Capture of Tacit Knowledge through Storytelling

By

Ibrahima Oumar Diallo

Dissertation submitted in partial fulfillment of
the requirements for the
Bachelor of Technology (Hons)
(Business Information System)

SEPTEMBER 2012

Universiti Teknologi PETRONAS
Bandar Seri Iskandar,
31750 Tronoh
Perak Darul Ridzuan

CERTIFICATION OF APPROVAL

Capture of Tacit Knowledge through Storytelling

By

Ibrahima Oumar Diallo

A project dissertation submitted to the
Business Information System Programme
Universiti Teknologi PETRONAS
in partial fulfilment of the requirements for the
Bachelor of Technology (Hons)
(Business Information System)

Approved by,

_____

(Khairul Shafee Kalid)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK

SEPTEMBER 2012

CERTIFICATE OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work herein have not been undertaken or done by unspecified sources or persons.

_____

IBRAHIMA OUMAR DIALLO

ACKNOWLEDGEMENT

Frankly I could not have come this far without the people who have supported me. My deepest gratitude goes to Mr. Khairul Shafee Kalid, for his supervision over this project, his guidance and advices given through project that have been really helpful. Truthfully, I would not be able finish this project without his guidance. Thank you for the advices, tips, motivations that you have given me during this project.

Also I would like to thank the four participants who let me interview them. Your input, thoughts and believes have been really helpful through this project. In addition, I am forever grateful to my friends who have been ever so helpful and supportive all this while.

Also thanks to the family member for strong moral support and advices. The guidance and support received from all the members who contributed and who are contributing to this project, was vital for the success of the project. I am grateful for their constant support and help.

.

ABSTRACT

This project introduces storytelling as a mechanism to capture tacit knowledge believed to be an experience- based knowledge. Storytelling is a mechanism through which tacit knowledge is captured. This project provides a bridge and a platform that will allow the capture of tacit knowledge in a structured method.

The objective of this project is to develop a knowledge management system that captures tacit knowledge using storytelling. Throughout this project we will attempts to capture, store, retrieve, and transfer and / or share knowledge within an entity.

.

LIST OF FIGURES

LIST OF TABLES

TABLE OF CONTENT

CHAPTER 1

INTRODUCTION

1.0 Chapter Overview

This chapter is an overview of the background of the study, the problems that are faced while attempting to capture tacit knowledge. This chapter will also give a description of the objective of this study as well as the scope of the study.

1.1 Background of Study

Introduction of knowledge

Knowledge is the basic foundation of every company. Without knowledge an organization cannot function thus making it impossible for an organization to act. Knowledge Management is an important part for every organization. As knowledge is the very core of every company, the ability to capture, share and transfer the knowledge are important tasks that are required to be planned carefully.

Knowledge about market price, financial statement, knowledge and experience about how to make an organization successful, selling out products / services; these are all knowledge some are explicit knowledge and some others are tacit knowledge.

Introduction of Tacit Knowledge of Storytelling

This project focuses on tacit knowledge sharing by capturing the knowledge through story telling. Tacit knowledge is an experience-based knowledge; it is the type of knowledge that has been gained through years of experience. Tacit knowledge is the most useful knowledge that one can capture and yet it is the most difficult knowledge to capture, (Tagger, 2005). Most people look at knowledge from an analytical or engineering perspective, explicit knowledge is the only knowledge that is visible, easy to capture share / transfer and so it is tempting to focus on it. Though most of the real knowledge that we possess is a tacit knowledge based on our experience in life, studies and work (Denning, 2000). Story telling has been used for ages to share knowledge, pass

down wisdom, experience (Brown & Gray, 1995). The task of capturing tacit knowledge through story telling means that there is interaction between the requester and the teller instead of just using a system where the expert fills in document without any human interaction. Which may answer to requests and questions experts, that are willing to share their knowledge, may often ask.

1.2 Problem Statement

Tacit knowledge cannot be "captured", "translated", or "converted" but only displayed, manifested in what we do (Tsoukas, 2002). Tacit knowledge also known as experience-based knowledge is the knowledge that was gained through years of experience. Capturing this knowledge is not an easy task. Many organizations employ or make contract with organizations in order to help them develop system that specifically manage the knowledge within the company. But most of these systems just allow the best to capture explicit knowledge. But what about tacit knowledge, some system may give the facility to share tacit knowledge. But is the knowledge circulated as intended by the expert who shared the knowledge? How can tacit knowledge best be captured?

Tacit knowledge is being transferred from experts but is not properly captured. This is because the methods or mechanisms that are being used are not appropriate. Staff wills often attempting to capture tacit knowledge through chitchatting or emails but this does not allow proper capture of the knowledge. As these methods do not allow the expert to give a properly structured knowledge. Storytelling provides experts with a platform that will allow a structured capture of tacit knowledge, which is then transferred to staff in a structured manner. Another problem that may be faced when attempting to capture tacit knowledge is that not many experts are willing to share this knowledge without interaction with the requester. Many experts will doubt whether their knowledge will be put into good use.

Experts will often ask the requester questions such as:

"Why do you need my knowledge?" "What are you going to use my knowledge for" "Who will get access to this system in which my knowledge is be stored?"

Experts will want to know the need of their knowledge and how will it be used. Some experts may want to hear the word “Thank you” after the interview is done. After all they have shared knowledge that mostly took them at least one year to gather.

The questions that address our project of capturing tacit knowledge are the following:

- How can tacit knowledge best be captured and transferred?
- What changes can be made to project management methodologies to ensure tacit knowledge is properly shared in an organization?
- What system can be built to allow proper capture and proper sharing of tacit knowledge?

1.3 Objectives of study

The main objective of this project is to develop a storytelling system as an effective mechanism to capture tacit knowledge. This system will serve as platform and a mean to facilitate the capture and sharing of tacit knowledge.

1.4 Scope of study

Capturing tacit knowledge has been a problem that organizations have been facing long time ago. The scope of the study focuses on the capture of tacit knowledge especially in oil and gas companies, where multiple projects with multiple experts work. The capture of the knowledge that has been gained through these projects will be done through a verbal mechanism known as storytelling. The captured knowledge would be stored in repository and would greatly benefit the organization. Similar projects as well future projects, would be able to use the captured knowledge as a reference.

CHAPTER 2

LITERATURE REVIEW

2.0 Chapter Overview

This chapter gives a description of the relevant literature to our research study. It shows the study referencing to prior researches that were conducted. The reason for studying previous papers is to give a strong basis for research.

The paragraph on importance of human interaction explains the need for staff to interact between each other. Since our research focuses on the capturing knowledge through storytelling, interaction between staff is a must.

2.1 Knowledge

Knowledge is one of the most important assets of any organization / entity (Uriarte, 2008). The knowledge kept in an organization is what defines it. Knowledge has a tacit component and hence is hard to transfer / integrate. When integrating a system to organization, two problems often arise: the problem of coordination and the problem of cooperation. Theories and researchers of knowledge sharing for organizations have mostly focused on the cooperation problem.

Knowledge-based theories of the firm have traditionally preoccupied themselves with the coordination problem - looking at how organizational members transfer, integrate, and create knowledge in view of its tacit nature. The focus on coordination is especially prominent in “Toward a knowledge-based theory of the firm” (Grant 1996).

An organizational knowledge creation relies heavily on the idea that an organization's primary role is the integration and explication of tacit knowledge on all organizational levels. This emphasizes the active, subjective nature of knowledge and the problem of justification of the beliefs and getting people's commitment. It sees the main function of organizations in amplifying the knowledge created by individuals and crystallizing it as a part of the knowledge network of organization. Nonaka’s model proposes that knowledge is created and expanded through social interaction between tacit and explicit knowledge.

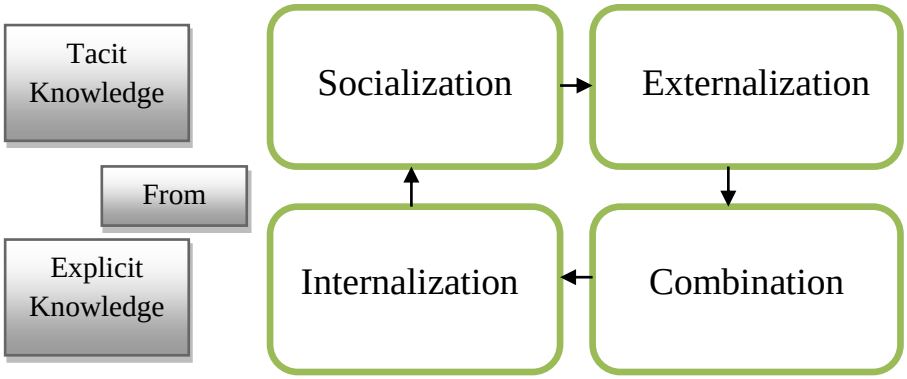


Figure 2.1: Nonaka's Model

There are four types of interaction: Socialization (tacit to tacit), Explication (tacit to explicit), Combination (explicit to explicit), and Internalization (explicit to tacit). The knowledge conversion occurs through the spiral of organizational knowledge creation, encompassing different organizational levels.

- Sharing of tacit knowledge by a group of individuals
- Conversion of tacit knowledge in teams into concepts and metaphors
- Combination of team-based concepts with existing data and external knowledge
- Articulation and development of concepts until they emerge into a concrete form
- Dissemination of new knowledge to others within organization

2.2 Knowledge Capture

Knowledge capture is the process of codifying tacit knowledge that was extracted from a person. The process of organizational knowledge creation is enabled by three factors: creative chaos, which involves reflection on the contradictions in the environment and inside organizations; the redundancy of information, which involves capturing of tacit knowledge among organizational members; and requisite variety, which involves constructing the organizational information processing channels that match the information imposed by the environment. Based on these enabling conditions, two types of management principles are proposed: middle-up-down management, where middle managers act as translators of tacit knowledge from top and bottom into explicit knowledge (capturing the tacit knowledge and transforming it to explicit knowledge); and

hypertext organization, which represents a mix of hierarchical management and self-organizing teams focused on building requisite variety. It is known that the way things are formally organized in most companies (their processes) is not the same as the way things are actually done. Knowledge is not always easy to capture even in case explicit knowledge; the knowledge will even be harder if it is experience based knowledge, tacit knowledge (Brown and Duguid, 2001).

Capturing tacit knowledge is an art rather than a specified, explicit process. The capture of tacit knowledge is difficult because such knowledge is located actually inside an expert's head. This knowledge can be thought of as being stored at a subconscious level and is, therefore not documented anywhere. What makes the process even more difficult is that the expert that on is trying to extract it from may not even be aware of it or even regard it as actual knowledge (Tagger, 2005). There are many platform that were introduced as means to capture tacit knowledge, one of these platforms is storytelling.

2.3 Storytelling

Storytelling is the process of passing down a tacit knowledge. It does not have to be knowledge that came from school. Storytelling can be a grandparent telling his grandchildren about a story. Stories come in many different categories: written, oral, paintings, architectural. Each of these categories has a specific objective that is passed down to another generation or person (Sole and Wilson, 2002).

Storytelling differs from an individual to another. A story (knowledge) can be interesting as well as boring depending on the way it is being told. Experts will be able to make their stories interesting because of the level of experience gained through year of hard practice.

The suggestion in this project is that story telling is used as a mechanism to capture, share / transfer knowledge. It is the easiest way of gathering knowledge as it allows the expert (/ whoever is sharing the knowledge) to have an interaction with the requester – social interaction.

Based on effects of story strength elements and interactivity on audience interest in and liking of story dissertation, (Orton, 1995), that was conducted, storytelling features two categories: story features definition and structural affect definition. Story feature

definition focuses on emphasizes the need to define the characteristics of the story which will determine its quality. As for the structural affect definition focuses on the structure of how the story is being told and in which way it may affect the audience.

The constant talk about stories throughout the day; during breakfast, lunch, coffee, breaks serves as continuum of those stories. Everyone tells a story, economists, scientist, business planners and even real estate agents. The content of the story may differ from each person, but the purpose is still the same. A stories purpose is to inform the other / individual party of a certain knowledge that have been passed down for ages or a knowledge that have been just discovered and one wishes to pass it down to another individual / party.

In the past several millennia ago, the ancient Greeks began to think seriously about matters that they thought they knew and understood, they discovered to their surprise that they did not in fact understand some of the seemingly simplest and most obvious things (Denning, 2000). Probing the apparently obvious can be an enlightening and sometimes disturbing experience.

One of the apparently obvious things that even in modern times is not so straightforward as it looks at first sight is a story. We all know, or think we know what a story is but when we try to define it, or explain it, then we find our assumptions about it can splinter into a multiplicity of possible meanings.

Telling a story is simple and it can be done by anyone, anywhere and at anytime. Telling a story is to tell a series of things that have happened today or yesterday or in ages. It could be true or false, it could be from one's imagination nevertheless it is still a story.

Through these past years, information technology has proved how useful it can be when it comes to knowledge sharing. While it is true, the creation of the actual knowledge and integration process are human-based actions, this points-out the importance of human knowledge in an organization / entity.

The social interaction between employees gives higher chances to capture knowledge by allowing the opportunity to ask the unknown and clarify ignorance and any lingering misunderstandings. This will allow the request have a more comprehensive answer or idea on the topic in question.

Storytelling allows having a clear idea from one point of definition to another; it provides a clear line to the tacit knowledge. And it draws on deep-flowing streams of meaning, and on patterns of primal narratives of which the listeners are barely aware, and so catalyzes visions of a different and renewed future (Steve Denning, 2000).

2.4 KM Storytelling

Tacit knowledge should be delivered in a rather manageable and absorbable fashion. Storytelling allows a proper capture and sharing of knowledge (Sole & Wilson, 2003). Explicit knowledge may be easier to understand and lot easier to retrieve, but tacit knowledge is most knowledge that one has and it is considered as the most important knowledge which may not be specific to work but also on a daily needs (Denning, 2000). During a knowledge management conference in Singapore (Klein, 2011), He highlighted the importance of capturing tacit knowledge; he said “experts see patterns we do not see” he stressed on the importance of capturing the knowledge that experts have gained through years of experience. He suggested that storytelling is good method for capturing tacit knowledge.

Research has shown that sharing tacit knowledge through storytelling allows to build trust and facilitates unlearning and it also also allows to connect to people (Sole & Wilson, 2003). Organizations are not the only entities that may use storytelling to transfer knowledge. Other professions such as the media, journalists and such.. all use storytelling to both capture and share / transfer the knowledge. The knowledge that is captured by journalists is a tacit knowledge because it is usually captured by interviewing witnesses of a certain incidents, or to get opinions of people on certain matters and such other things. Journalists, by taking the role of the storyteller, claim a position at the center of

the story. They also claim possession of the story as they are the ones telling it and they also the ones to decide to tell the story and in the way they choose to tell it.

A winner of the Nobel Prize for Literature (Gabriel García Márquez, 2004) has expressed his enjoyment when storytelling. He says "*For me, stories are like toys, and making them up is, one way or another, like a game.*." In this statement, he was not referring to the Internet revolution. In its relatively brief history, the Internet has dislocated the economic foundations of traditional media but has also created for society, in general, and journalists, in particular, new possibilities for how their stories can be told. It has broken the one-way communication paradigm in which "we talk, you listen," and in doing so has required that the journalists develop new storytelling skills.

2.5 Related Work

2.5.1 Narrative and Social Tacit Knowledge

This paper discusses regarding the Narrative and Social Tacit Knowledge, (Charlotte Linde, 2001), and it introduces the development of a system called Narrative. It discusses about the role of narrative in the expression and transmission of social knowledge as a specific type of tacit knowledge. Narrative is a central mechanism by which social knowledge is conveyed. Narrative provides a bridge between the tacit and the explicit, allowing tacit social knowledge to be demonstrated and learned (Linde, 2001).

2.5.2 Imparting Knowledge Through Storytelling

This paper discusses regarding storytelling as the best way to make the leap from information to knowledge and as the best way to capture and transfer tacit knowledge. In short, this paper talks about the reason why should knowledge management incorporate storytelling, about stories as fundamental form of knowledge, how can storytelling improve knowledge management. The reason why storytelling can improve knowledge management is because by focusing on the corporate context and the rich store of corporate stories, it will the story elements to be focused on the organization (Reamy, 2002).

CHAPTER 3

METHODOLOGY

3.0 Chapter Overview

This chapter presents the methodology used in this project. It tackles the method of data collection that is followed in this project to capture and share / transfer the tacit knowledge from an expert within an entity. An explanation of the method of analysis will be provided as well.

A sample of the questionnaire was followed during the semi- structured interview along with an explanation of the objectives of each question as well as the expected outcome from the question.

3.1 Research Methodology

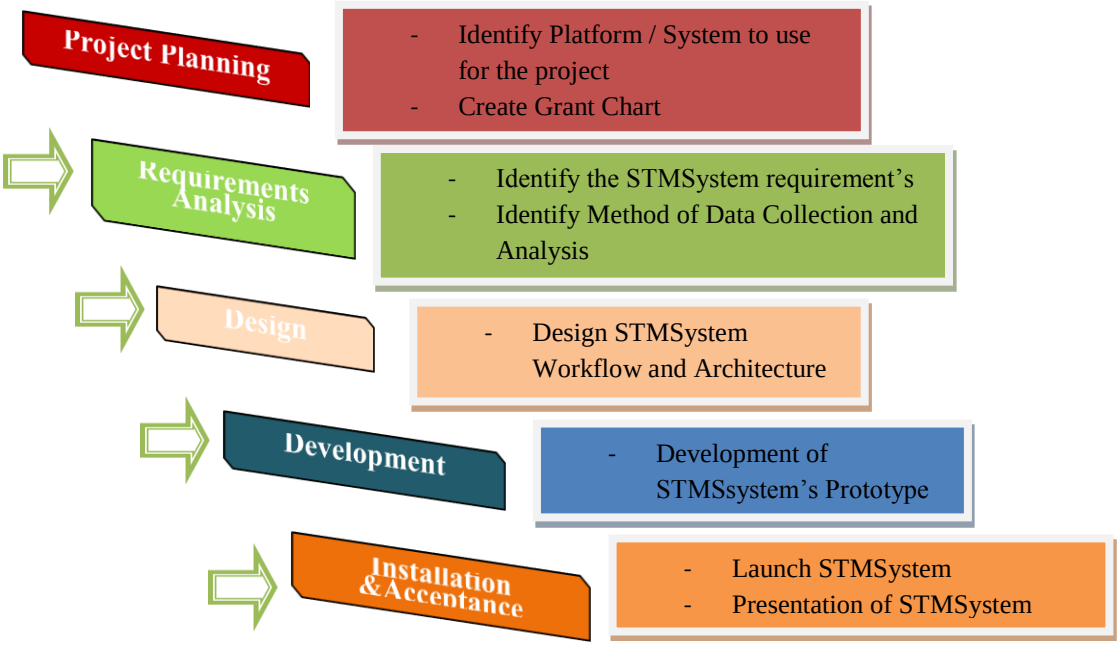


Figure 3.1: Research Methodology

3.1.1 Project Planning

At this stage of the study, the identification of the platform to be used for the system was the first step to be completed. Based on the literature regarding the ability of storytelling

to capture knowledge and on the background study that was conducted, it was decided that it would be best to use StoryTelling Management System as a platform to capture knowledge.

STMS is a web- based portal that will allow us to save, share and transfer the captured experience- based knowledge / tacit knowledge from experts. The StoryTelling Management System is designed in a manner that it will be:

- A system with no specific requirements
- A user friendly system
- An easy and effective system

The StoryTelling Management System will allow the staff of a company (users) to view to knowledge that was captured during an interview with an expert of the company. Not only that but it also serves as a platform to share and transfer knowledge.

3.1.2 Requirements Analysis

3.1.2.1 Data Collection

The purpose of the data collection is to give us an idea on what the company is doing, its objectives and the difficulties faced by the staff of this company. It provides an insight on how knowledge is currently being captured within the company and what platform are provided for knowledge capture. This research paper is divided into phases. The first phase is to collect the knowledge from the oil and gas company and the second phase is the development of the project.

The method for the data collection that is being used in this research paper itself is divided into two stages. The first stage is the collection of knowledge and the second stage is the method of analysis. But first a study of the company was conducted in order to identify the most appropriate method for the collection of knowledge and experts that are to be source of knowledge.

The stages consisted of:

- Planning and Analysis

- Identification of Knowledge Needed
- Gap Analysis

Planning and Analysis

Key Activities	Detail
Understand the Business Background	▪ Business background is analyzed to ensure that the Learning Organization initiative serves the business strategy, and is not just pursued as an end in itself.
Analyze Current Status and Issues	▪ Assessment of the challenges and opportunities relating to knowledge, then identifying and analyzing (i.e. confidentiality, process, organization, staff or technology)
Preliminary Recommendation	▪ Based on the findings, preliminary recommendation is produced for the development stage. This will include creating a common understanding and description the knowledge

Table 3.1: Planning and Analysis

Gap Analysis

It is imperative to understand and perform a current knowledge management assessment on the current situation in order to provide better understanding of the knowledge management practices in the organization. This analysis allowed finding out about the current practices of knowledge management system that are being followed. It provided an insight on how knowledge is currently being captured within the company and what platform are provided for knowledge capture.

3.1.2.2 Method of Data Collection

To collect data for this project, it is decided that an interview will be conducted, through which we will attempt to gather the information about how the staff of the company are

currently sharing their knowledge, what are the methods that they follow to share of acquire knowledge with their colleagues and what are the difficulties that they face during the process of the capture of tacit knowledge.

For this interview, the method that is followed is a series of questions that will be dependent on the answers given by the participants of the interview, thus making the interview a semi-structured interview.

Interview and Questionnaire

As participants of the interview are quite busy, it is unfortunate that we were only able to formulate about five main questions though not limited as responses may vary from a participant to another. These questions are formulated in a simple manner and as straight forward as possible. This is to allow an objective and straight forward response thus allowing the possibility of creating other questions that are as simple and as straight forward to the point.

The main focus of this interview is to gather data, information and insight. During this interview, storytelling will be introduced and explained to participants as an effective mechanism to capture and share knowledge within the organization. Thus by making the interview a semi-structured interview, it will allow us to find out what are the mechanisms that staffs are using to capture or transfer tacit knowledge. Below is a sample of the questionnaire that will be used for the interview.

3.1.2.3 Method of Data Analysis:

The purpose of analyzing data is to understand the outcome of the interview that was conducted, and to provide the evidence for STMS as an effective mechanism for tacit knowledge capture in the oil and gas company. The data analysis process will follow the gathering of data. Then for the process data analysis, common themes were identified within the responses given by the participants, and then allocation of the number of times a common response occurred. In other words, during this process the data collected from the participants was inspected, transformed with the goal of highlighting the useful information, suggestions.

3.1.3 STMS Designing

The design of the StoryTelling Management System (STMS) follows the data collection and analysis. The design involving tasks such as creating the project workflow, the workflow of STMS as well as a flowcharts that explains in details the steps that are be followed be by the user and the administrator. This is to provide an explanation on the flow and the use of StoryTelling Management System.

3.1.4 STMS Development:

The development of the StoryTelling Management System occurred in the second stage of the project. During this stage, we attempted to implement all rules and steps that have been described in the workflow of STMS. The development of STMS was anticipated last for about three months during which a platform for development was chosen, following the design of the interface and launching the website as testing will required to verify the effectiveness the the StoryTelling Management System.

3.1.5 Installation & Acceptance

Installation and Acceptance is the final stage during which the prototype of the StoryTelling Management System will launched. This stage requires the prototype of the system and it involves presenting the system as the final part of this study.

3.6 Gantt Chart

		Capture of Tacit Knowledge through Storytelling													
		DATE / WEEKS													
			September			October				November			December		
			1	2	3	4	5	6	7	8	9	10	11	12	13	14
	ACTIVITY															
PROJECT PLANNING	Amendment to Report		✓	✓	✓	✓										
	Submission of Progress Report					✓										
	Creation of Gantt chart				✓	✓										
	Making Decision on Platform to be used				✓	✓										
REQUIREMENTS ANALYSIS	Identification of System Requirements				✓	✓										
	Data Collection & Analaysis			✓	✓	✓										
DESIGN	Design of Project Workflows and Architecture						✓	✓	✓					✓	✓	
DEVELOPMENT	Development of STMS Prototype						✓	✓	✓	✓						
	Trial Testing and Improving of STMS						✓	✓	✓	✓	✓	✓				
	Final stage for improve and developing the system														✓	✓
INSTALLATION & ACCEPTANCE	Dissertation											✓	✓			
	Pre-EDX												✓			
	Viva													✓		
	Final Dissertation													✓	✓	✓

Figure 3.2: Gantt chart

CHAPTER 4

RESULTS AND DISCUSSION

4.0 Chapter Overview:

This chapter will give a conclusion to the main objective of the interview that was conducted. That is whether the participants find StoryTelling Management System is a system that could solve the difficulties they encountered while attempting to share tacit knowledge.

This chapter will provide an analysis of /and the results that were gathered from the data collection. This chapter will also include the prototype designed for STMS and explain more about the specifications of the system.

4.1 Results and Discussion

The interview that was conducted had four participants that were willing to contribute to this research. The participants were chosen randomly as most of the staffs that would be more appropriate for this project were busy with fulfilling the tasks of their work; nevertheless all four participants are from an oil and gas company. Amongst the participants were mechanical engineers, petroleum engineer and chemical engineer. Most of participants are considered as an expert in his / her field. This interview will give an insight on how knowledge is being captured in a project and about the usefulness of the captured knowledge.

Question 1:

Have you ever shared your experience- based knowledge with your colleagues at work?

Through this question, we attempted to identify the challenges / difficulties that the participant faces when trying to share knowledge with their colleagues. All participants responded “Yes, I have shared my knowledge before” to this question which is quiet logical. The expected form this question is to find the difficulties by asking related

questions such as "*How did you share your knowledge? Have you faced any difficulty in the process?*" and they were proven. Most participants gave a common response that is:

"*Yes, I have shared my knowledge previously, since it was a face to face question I expected it to be easy and fast, but that was not the case. The person asking was inexperienced so it was quiet difficult to explain what I wanted to relay as I needed to make sketches and a lot of time*"

This response shows the difficulty faced by the participant while attempting to share tacit knowledge. As known, tacit knowledge is mostly an experience- based knowledge that is gained through years of experience and sharing it requires great insights as one will need to give great details and information to explain the knowledge gained through the years of experience.

Question 2:

Have you faced any difficulties while trying to capture the experience- based knowledge from you senior colleagues?

The main objective of this question was to put the participant on the receiving end. In short they would be receiving knowledge instead of sharing and through that we were hoping to put the participant in a situation where he has to compare himself as the colleague who is trying to capture the knowledge and the expert who is sharing the knowledge. Outcome was quiet interesting as the one of the participants responded as following:

"*It is not really helpful to try capturing experience of a senior through online chit-chat, but a lot of seniors might consider it rude, another alternative is email. Email is acceptable though it might take some time to get a response.* "

At the time a question arose which was the following: Would it be best to conduct a face to face interview? The participant responded that most of senior staff are quiet busy. If one would like to have a face to face interview, then it should not take too long. And since most engineers have to work in field, mostly of the time not sitting back in the office; it is not quite easy to sit back and ask question that would require a great deal of time.

This response shows that capture of knowledge for this participant is not easy, as the seniors are not available all the time. This leads us to the third question which is:

Question 3:

How do you capture tacit knowledge in your organization?

The purpose of this question was to allow us to introduce STMS through the following question, by allocating the flaws in the system(s) that are currently being used in the company. Participants responded that indeed a system called AXIS was being currently used in the company. The system is web- based portal which is being through all the company and by all staff. Staffs have the ability to access the system to view knowledge that is being shared in Axis. In fact there is a new system that will soon be introduced to the company and it is currently in its last phases of development.

This new system is called Content Management System. It was introduced by a company called iPerintis and is currently in the last phases of development. Content Management System is web- based portal which allows capturing, sharing and transferring explicit knowledge through the company. It also provides a discussion forum and emails to allow staff to interact amongst each other. This system is not really different from AXIS that is current in use in the company. The reason for implementing such a similar system is unknown to the participants.

Through the responses given by the participants, we are aware that the company is currently using a system called AXIS and have another system in store called Content Management System. Though this makes the introduction of the STMS more complicated, but this shows that there is no system in the company that is solely used to capture the experience- based knowledge of the staff.

Question 4:

How would you describe the sharing process of knowledge in your organization?

This question allows knowing the effectiveness of the current systems implemented in the organization in capturing tacit knowledge from the perspective of the users. As it was

pointed out in the discussion in question 3, there is not a system that is solely to capture tacit knowledge.

From the participants' perspective, the sharing process in rather simple as the sharing is not just limited to the use of Knowledge Systems but Microsoft and other products are also being used; which makes the sharing process easier.

Question 5:

What do you think of using STMS as a mechanism to capture and share knowledge?

The purpose of this question is mainly to allow us to introduce STMS as a more effective system to share and capture experience- based knowledge in other words Tacit Knowledge. Before proceeding with the question, participants were given a clear idea of the workflow and content of the StoryTellling Management System. When this question came in, participants did not show quite an enthusiasm regarding the introduction of the STMS. Most Participants believe that the implementation the STMS requires quite some work and some time, but they do think that implementing could prove useful. One of the participants responded the following:

"*As I told you earlier, not all staffs have the time to sit back and share the knowledge. Most of the engineers that you would want capture their knowledge, are quite busy. Even if the management requested that knowledge to be share, I doubt the quality of knowledge would be accurate, as they are really busy. We faced the same problem with the first stage of implementing Content Management System. Even though the implementation of the system was approved by the management, there were difficulties during the Collection of Data."*

Though, I would not mind using the StoryTelling Management System. Because the user will be able view the knowledge as much one wishes to do."

This shows that participants believe that the StoryTelling Management System could prove to be useful, if they are the user of the system since it will allow them to capture the tacit knowledge of their colleague at any time.

As a conclusion of the results collected from the interview, we can say that the StoryTelling Management System could prove to be useful to the staff of the company if

the knowledge capturer is successfully able to capture the experience- based knowledge / tacit knowledge of the staff within the company.

This interview was held with a minimum amount of participants. The results that were gathered cannot be considered in any case as a representation of the whole company.

4.2 Design

4.2.1 Project Workflow

In this case, the project workflow is the process during which the experience- based knowledge / tacit knowledge is captured by the knowledge capturer, which will then be uploaded into the StoryTelling Management system. STMS will then allow sharing the knowledge with the users of the system. The three stages of the project workflow are listed below for further clarification.

- Capture of Tacit Knowledge through Storytelling
- Codifying of Tacit Knowledge into STMS
- Sharing / transferring of Tacit Knowledge through STMS

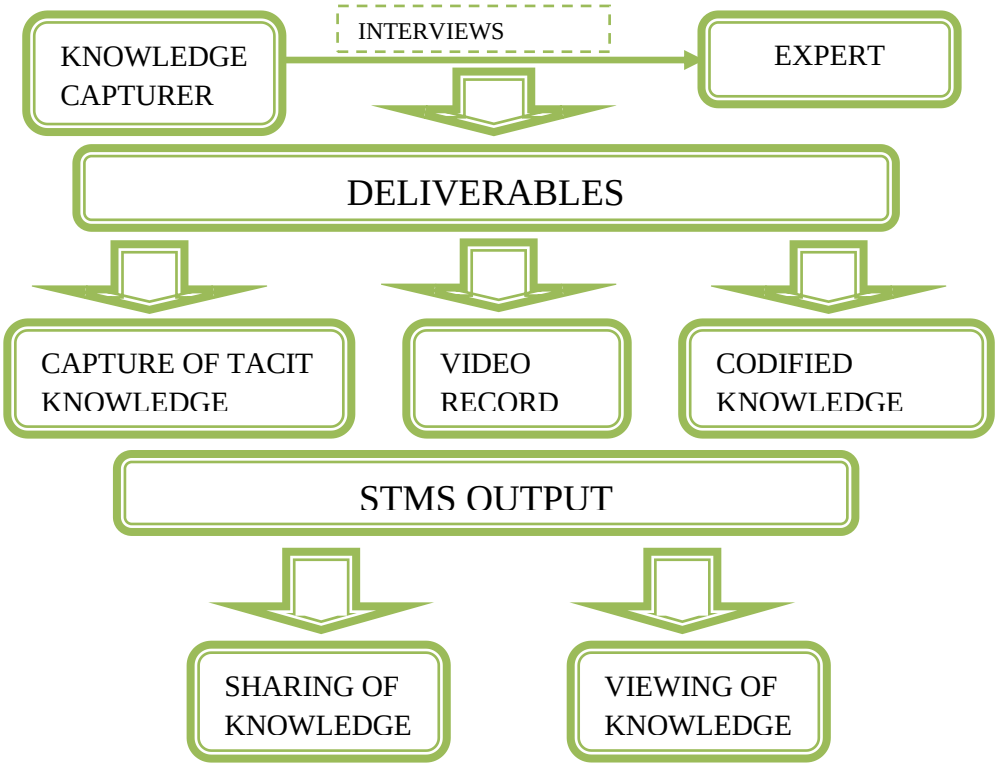


Figure 4.1: Project Workflow

Capture of Tacit Knowledge

The capture of the tacit knowledge will be done through an interview. During this stage, the person in charge of capturing the knowledge (knowledge capturer) will be equipped with a video camera that will allow him to capture the experience- based knowledge or tacit knowledge that is being shared by the expert (the knowledge sharer). Expert is free to use graphs, to draw diagram if it is required to make the transaction of understanding easier, since we know tacit knowledge is not easy to relay.

Codification of Tacit Knowledge into STMS

This stage follows the capture of knowledge phase. During this stage, the video will be review by the administrator, knowledge capturer and the expert (if the expert is willing to review the video). This step is taken in order to make sure that the essence of the knowledge was captured.

After review, the administrator is to upload this video in the StoryTelling Management System in order to allow other users to view the knowledge. The tagging, categorizing and description of the video will all be done by the system administrator. The specifications of the video such as the purpose of the video, the problems or the questions it tackles and the answers that the video gives would all have been provided by the expert during the interview, which makes the work of the administrator faster and more efficient.

Sharing / Transferring of Tacit Knowledge through STMS

STMS is the system that was used to allow sharing of the captured knowledge. Sharing of the captured knowledge is the final stage of the project workflow. As the video of the knowledge has been uploaded to STMS and users are allowed to view. Users are allowed to rate the video as they see fit. This is to show how helpful the video was to the viewer. Users are also allowed to give comments regarding the video or any matter that they may see fit.

In the following page is a representation of the project workflow which showed first that the process being followed to capture the tacit knowledge of the expert is an interview.

Second the least deliverables that are expected from the interview between the knowledge capturer and the expert. And last, it shows the output of the StoryTelling Management System.

4.2.2 STMS Workflow

The STMS workflow describes the steps that are to be followed in the system. Below are two workflows.

- STMS Workflow for User
- STMS Workflow for Administrator

The STMS Workflow for User describes the steps that are to be followed by the user once the log in process is successful. As for the STMS Workflow for Administrator, it describes the steps followed by the administrator.

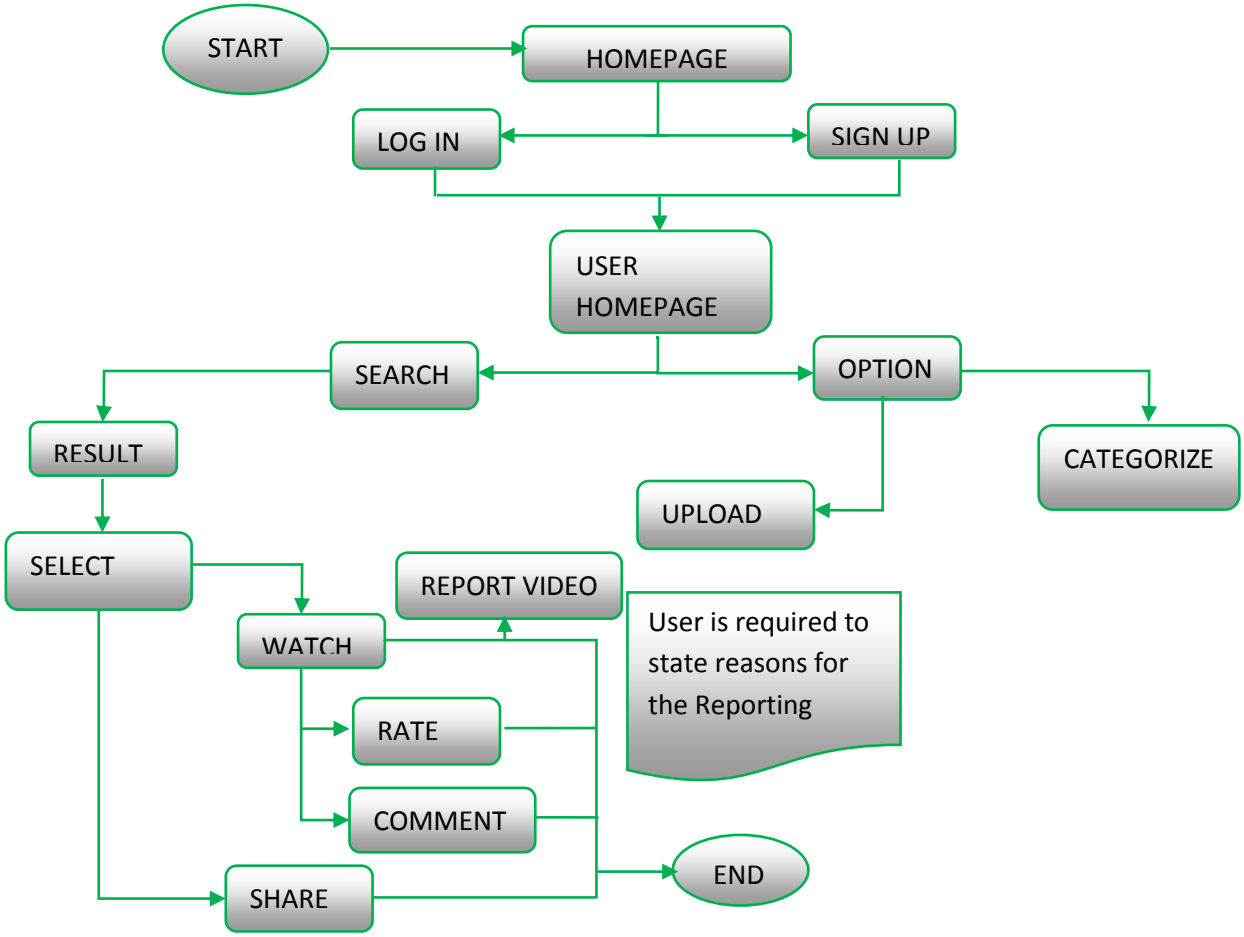


Figure 4.2: STMS User workflow

For the user workflow, the first step to be followed is to log in if user owns an account if not user is required to sign up. After log in, user has the option to either search for a video through the search box or to upload a video (captured knowledge). If user chooses to search a video to view it, user is then capable of rating, commenting a video or even to report it to the administrator if the user believes that the knowledge captured does not contain true knowledge. If user chooses to upload a video, user will require the administrators approval before the video is uploaded into the system.

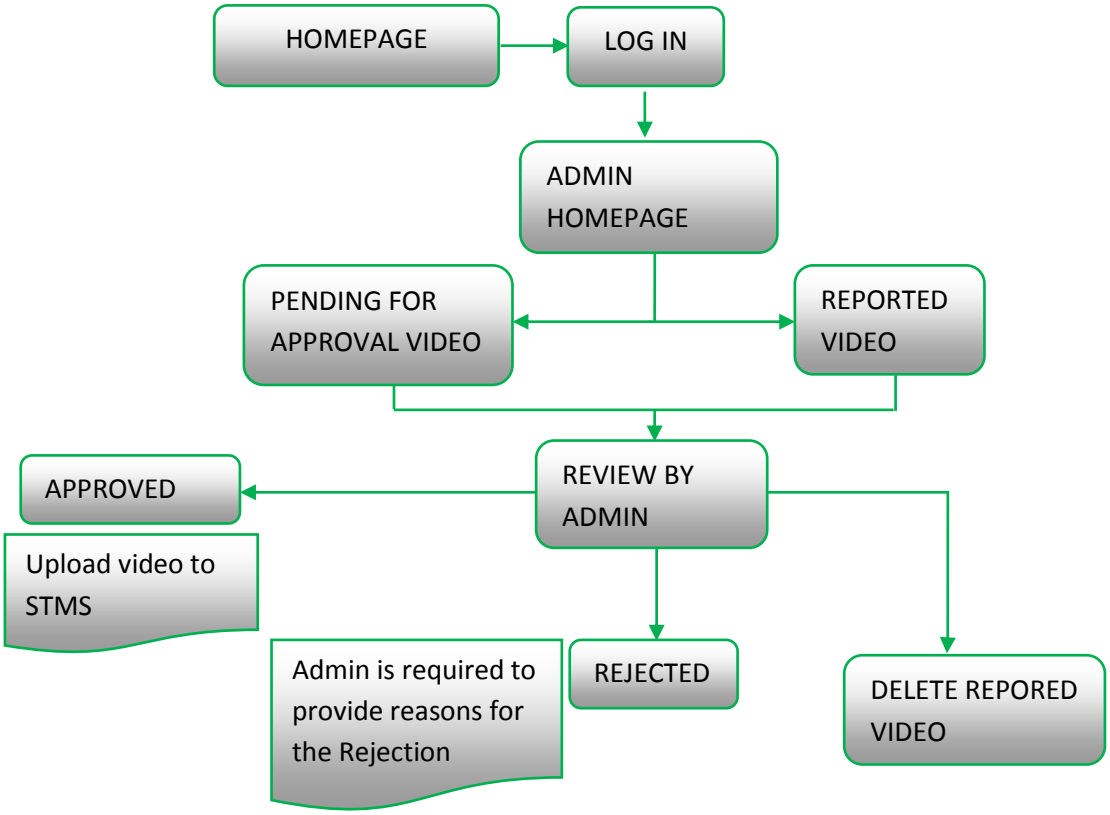


Figure 4.3: STMS Administrator workflow

For the administrator workflow, it explains about the roles the administrator as the person in charge of the system. Administrator is required to log in to access his / her account. Once log in is successful administrator may access the system as a normal user, however the main function of the administrator are review pending video for approval or view reported videos. Administrator has the privilege to delete reported videos from the system or videos that he / she may find that the knowledge is not true.

4.2.3 STMS Architecture

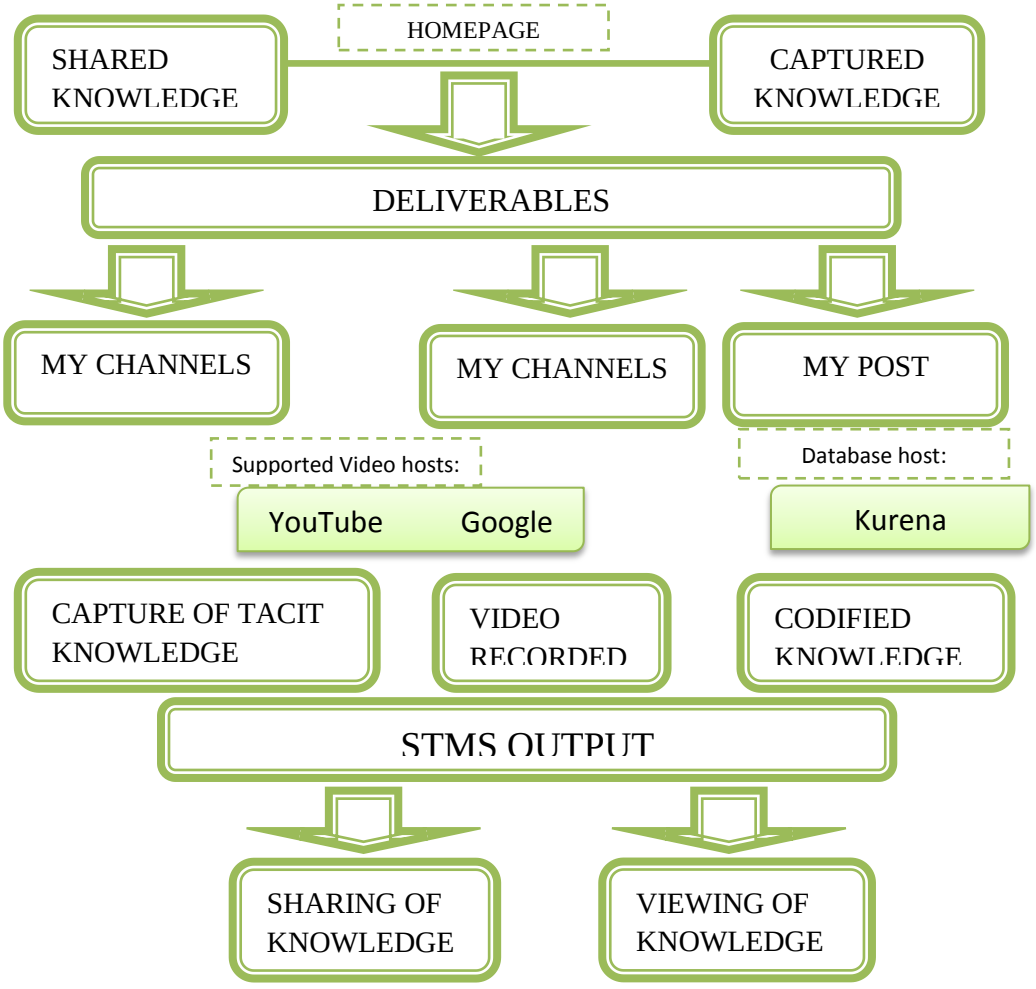


Figure 4.4: STMS Architecture

The figure above describes the STMS architecture. The system starts with the homepage which provide to the user two types of knowledge of knowledge option. These two types are shared knowledge and captured knowledge. As it, shared knowledge refers to the knowledge that was shared by all users that was input into the system. As for the captured knowledge it refers to the knowledge that was shared only by the user and the knowledge that the user had captured.

This architecture also shows the deliverables of the system as well as the functions of this system. The deliverables that are provided by this system are codified knowledge as well as a platform to share more knowledge.

4.3 STMS Protoype

In this section, the STMS prototype will be introduced to show how the system will be used and how it is a suitable platform to capture tacit knowledge through storytelling.

4.3.1 STMS Homepage

Figure 4.5: STMS Homepage (section 1)

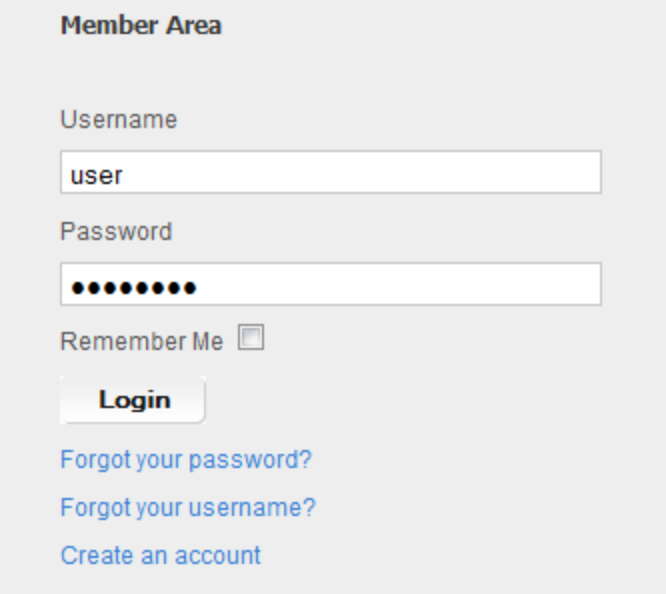


Figure 4.6: STMS Homepage (section 2: Log in menu)

Above is the homepage of the STMS prototype. The homepage is made of two sections. The first section will display a video that was uploaded by users and the second section will display the company information and a log in menu.

In the the first section there is a menu called SKnowledge which refers to Shared Knowledge. Under shared knowledge there are posts by other users to share as a platform provided for users to share their knowledge.

Public users are allowed to view the video to capture knowledge after all this is a sharing system, however public user are not unable to use any specific function of the system.

4.3.2 User Homepage

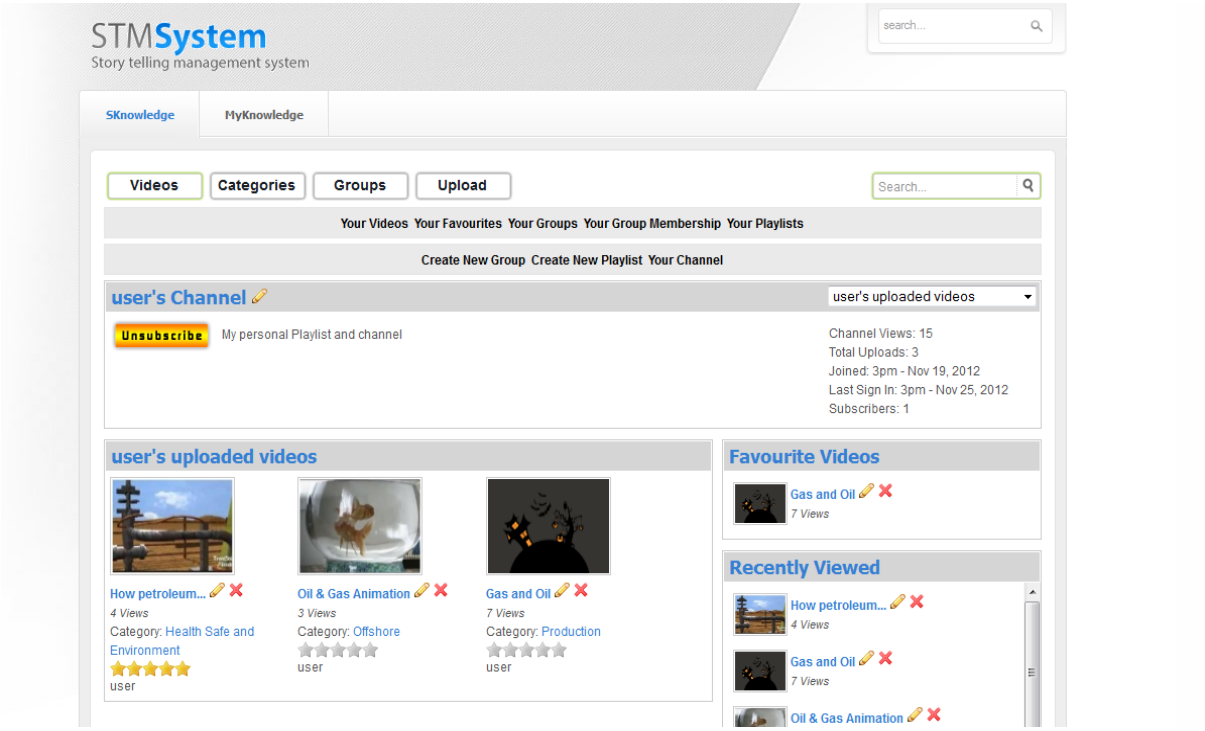


Figure 4.7: User Homepage

There are three main menus under the user homepage which are the Search Box, SKnownledge and MyKnowledge and the Search Box.

4.3.2.1 Search Box

The search box allows users to find video by inputting a keyword and it will provide results of that specific keyword. This search box is developed based on Taxonomy which a knowledge management concept. The search box will provide the resu

4.3.2.2 SKnowledge

This knowledge is the Shared Knowledge that defines the system. Under this menu is all knowledge that is being shared by all users of the StoryTelling Management System. Under Sknowledge there is:

- Video: The Video page which is also the homepage will display overall knowledge that is being shared by all users.

- Post: The Post page will display overall knowledge that is being shared by all users.

4.3.2.3 MyKnowlege

My knowledge refers to the knowledge that belongs to the user and was shared or captured by the user. Under MyKnowledge there is a drop down list of:

- My Channels: This page will display the channel of the users which other users are allowed to subscribe to see the latest video post of that user. The MyChannel page will also display the videos that were uploaded by the user, the favourite video as well as the user's playlist video
- My Posts: This page will display the knowledge that was shared by the user

To be able to view MyKnowledge, users must log in.

4.3.3 "Currently Playing" page

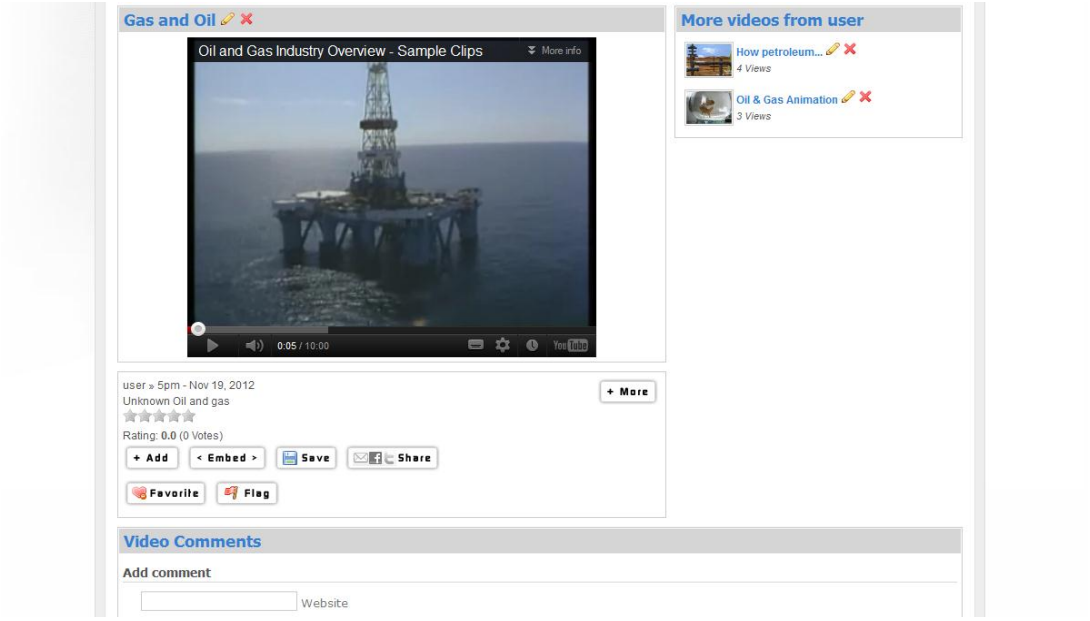


Figure 4.8:"Currenty Playing" Page

This page provides the user with the knowledge that required as well as function to allow user to give a review of the video by ranking and / or comment.

Users are given the option to add the knowledge under MyPlaylist, this is to allow easy to the knowledge access in the future.

4.3.4 “Posted Knowledge” page

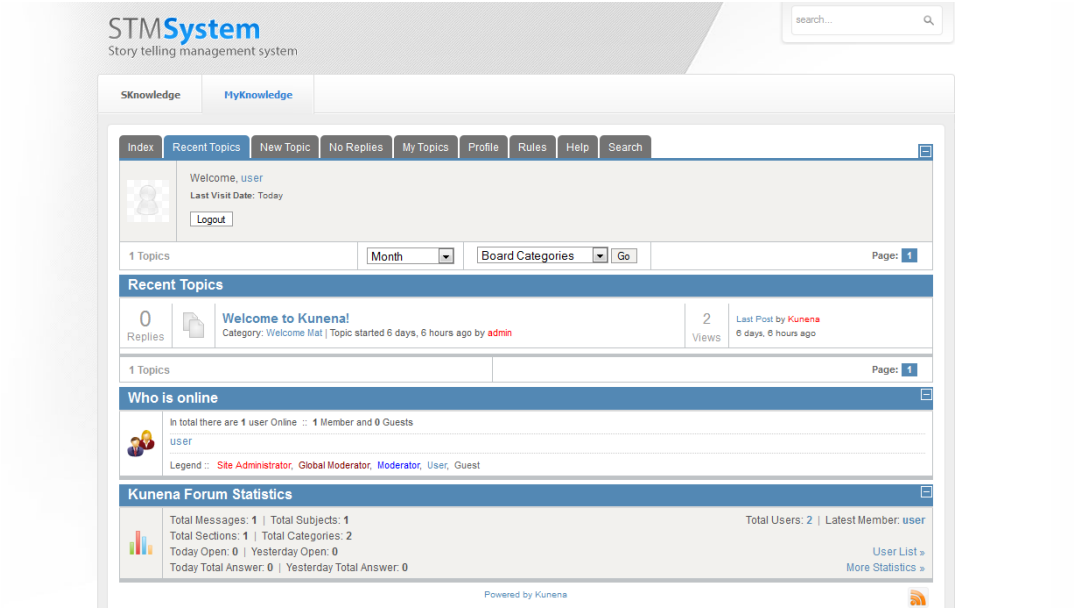


Figure 4.9: “Posted Knowledge” page

This page displays all the knowledge discussion by users of the STMS system. A search box is also provided in this page. This page allows the user to see the number of user that are currently online, it also provides the user with the statistics of the forum such as the total of messages, number of messages opened today and so on. The user is also able to share his / her knowledge by clicking on the tab “New Topic”. Other Tab such as “My Topics”, “Recent Topics” and such, are also provided to facilitate user navigation through the forum.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

In conclusion this research has served its objective presented in the earlier section of this paper. This project's objective is to introduce storytelling as the best and most effective mechanism of capturing tacit knowledge. Tacit knowledge is an experience- based knowledge which renders it difficult to capture. Our research focused on studying the improvement that storytelling could bring to companies by doing interview with the staff of the company. Unfortunately due to the restriction caused by insufficiency of time, the research could not conduct as deeply as one would wish to do. The participants of this research were chosen randomly as we were not able to conduct an interview with the primarily chosen staff as they were very busy with their work.

The results that were gathered from the interview proved that storytelling can be considered as an effective mechanism for capturing tacit knowledge. But it would require a time and input. As the interview only had four staffs as participants, the results cannot be considered as a representation of whole company.

This project has come to an end for the first stage which is the data collection and analysis. The second stage which is the development of the STMS system has been completed by providing a prototype. After working on this paper, it is recommended for future research paper:

- To do a more thoroughly work, by referring to previous literature that are relevant to this study
- To conduct interviews with a larger group of participants
- More time to provide a complete STMS

Studying more literature review will allow this study to differentiate itself from previous work, thus providing a more significant contribution to current platforms for capturing knowledge. Without forgetting the need to conduct interview with a larger group of participant which will allow a more accurate data or information of the platforms that are

being used to capture knowledge as well as it will provide more insight regarding the questionnaire that was prepared.

However, in order to be able to complete the highlighted points above, enough time need to be allocated. Since this study requires preparing a data collection and analysing as well as developing a prototype, it might be time consuming. Thus, it is recommended to allocate enough time for this study.

REFERENCES

[1] Grant, R. M. "Toward a knowledge-based theory of the firm," *Strategic Management Journal* (17:Winter), 1996b.

[2] Nonaka, I. "A dynamic theory of organizational knowledge creation," *Organization Science* (5:1), 1994.

[3] http://www.wikipedia.org/

[4] Gary Klein " Source of Power and Intuition at work" http://www.kmsingapore.com/2011/09/02/capturing-tacit-knowledge-through-storytelling/

[5] Sole, D., & Wilson, D. G. (2003). *Storytelling in Organizations: The power and traps of using.* Harvard: Learning Innovation Laboratories, Harvard University.

[6] Swap, W., Leonard, D., Shields, M., & Abrams, L.,(2001). "Using mentoring and storytelling to transfer knowledge in the workplace," Journal of Management Information Systems, vol. 18, p. 95.

[7] Stephen Denning, The Springboard: How Storytelling Ignites Action in Knowledge-Era Organizations. Boston, London, Butterworth Heinemann, October 2000.

[8] Donald E. Polkinghorne, Narrative Knowing and the Human Sciences. Albany N.Y.: State University of New York Press, 1988.

[9] Brown, E. D., & Deokar, A. (2009). Applications of storytelling in knowledge management. *INFS 838.*

[10] Brown, J.S., & Gray, E.S. (1995) "The people are the company" in Fast Company

[11] Endres, M. L., Endres, S. P., Chowdhury, S. K., & Alam, I. (2007). Tacit knowledge sharing, self - efficacy theory, and application to the Open Source community. *Journal of knowledge management , 11* (3), 92-103.

[12] Leavitt, P. (2002). *Applying Knowledge Management to Oil and Gas Industry Challenges.* Houston: American Productivity & Quality Center.

[13] Kidwell, J. J., Linde, K. M., & Johnson, S. L. (2000, October). Applying corporate knowledge management practices in higher education. *Educause quarterly* , pp. 28-33.

[14] Ramaprasad, A., & Prakash, A. (2009). Fostering Knowledge Sharing in Project Management. 42nd Hawaii International Conference on System Sciences, (pp. 1-10). Hawaii.

[15] Swap, W., Leonard, D., Shields, M., & Abrams, L.,(2001). "Using mentoring and storytelling to transfer knowledge in the workplace," Journal of Management Information Systems, vol. 18, p. 95.

[16] Wende, E., & Parissa, D. H. (2009). Storytelling as a tool for knowledge transfer in the IT industry. *17th European Conference on Information System* (pp. 1-12). Verona: Manuscript Central

[17] Endres, M. L., Endres, S. P., Chowdhury, S. K., & Alam, I. (2007). Tacit knowledge sharing, self - efficacy theory, and application to the Open Source community. *Journal of knowledge management, 11* (3), 92-103.

[18] Raphael Perret, Marcos R. S. Borges and Flávia Maria Santoro. Applying Group Storytelling in Knowledge Management

[19] Walter Swap, Dorothy Leonard, Mimi Shields, Lisa Abrams. (2001). Journal of Management Information Systems, Volume 18, Number 1 / Summer 2001

[20] Snowden, D. (2005). Story telling: an old skill in a new context. *Business Information Review , 16* (1), 30-37.

[21] Scott B. Droege and Jenny M. Hoobler.*Journal of Managerial Issues* Vol. 15, No. 1 (Spring 2003).

[22] Orton, P.Z. Effects of story strength elements and interactivity on audience interest in and liking of story dissertation, Department of communication, Standford University, 1995.

[23] Charlotte Linde, (2001) "Narrative and social tacit knowledge", Journal of Knowledge Management, Vol. 5 Issue: 2.

[24] Joseph A. Horvath. "Working with Tacit Knowledge" in: James W. Cortada and John A. Woods (editors). *The Knowledge Management Yearbook 2000-2001*. Butterworth-Heinemann, 2000.

[25] John Seely Brown and Paul Duguid. "*Balancing Act: How to Capture Knowledge without Killing It*". Harvard Business Review on Organization Learning, Harvard Business School Press, 2001.

[26] Tom Reamy (2002*). Imparting knowledge through storytelling, Part 1 of a two-part article*, KMWorld July/August 2002, Volume 11, Issue 7.

[27] Haridimos Tsoukas (2002). *Do we really understand tacit knowledge?* Athens Laboratory of Business Administration (ALBA), Greece & University of Strathclyde Graduate School of Business, UK

[28] Filemon A. Uriarte, Jr. (2008). *Introduction to knowledge management*. ASEAN FOUNDATION. National Academy of Science and Technology Government of Japan

[29] Ben Tagger (2005). *An Enquiry into the Extraction of tacit Knowledge. IMR Assignment*

APPENDIX I

STORYTELLING MANAGEMENT SYSTEM WORKFLOW FOR USER

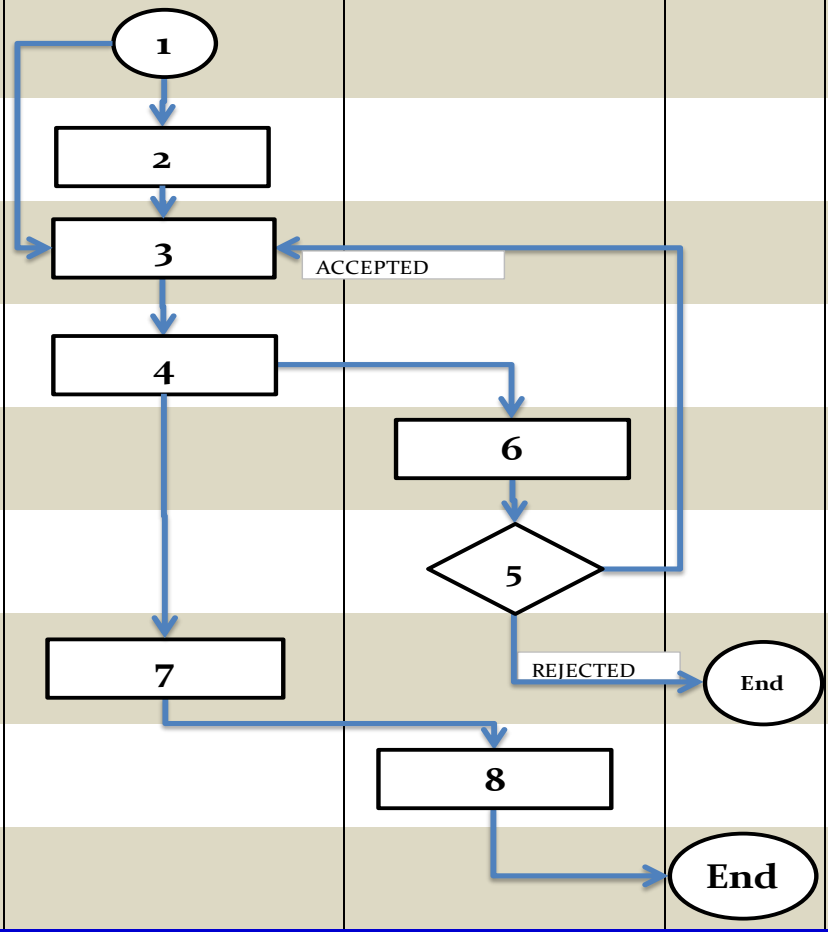
APPENDIX I-a

NO	DESCRIPTION	USER	STM SYSTEM		REMARKS
1	User opens STMS homepage	1			
2	Register, if new user	2			If existing User, skip step 2
3	Input Username and Password	3	NOT VALID		
4	User Logs in	4			
5	Verification of Input		5		
6	Display the Homepage		VALID 6		
7	User inputs Keyword	7			Search Engine
8	System Displays the the seach results		8		
9	User views / watch videos	9			
10	User may comments on the video output, quality	10			
11	User saves video	11			User may upload videos, but first the video needs to be approved by system administrator
12	User rates the video	12			User may rate video depending on the quality of knowledge that was acquired after watching the video
13	User Logs out	13			
14	System closes user homepage		14		
15	End	End			

STORYTELLING MANAGEMENT SYSTEM WORKFLOW FOR ADMINISTRATOR

APPENDIX I-b

NO	DESCRIPTION	USER	NM SYSTEM		REMARKS
1	Administrator opens STMS homepage				
2	Logs In				
3	Upload Video				
4	Tag videos or Categorize and Describre videos				
5	View Requested Videos for Upload				
6	Approve				
7	View Reports				Administrator is required to provide appropriate reasons for the rejection
8	Administrator Logs Out				
9	End				



APPENDIX II

Interview Question

Key Activities	Objective	Expected Outcome
1- Have you ever shared your experience-based knowledge with your colleagues at work?	▪ This gives an insight on how participants share their knowledge with their colleagues. ▪ It also allows putting the participant on the giving end.	Through this question, we will be able to identify the challenges / difficulties that the participant faces when attempting to share knowledge
2- Have you faced any difficulties while trying to capture the experience- based knowledge from you senior colleagues?	▪ The reason we have such a question is to put the participant on the reception end and find out the difficulties that are being faced in the process.	Through this questions, we are hoping to put the participant in a situation where he has to compare himself as the colleague who is trying to capture the knowledge and the expert who is sharing the knowledge(reference to question 1)
3- How do you capture tacit knowledge in your organization?	▪ This question allows us to find out how participant share tacit knowledge. ▪ It also allows to know what systems are being used to share tacit knowledge ▪ And Finally the question allows to obtain the overall state of knowledge flow	From this question, we will attempt to introduce STMS as a more effective system to share and capture knowledge

Key Activities	Objective	Expected Outcome
4- How would you describe the sharing process of knowledge in your organization?	▪ The reason for such a question is to know how helpful it is to use current system implemented in organizations	Through this question we will attempt to to introduce STMS as a more effective system to share and capture knowledge
5- What do you think of using STMS as a mechanism to capture and share knowledge?	The objectives of this question are: ▪ The first objective is to allow introduction of STMS. ▪ The second objective is to promote STMS as the best effective system there is to capture, share and transfer tacit knowledge.	We are hoping that participants show participants that STMS is first of all: ▪ A simple system (no special requirements) ▪ A user friendly system ▪ Easy to use and Effective (just log in to find out all knowledge that you wish to know)

APPENDIX III