. Doing these ensures lost content can be retrieved.

6.2   Improving Knowledge Management in the 2011 Edition of the Workshop

As earlier stated, this thesis also serves as a reference document and contains development suggestions for the 2011 edition of the MyMobileMyLife Workshop-Festival which is scheduled to hold in October. After a careful analysis of the responses of the interviewees, I present the following recommendations.

6.2.1 Organizational Policy

Having a pre-determined policy that dictates the collaborative tools to be used during planning ensure developers of the MyMobileMyLife Team know before hand the offerings of these tools. Unlike the case of Ning that was used but was later discontinued as a free service, posing a serious set back to both teams.

I recommend that whichever tool that is to be used should be tested before collaboration starts. The testing-phase would guarantee its efficacy, and its efficacy would ensure time and money is saved in the latter part of co-operation.

6.2.2 Use of Audio Memos

Documenting knowledge with the use of memos as done in the management process of the MyMobileMyLife Workshop proved reliable with the aid of minutes kept during information sessions. Theses information was later word processed and archived in Wikis. However, it could be argued that some words might loose their context in the process of documentation. One solution to ensure this does not occur is by using audio memos as an option of knowledge transfer. Information is captured with the use of an audio device and later transcribed into text. The text and audio files are stored and archived for future reference. This method was tried during my interview process and ensured I captured all the information my interviewees presented without losing its context. The downside of this is that it may be time-consuming if it's done however there are social media tools that render this service. Otherwise it is 100% accurate.

6.2.3 Integration of Social Media Marketing-Tools

From Figure 2, it can be seen that Twitter, Blogs, Facebook and Ning were the tools mainly used for marketing. While these tools did a remarkable job in promoting awareness and giving the workshop an online visibility, the integration of other tools would easily have doubled its effort vis-à-vis; The use of Google Adwords, which would ensure the workshop is easily referred to whilst making internet searches and workshop banners are advertised on related websites. Google AdWords is an online service that lets users create and run adverts for their businesses, quickly and simply.

Doing this will generate more web traffic to the website. Making public announcement on various mobile solutions can also help in spreading awareness, after all the secondary objective of the workshop is to make people aware.

As seen from the Google Analytics dashboard in Chapter Four. Only 0.33% of viewers from the website came via search engines. This statistic can be seen as an area that should be further explored, hence the need for integrated digital marketing.

6.2.4   Single and De-centralized Information Portals

The use of collaborative tools in organizational management is a very good idea. However, using too many of these tools may pose a major constraint on time. There are several types of collaborative tools that serve the same purpose. Narrowing down these tools according to their applications will serve as a good means to preserve time. Also, a de-centralized information node will ensure members of the development team can access and store information without the need to wait for approval from a central administration point. This was the case with Google Docs and Ning, where developers where unable to edit content on these tools without prior permission from the tool administrator.

6.3   Summary

The study results indicate that use of collaborative tools in MyMobileMyLife 2010 supported the creation, transfer and capturing of knowledge. The teams were able to identify and leverage on their collective knowledge together and succeeded in organizing a successful event.

More specifically, the results indicate that interviewees share similar and divergent opinions when using collaborative tools in online environments. However, they still assert that collaborative tools can assist knowledge management, provided the tools being used are pre-determined and readily accessible to all members working within the same environment.

Also, the use of audio memos is another means of documenting knowledge effectively. Using audio memos would ensure the context of the information being transferred is not misrepresented in the process of documentation.

7 CONCLUSION

The experience from the use of collaborative tools by members of the development team of the MyMobileMyLife project is not representative of what obtains in every online environment. However, it serves as a good start point in identifying the likely bottle-necks experienced in these environments. One can see why and how these tools if not properly managed, become a constraint to the overall objective of organizations.

This research has demonstrated that collaborative tools have a positive impact on knowledge management. Albeit, the need for organizational policies that would ensure appropriate tools which encourage cooperation are tested before being utilized in collaborative environments is also needed. I have been able to explain how to ensure context is not lost during knowledge codification and more importantly, the need for a single and de-centralized information portal when communicating information from collaborative communities to viewers on the internet.

7.1 Difficulty in Managing Knowledge

Managing knowledge is not as easy as it seems. The documented experience of members of the MMML Development Team buttresses it. There are collaborative tools that ensure the process of knowledge management is done effectively. However, these tools are not a guarantee that knowledge will be managed effectively.
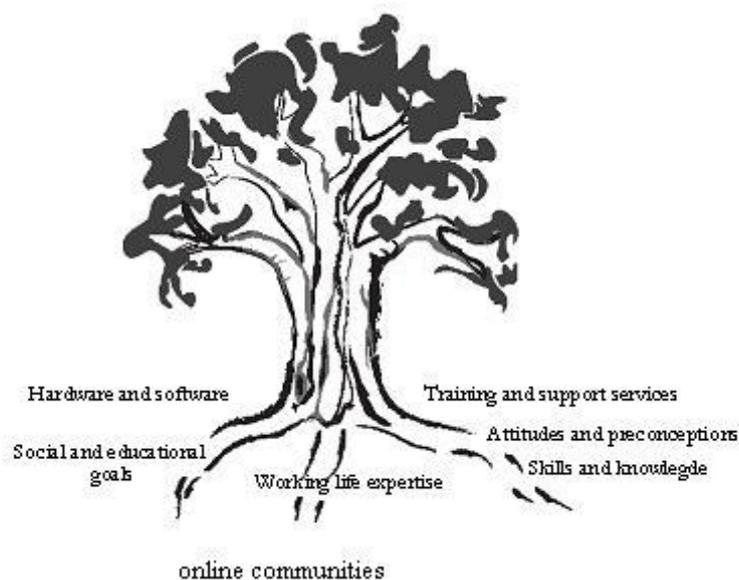
Figure 10. Knowledge Tree: Metaphor of a well-functioning knowledge environment (Modified from Jäminki & Okuogume, 2011)

As can be seen from Figure 10, the attributes contained in the context of knowledge management may not be seen by the naked eye, as they are metaphorically the root structure of every knowledge organization and are critical to its success. The process is dependent on the individual and management choices, because individual choices often represent the vision, strategy and organizational culture. Ignoring this attributes lead to a failure in managing knowledge effectively.

7.2   Suggestions for Further Research

This Bachelor's thesis studied the impact of collaborative tools on knowledge management; in other words, the impact of web 2.0 on knowledge management.

It would be very interesting to research on the impact of web 3.0 tools on knowledge management. How will information be organized? Will web 3.0 personify knowledge? After all, it is argued that web 3.0 is the portable web focused on the individual's life-stream. It is supposed to consolidate dynamic content i.e. web 2.0 and allow for semantic web tagging.

Doing a future research on the impact of web 3.0 collaborative tools on knowledge management promises an interesting challenge more so, comparing its impact on web 2.0. Further research will reveal if there are similarities or differences.

REFERENCES

Printed

Alavi, Maryam & Leidner, Dorothy E., 1999. Knowledge Management Systems: Issues, Challenges and Benefits. Communications of the Association for Information Systems, Volume 1 Issue 2.

Alavi, Maryam & Leidner, Dorothy E., 2001. Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues. Management Information Systems Research Center, University of Minnesota. Vol. 25, No. 1, 107-136.

Bernoff, J. & Li, C., 2008. Harnessing the Power of Social Applications. MIT Sloan Management Review .

Bontis, Nick 1999. Managing Organizational Knowledge. McMaster University, Ontario, Canada.

Brewerton, P. M., & Millward, L., 2001. Organizational Research Methods: A Guide for Students and Researchers. Sage Publications Ltd. London.

Collis, Jill & Hussey, Roger 2009. Business Research: A Practical Guide for Undergraduate and Postgraduate Students. Palgrave Macmillan, China.

Davenport, T. H. & Prusak, L., 1998. Working Knowledge: How organizations manage what they know. Harvard Business School Press, Boston.

Jäminki, Seija 2008. Ohjaus ja opiskeluprosessit sammenaikaisessa ja eriaikaisessa verkkoympäristössä. Selective summary translated into English by Marja Aro: Teaching and studying processes in synchronic and asynchronic virtual learnng environments. An ethnographic excursion to the world of e-Degree programmes. Academic Dissertation, University of Lapland.

Jäminki, Seija & Okuogume, Anthony 2011. Efforts to Strategize Social Media Implementation in Higher Education. 5th International Conference on Business, Economics and Management, Izmir, Turkey.

Mehrabain, Albert 1972. Non-verbal communication. Aldine-Atherton, Chicago.

Nonaka, Ikujiro & Konno, Noboru 1998. The Concept of "Ba": Building a Foundation for Knowledge Creation. California Management Review, Volume 40 Issue 3.

Nonaka, Ikujiro, & Takeuchi, H. 2004. The Knowledge-Creating Company. Oxford University Press, New York.

Nonaka Ikujiro, Toyama, Ryoko, & Konno, Noboru, 2000. SECI, Ba and Leadership: a Unified Model of Dynamic Knowledge Creation. Elsevier Direct Long Range Planning 33: 5–34.

Polanyi, Michael 1966. The Tacit Dimension. Re-issue edition, Foreword by Amartya Sen 2009. University of Chicago Press.

Räisänen, Teppo 2010. All for One, One for All: Organizational knowledge creation and utilization using a new generation of IT tools. Academic Dissertation, University of Oulu, Finland.

Ringel-Bickelmaier, C. & Ringel, M 2010. Knowledge management in international organisations, Journal of Knowledge Management, Vol. 14 Iss: 4, 524 – 539

Smith, Daniel Crane 2009. Social media correlates of organizational climate. Dissertation-University of Hawaii, USA.

Stenmark Dick 2002. The Relationship between Information and Knowledge. Volvo Information Technology and Viktoria Institute, Göteborg,, Sweden.

Walsham, G., 1993. Interpreting Information Systems in Organizations, Wiley, Chichester

Yin, Robert K., 1984. Case Study Research: Design and Methods. Revised Edition. Newbury Park, Sage Publications

Not printed

Ezewuzie, Patrick 2010. Interview of Patrick Ezewizie, MyMobileMyLife Tornio Development Team Member. Conducted November 26, 2010.

Kagiri, Eva ICT Works. ICT works Interview with Eva Kagiri of eCAP East Africa on ICT Sustainability. Read 3 April, 2011.
<http://www.ictworks.org/news/2011/04/22/ictworks-interview-eva-kagiri-ecap-east-africa-ict-sustainability>

Soat, John InformationWeek. 7 Questions key to Social Networking Success. What's the ROI? Go public or private? What about a policy? It's time to get serious. Read 15 November, 2010.
<http://www.informationweek.com/news/internet/social_network/showArticle.jhtml?articleID=222301011>

Jäminki, Seija 2010. Interview of Seija Jäminki, MyMobileMyLife Tornio Cordinator. Conducted November 18, 2010.

Khan, Alamder 2010. Interview of Alamder Khan. MyMobileMyLife Stockholm Cordinator. Conducted November 19, 2010.

Mitchell, Scott 2008. MSDN Magazine: Easy Wiki Hosting, Scott Hanselman's blog, and Snagging Screens. Date read March 21st 2011.

<http://msdn.microsoft.com/en-us/magazine/cc700339.aspx>

Moodle. About Moodle. Read 13 March, 2011.

< http://moodle.org/about>

My Mobile My Life-MKFC Community. Read 15 May, 2010.

<http://mmmlife.ning.com>

O'Reilly, Tim 2005. What is Web 2.0: Design Patterns and Business Models for the Next Generation of Software. Read 3 March, 2011.

< http://oreilly.com/web2/archive/what-is-web-20.html>

Riitanoro, Marja-Riita 2010. Interview of Marja-Riita Ritanoro, Rector MKFC Stockholm College, Sweden. Conducted November 11, 2010.

Ylä-Anttila, Pekka 2010. Finland's transition to a knowledge economy. Date read September 28th 2010.

<http://www.etla.fi/eng/index.php?did=1390>

APPENDICES 1-2

Interview Questions

To answer the above research questions, I developed interview questions that seek to understand how information was disseminated during a 3-month period planning process for MyMobieMyLife Workshop and the impact collaborative tools had on this process. The respondents included developers and managers from both coordinating organizations: Kemi-Tornio University of Applied Sciences, Finland and MKFC Stockholm College in Sweden. The interview questions comprised;

- o What was the objective of the MyMobileMyLife (MMML) workshop? How did the collaboration start?
- o To enhance collaboration, which collaborative tools were utilized during inter-organizational communications and knowledge codification? Which purposes did they serve?
- o How was group knowledge managed and communicated across online-communities?
- o Which collaborative tools did you use to access information?
- o Which collaborative tools did you use to capture knowledge?
- o Which collaborative tools did you use to share knowledge?
- o What challenges or limitation did you experience in accessing, capturing, storing and sharing knowledge amongst MMML organizing members?
- o Of the collaborative tools, which were in the most effective? Why
- o Which collaborative tools were least effective? In your opinion, why was this so?
- o Do you think collaborative tools hindered or assisted inter-organizational communications?

Interview Transcripts

The interviews were conducted with the aid of a voice recorder to ensure I capture the verbatim context of my interviewees. Their responses were later transcribed into text. The interviewees and their roles include;

Interviewee 1 (Marja-Riita Ritanoro); Rector, MKFC Stockholm College, she worked from Stockholm, Sweden along side members of the Development Team in Stockholm.

Interviewee 2 (Seija Jaminki); Online Tutor & Cordinator of the MyMobileMyLife Workshop in Finland, she coordinated the affairs of the development team in Finland and had meetings with MKFC Stockholm every other week.

Interviewee 3 (Alamdar Khan); Cordinator of the MyMobileMyLife Workshop in Sweden, he worked all the time from Sweden with his team.

Interviewee 4 (Patrick Ezewuzie) was interviewed on behalf of the Development Team in Tornio, Finland. He worked with his colleagues under the direction MyMobileMyLife Cordinator in Finland.

Their responses to the questions are contained in the order their names and roles appear.

   i.   What was the objective of the MyMobileMyLife (MMML) workshop? How did the collaboration start?
        Interviewee 1: "The objective of the workshop was to see how mobile phones can impact the lives of people in living in rural areas and also to create a platform where people can have access to information with their mobile phones. Seija Jaminki's thesis dissertation served as a good referral point to begin the collaboration".

        Interviewee 2: "The objective of the workshop was to find out more about mobile applications used in different areas and finding out if social media could deliver what it promised and also find out the possibility of starting a partnership in online environments. Collaboration started when MKFC College contacted

her after reading my doctoral thesis dissertation on the use of virtual learning environments during bachelor degree studies at the Faculty of Business and Culture, in Kemi-Tornio University of Applied Sciences".

Interviewee 3: "The objective of MyMobileMyLife was to provide a platform for researcher, practitioners and learners to meet, explore, develop simple, innovative mobile solutions and authentic practices which can help people both in develop and developing countries. Marja-Riitta from MKFC and Seija Jäminki Kemi-Tornio University of applied sciences started this collaboration".

Interviewee 4: "The objective of the workshop was to educate and as well as share information regarding mobile applications and the impact it's having around the world mostly in rural areas".

ii. To enhance collaboration, which collaborative tools were utilized during inter-organizational communications and knowledge codification? Which purposes did they serve?

Interviewee 1: "To enhance collaboration, at the operational level NING was used because it was free, but when it became a paid service blogs were reverted to. With blogging, the process of codification became easier as doing this achieved good results".

Interviewee 2: "To enhance collaboration, coordinators used Google docs (most important) for documentation, for codifying tacit knowledge as there was lost of people located in different countries and different languages. English was chosen as a mutual language. A common place to edit information was needed and Google docs satisfied this purpose. NING was also used by developers. For advertising Facebook was used as it presented the right type of prospective audience".

Interviewee 3: "In the beginning we started our communication through mail, and Adobe Connect but later we also started with Google docs, Skype, Facebook, a separate blog for the event and a ning community for networking,

socializing and creating new knowledge. Ning served as platform for the members to share their knowledge, practices and best examples of using mobiles. The all social media channels performed as a source of inspirations, innovation, collaboration and constructive knowledge building approach".

Interviewee 4: "We used ilinc to communicate with our partners from MKFC Stockholm and between ourselves we mostly used Facebook and the organization's email (tokem). To codify information we used wikis (Moodle), and as well as Google Docs".

iii. How was group knowledge managed and communicated across online-communities?

Interviewee 1: "It was managed and communicated through e-mails and Skype".

Interviewee 2: "Knowledge was managed with the aid of tools chosen by MKFC. These tools included the website managed by MKFC College; another website was made and managed by Tornio so it would be faster to respond to people from Finland who was also interested in the workshop. NING was used, but it was quite complicated because it took time to access information and the whole essence of Social Media is ease of access and that was defeated".

Interviewee 3: "The participants had the possibility to share their knowledge through blog-posts and through participating in discussion forums".

Interviewee 4: "Every member in the group was given privilege rights to upload or edit contents mostly via the school's Moodle environment".

iv. Which collaborative tools did you use to access and share knowledge?

Interviewee 1: "The OPIT Learning Management System is traditionally used in MKFC, like Moodle is used in Kem-Tornio University of Applied Sciences but in the case of MMML Workshop; OPIT could not be used because it's not free".

Interviewee 3: "Different tools were used but most important were online journals, blogs, Youtube channels, Google for inter-organizational communication and access of information. We used Ning, Blogs and MMMLife Facebook page to share knowledge.

Interviewee 4: "There were a lot of SM tools available to us such as searching for information via Google, Youtube and Facebook. We used Blogs, Facebook and Moodle to capture knowledge. For example we used the Google doc. to share the guest list with our partners in Stockholm and as well as communicate with them with the use of Ilinc*".

v.   What challenges or limitation did you experience in accessing, capturing, storing and sharing knowledge amongst MMML organizing members?

Interviewee 1: "The most challenging aspect I would say was at the starting point, when the team was yet to agree on specific tools, although it got better with time".

Iinterviewee 2: The most challenging tool was NING because of the fee. We were afraid it would disappear soon. Collaborative tools saved a lot of time and money, so they were better than nothing. More so, they served as knowledge repositories. In the long run, people followed whichever Social Media tool they were most familiar with. I also felt one website would have been ideal to share information, that way information is not duplicated or misinterpreted".

Interviewee 3: "It was easy through our Ning platform to access and share knowledge. At the time of commencement it was bit challenging to decide about the platform that to which extent it should be open and private. In the beginning Ning was a free ware and open source, later they started to charge this; some of the functions were not available later in Ning mini".

Interviewee 4: "Some of the members of the development team (including myself) had problems accessing Google doc especially in the beginning because

there was the issue of instructions were in Swedish and another challenge was learning how to use some of the SM tools".

vi.   Of the collaborative tools used, which were in the most effective? Why

Interviewee 1: "Blogging was most effective, because they are very easy and changes can be made any post made, compared to other collaborative tools that change drastically over time".

Interviewee 2: "For marketing purposes Facebook and Twitter, for codification Google Docs".

Interviewee 3: "Different collaborative tools have different importance, using Facebook pages was good since many member were active on it but Ning was good since it provide you more control and personalization of the network. If more members are active then Ning is better choice".

Interviewee 4: "The most effective collaborative tool in my opinion was Moodle because our team had our own environment and it is very easy to learn how to use this environment and it is very easy to see where what information is unlike the Ning environment which has a very confusing layout".

vii.   Which collaborative tools were least effective? In your opinion, why was this so?

Interviewee 1: "It's hard to say, because all these tools served its purpose. As long as information reached a single person, is disseminated then its purpose is justified".

Interviewee 2: "It's hard to say, because they all served their purposes. Maybe for outsiders (from the feedback gathered) the information channels were too many and should have been narrowed to one or two, and more centralized".

Interviewee 3: "I won't say least effective because it's depends on which way a specific tool is being used. If the purpose and goals with a specific tool are

limited then that would be least effective. For interactivity and socialization Ning and Facebook were more effective than a simple blog".

Interviewee 4: "Ning was definitely the least effective because it was difficult finding information and the environment in my opinion wasn't very user friendly".

viii. Do you think collaborative tools hindered or assisted inter-organizational communications?

Interviewee 1: "Collaborative tools helped because they did a great job in informing the public about the workshop. For instance, thru collaborative we reached out to our followers in Pakistan and Africa".

Interviewee 2: "Collaborative tools assisted because they made access to knowledge easier. Maybe, they were not utilized to a full potential; maybe strict rules could be enforced on which tools to use as their where too many of them. But were the most efficient method for our asynchronous meetings where we met online and made changes as we went by. If could do things differently for the next edition, I would agree on the tools and try to find out (before hand) which are used and for what purposes. I would also advocate for using lesser tools".

Interviewee 3: "Collaborative tools have great importance in inter-organizational communication and interaction. It provides different channel of communication at different layers and levels among organizational interaction".

Interviewee 4: "Collaborative tools definitely assisted communication because we had a lot of information coming from everywhere and it would have been impossible to keep track of everything if it wasn't for them".