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Co-creating corporate knowledge with a Wiki

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Keywords

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Abstract

Wikis have a growing reputation on the open Internet for producing evolving stores of shared knowledge. However such democratic systems are often treated with suspicion within corporations for management, legal, social, and other reasons. This paper describes a field study of a corporate Wiki that has been developed to capture, and make available, organisational knowledge in a large manufacturing company as an initiative of their Knowledge Management program. As this approach to KM is a controversial and rapidly changing phenomenon, a Q Methodology research approach was selected to uncover employees' subjective attitudes to the Wiki. Activity Theory was used to provide a deeper interpretation of the findings of the Q-study. The results are enabling the firm to more fully exploit the potential of the Wiki as a ubiquitous tool for successful tacit and explicit knowledge management as more employees are encouraged to participate in a process of co-creating the store of corporate knowledge. The paper also demonstrates how meaningful and rigorous research on this new democratic direction of corporate KM should continue.

Key Words: Corporate Wikis, Knowledge Repository, Q Methodology, Activity Theory

1. Introduction

The Internet, through the use of social technologies such as Wikis, is enabling data, information and knowledge to have a ubiquitous quality where people take for granted their ability and right to access, and contribute to, the global knowledge repository that is the World Wide Web. This is transforming the knowledge culture from one where control rests with established authority and power to one where knowledge repositories continually evolve being created and maintained by society as a whole. Within corporations, knowledge management (KM) initiatives strive to collect organisational knowledge to be available as a strategic resource, but corporate cultures are often not well disposed to the sharing of knowledge in the open, participatory manner afforded by a Wiki (Warne et al., 2005). Organisational KM initiatives usually incorporate the development of formal knowledge management systems (KMS) that support employees in regard to knowledge processes (Jennex 2005). Some enlightened, learning organisations (Senge 1990) are now seeking the capability to co-create such open knowledge repositories where all workers are motivated and empowered to take responsibility for their own KM processes. Emerging from the social arena into the corporation, the Wiki is, however, bound to challenge management authority by attempting to engage the knowledge worker in a more participatory KM capability and environment. Even with traditional KMS, it has often been difficult to determine what factors contribute to their success and to know that they have succeeded (Jennex & Olfman 2005). As a new, emerging phenomenon, corporate Wikis pose an even greater challenge in this regard.

This paper critically examines the prospects for Wiki technology to be a tool to successfully support a contemporary, yet challenging, view of corporate KM that is participatory, holistic, collective and contextual. The research described here involved a field study of a pioneering case where a corporate Wiki was developed to capture, and make available, organisational knowledge in a large manufacturing company as an initiative of their KM program. The study aimed to tease out the range of attitudes of employees to the Wiki and determined perceptions of Wiki attributes that influenced their willingness to contribute to it. Due to the ground-breaking nature of the topic and this case, innovative research techniques were adopted that would allow issues to emerge from the participant

employees, rather than predetermined by the researchers. The results of the data analysis are re-interpreted in terms of critical success factors (CSF) or KMS success.

The paper begins with an overview of changing user perceptions of KM through the use of a Wiki, and creating receptive environments for a Wiki in organisations. The Wiki is defined and lessons from unsuccessful corporate Wiki projects are presented. The context of the field study of the Wiki implementation is introduced together with an outline and justification of the Q methodology approach adopted for the data collection of the study. Activity Theory is also introduced as a richer framework for understanding the topic. Findings from the Q-study on employee attitudes to the Wiki are presented and Activity Theory is then used to interpret them. The results of this analysis and their implication for an expanded use of the Wiki are discussed.

2. Background

2.1 Knowledge and Wikis

A Wiki is an open author system for a conjoined construction and maintenance of websites (Fuchs-Kittowsk & Köhler 2002). Technically, a Wiki is a collection of interlinked HTML web pages and has cross links between internal pages where each page can be edited, keeping a complete record of such changes. Thus a Wiki can be accessed from any web browser and no other special tools are needed to create and edit existing pages. Any change can be easily reverted to any of its previous states. A working definition of a Wiki is an evolving knowledge repository where users are encouraged to make additions to this repository by adding new documents or working on existing ones (Pfaff & Hasan 2006a). It opens up ownership, and responsibility for, the store of record knowledge to all those who have access to it. The implications of this can be felt in legal, social and cultural areas.

In many cases organisations try to ‘manage knowledge’ by organising and categorising large volumes of information so that it can be easily retrieved (Hildreth & Kimble 2002). However, research indicates that this may be detrimental because knowledge by its very nature cannot be ‘managed’, in the traditional sense (Hart & Warne 2005). Organisations often implement KM programs by adopting a well-structured and ordered approach that must be aligned with current organisational goals

(Maholtra 2004). There are assumptions that all relevant knowledge, including that which is tacit, can be stored in carefully designed computerised databases, software programs, and institutionalised rules and practices (Ibid). The process of building these structured knowledge repositories has been criticised as being time-consuming, laborious, and costly (Lam & Chua 2005). Viewed as a superficial implement of management, official corporate knowledge repositories are often not kept up-to-date and are rarely accessed when real knowledge is sought (Ibid).

In contrast, a Wiki transforms users into active participants receiving and creating ubiquitous knowledge. Wiki technology can take advantage of the collaborative efforts of all members of the organisation to create an effective library of organisational knowledge. Organisational knowledge is equated with the collective wisdom of the organisation when this knowledge is collected and shared (Rich & Duchessi 2000). The Wiki challenges holders of opposing viewpoints to build consensus so that collective knowledge is created and innovative work can be done. Users can create knowledge collaboratively in groups or through individual efforts and disseminate knowledge anywhere and anytime. Weiser (1993) argues that users live through their practices and tacit knowledge so that the most powerful things are those that are effectively invisible in use. By invisibility, he means that the tool does not intrude on human consciousness but the focus is on the task and not the tool. The challenge is making the invisibility visible through the study of human factors and the user interface (Linger & Warne 2001). It is the invisible work of finding, interpreting and connecting relevant pieces of information, negotiating meanings and eliciting knowledge in conversations with others, creating new ideas and using them to come up with a final product, which occurs in the head or as part of communication or doing work (Efimova, 2004), that constitutes as knowledge work. The creators and users of such knowledge are known as knowledge workers.

Traditionally the main elements of computer-based systems in organisations are data and information (Alavi & Leidner 2001). On the contrary, knowledge, now recognised as a critical organisational resource (Kelloway & Barling 2000), is the province of people. It makes sense to bring the capability of social technologies to play in organisational KM initiatives because social technologies such as Wikis support the concept of knowledge as the *social practice of knowing*, where knowledge is

considered to be embedded in a community rather than just in one individual (Boyd 2006). A Wiki can become a *peer production information commons* (Benkler 2006) functioning as common spaces where people can share experiences and have unanticipated, un-chosen exposures to the ideas of other people. Moreover, due to the association of knowledge with people, it seems sensible to view KMS as an advanced information systems (IS) that are essentially socio-technical in nature (Hasan & Crawford 2007). A considerable body of knowledge has been created over the past few decades on IS development and success in organisations (e.g. Klein & Hirschheim. 2008) that can be applied to KMS.

The situation with KMS is generally more complex than it is with IS. IS development is typically top-down, expensive, and controlled by formal methodologies and procedures, where managers set specific performance targets and are looking for a measurable return on their substantial investment within a few years (Cleetus et al. 1996). While some traditional KMS may be created this way, this is certainly not the case with the Wiki project we have studied. According to the Australian Standard (AS5037 2005), KM success is determined indirectly by improvement in organisational performance, which can be difficult to attribute directly to the KMS as other factors could be involved. While recognising this, considerable progress been made in adapting IS success models to one for KMS success (Jennex & Olfman 2006). This has led towards a definition (Jennex et al 2007) and measures of KM and KMS success (Jennex et al 2008). Table 1 contains a list of twelve CSF that have been identified to assist with the analysis of KM/KMS success dimensions (Jennex et al. 2008). These appear to be relevant to the corporate Wiki as a KMS and this list provides a dimension against which results of this study of employee attitudes to their Wiki can be reviewed.

Table 1 Twelve CSF for KMS Success (Jennex et al. 2008)
A knowledge strategy that identifies users, sources, processes, storage strategy, knowledge and links to knowledge
Motivation and commitment of users including incentives and training
Integrated technical infrastructure, including networks, repositories, computers, software and KMS experts
An organisational culture and structure that supports learning and the sharing and use of knowledge
A common enterprise-side knowledge structures that is clearly articulated and easily understood.
Senior management support including allocation of resources leadership and training
Learning organisation
The KMS has a clear goal and purpose
Measures are established to assess the impacts of the KMS and use of knowledge, as well as verification that the right knowledge is being captured
The search, retrieval and visualisation functions of the KMS support facilitated use of knowledge
Work processes are designed that incorporate knowledge capture and use
Knowledge is secure / protected

2.2 Previous Wiki research

In previous research (author's references removed for reviewing) we have reported corporate Wiki projects that were unsuccessful. This research identified management, social and legal issues that mitigate against the easy uptake of Wikis in corporations. The informal network approach that is currently favoured in a Wiki, implies a loss of central management control of corporate knowledge and changes to organisational structure and culture (Pfaff & Hasan, 2006b). The Wiki is described as a 'social software' (Swisher, 2004), implying that there are social factors that must undergo some changes before the Wiki will be accepted to improve the organisation's knowledge management. Legal issues concerning rights to intellectual property and possible libellous material see a Wiki as a risky endeavour. Yahoo!, Disney, SAP, and Motorola have been cited in literature as having successfully used corporate Wikis to reap the benefits of economic savings, increased efficiency in understanding the elements of knowledge work, and easy dissemination of knowledge to disconnected teams (Pfaff & Hasan 2006b; Gonzalez-Reinhart 2005).

There are some informal and networked enterprises where flexible participatory modes of information and knowledge management are ubiquitous (e.g. O'Brien & Ali 2006). The adaptability and leaderless development capability of the Wiki, makes it eminently suitable as a knowledge repository in such enterprises, as has been shown emergency situations (Murphy

& Jennex 2006a,b; Raman et al. 2006). Such projects show how, in contrast to many organisational IS and KMS, Wikis can be acquired with low cost software and bottom up design where its structure and content are set up through the ongoing efforts of users (Pfaff & Hasan 2006a) .

2.3 Current Research

In this paper we report the findings of an exploratory field study of a corporate Wiki called a Technology Encyclopaedia (TE) that has been developed and implemented to capture organisational knowledge for a large manufacturing company and make it widely available as an initiative of their Knowledge Management (KM) program. We sought to employ techniques for data collection and analysis that would not preclude issues to emerge in the study that were not anticipated by the researchers. Consequently, Q Methodology and Activity Theory are employed as research tools because of their suitability for this purpose. They are described in the following sections of the paper in sufficient detail so that their use in the data collection, analysis and interpretation of the study can be understood.

Q Methodology consists of procedures for data collection and analysis with the ability to reveal communicative subjectivity, giving a voice to the understandings of what are the key issues and letting the people involved share their views and opinions. Q Methodology also allows the researchers to further explore and understand the experiences of participants in the study and expand on knowledge of their behaviours and attitudes (Brown 1986). A Q Methodology research approach was therefore selected to uncover employees' subjective attitudes to the TE so that the firm could more fully exploit its potential as a ubiquitous tool for tacit KM.

Activity Theory provides a solid theoretical basis for understanding human experience through the discovery and observation of how humans develop through the use and creation of tools within their culture. According to Kaptelinin and Nardi (1997), it is really a "set of conceptual principles that constitute a general conceptual system, rather than a highly predictive theory". Activity Theory can however be quite a practical holistic way of analysing a complex situation as seems to be the case in

this study. Activity, i.e. what people do, is the basic unit of analysis, and is mediated through the use of tools. The TE is the tool, , although significant; is not neutral, but an integral part of the activity. In our research, the process of identifying and revealing the aspects of the activities mediated by the TE add to the findings from the data analysis of the Q-study.

2.4 Q Methodology

Q Methodology was selected as a technique for data collection and analysis to better understand how Wiki technology can contribute to the area of KM by drawing out and examining the views of TE users . As the corporate Wiki is an emergent technology having complex ramifications that are not yet well understood, this approach can help to expose issues, which may otherwise be invisible. Q Methodology has been frequently associated with quantitative forms of analysis due to its involvement with factor analysis of Q-sort technique. However it is important to note that the Q Methodology uncovers the *range of views,* such as the users' subjective views, attitudes, opinions, understandings, and experiences on a specific topic of investigation, as opposed to most methods that offer one composite view. The following will describe the concourse, the sorting procedure, and the analysis of the results from the sort process that form the Q Methodology.

A Q study normally starts with the concourse, which involves having the participants provide their thoughts and views. This activity of statement generation may not occur in a single session but may transpire over time or amongst various groups, but always on the same topic/s. A Q sample of 30 to 50 individuals has the ability to produce meaningful results i.e. provide an accurate picture of the range of views on a topic (McKeown & Thomas 1988).

The Q sort involves eliciting the individual views of participants by choosing amongst the statements called a Q sample, and demonstrating the extent of their agreement or disagreement with them. For example they may be instructed as follows:

"You are being asked to sort statements in accordance with your degree of concurrence/agreement with the statements. Where +4 is high agreement and –4 is high disagreement and the scales between –4 and +4 reflect shades/levels of agreement. You will find the statements on a pack of cards that will be given to you. You are asked to sort the cards in accordance with the rating given to each card. The

largest number of statements will be placed in the centre and the least amount of statements at each extreme point. Figure (1) is similar to the sample form that you will need to record your ranking of the statements," (Meloche & Crawford 1998).

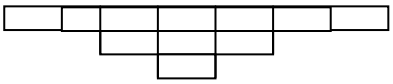

Figure 1: A Q Sort Triangle for ranking of the Statement if there were a sample of 11

The analysis stage occurs when all participants have completed the individual sorting process. The Q Sorts are statistically analysed by any of the standard Q factor analysis computer programs to find correlations and identify Factors that are common to the sorts of several individuals (Stephenson 1953). The results contain clusters of those individuals who appear to hold similar views in their ranking of the statements. Each of these clusters may reveal a distinct activity for which the TE is being used.

2.5 Activity Theory

Once clusters of like-minded participants are determined in the Q-study, we have found that a deeper understanding of these clusters can be made if each is interpreted as an activity using the language and framework of Activity Theory.

The Cultural-Historical Activity Theory is a social-psychological theory that has its roots in the work of the Russian psychologist Vygotsky during the first half of the 20th century. Vygotsky (1997) saw human activity as quite distinct from that of non-human entities in that it is mediated by tools, the most significant of which is language. Vygotsky defined human activity as a dialectic relationship between subject and object, simply a person or group of people, working at something. He also proposed that all human activity is purposeful, is carried out through the use of tools and is essentially social. Vygotsky believed that tools play a mediating role in all human activities and mental processes. To be able to analyse complex interactions and relationships, Engeström (1987) proposed a research framework with an activity system as the unit of analysis. This is represented in the triangle shown take in Figure (2) which has been widely used in social science research over the last two decades

(Hasan 2001). Here the core of an activity is a dialectic relationship between subject (human) and object (purpose) where the subject can be individual or collective, as in a group or team working on a common project. The subject-object relationship, which defines the activity, is mediated by tools and community. Tools which mediate activities can be physical, i.e. technical or psychological such as language, ideas and business models. This is a two-way concept of mediation where the capability and availability of tools mediates what is able to be done and tools, in turn, evolve to hold the historical knowledge of how the communities behaves and is organised.

This is particularly powerful when the tools are computer-based. Engeström (1987) proposed that the formal, or informal, rules and division of labour of the community, in which the activity occurs, also dynamically mediate the subject-object relationship. Engeström suggests that it is the internal tensions and contradictions of such an activity system, which includes both historical continuity and locally situated contingency that are the motive for change and development.

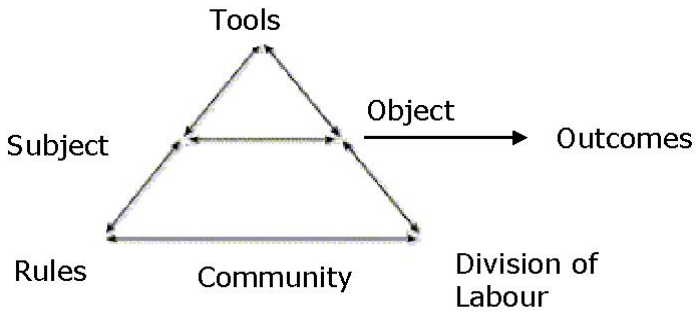

Figure 2: Engeström's Activity Theory

In research there are normally two sets of activities of interest namely those of the researchers and those of the situation being studied. While traditional scientific research is built on objectivity where there is assumed to be no influence of the researchers on the object of the study, there is an equally valid approach to research which focuses on subjectivity. Here the researchers recognised that the activities of the researcher and the situation being studied impact on each other to mutual advantage. In this approach Q Methodology and Activity Theory come together to provide appropriate techniques for conducting the research and interpreting the results.

Activity Theory imposes the following concepts on the design, conduct and interpretation of the research activity for which Q Methodology is a tool:

- The **holistic** nature of the object of study i.e. in the activities involving the TE, the subjects (employees), the tool (TE) and the culture of the work community are all inter-related and any attempt to study them individually may be misleading.
- All human activity is driven by some **purpose** but people always have a variety of **motives** for doing what they do, some personal and some for the common good.
- Human activity is **dynamic** and is always changing. What works one day may not work the next. Opinions and motives change.
- Human activity is always influenced by the **context** in which it takes place. The Concourse is quite public yet the sorts can be a private activity.

It is always useful to explicitly identify the activities of the study. In this case there are at least four:

- The activity of contributing to the TE which is the focus of the Q-study
- The activity of accessing and using the content of the TE, its main purpose
- The researchers' activity in conducting the study
- (for some employees) Participating in the study

The key activity of accessing and using the content of the TE can be generalised to the activity of knowledge work as depicted in the Activity Theory Triangle of Figure 3.

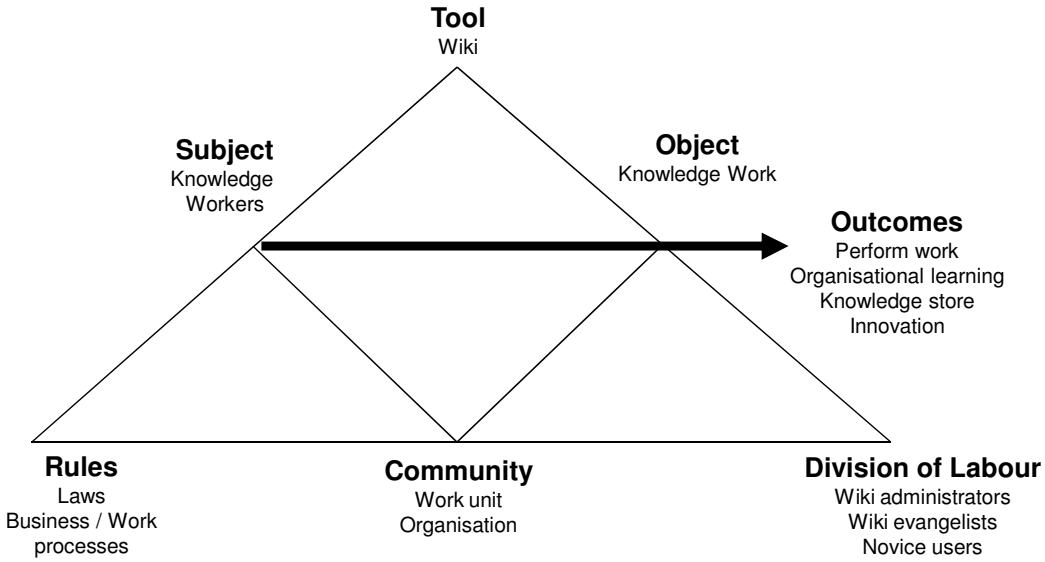

Figure 3 The Activity Triangle of Figure 2 labelled for the activity of knowledge work.

3. The Wiki Case Study

This research project was initiated by the manager of the unit where the TE is implemented and who is its main sponsor. He approached the other authors, researchers of KM at the local university, to conduct a study of employee attitudes in contributing to the TE in order to suggest interventions that might improve their involvement.

3.1 The Concourse

A Concourse was held with a selected group of employees at their worksite. It consisted of a general discussion with the members of the research team and the client representative on what they would like or expect of a TE**.** Using ZING Technology, which is a group decision support tool. Participants were asked to supply their ideas for the topic as brief statements. A total of 57 statements were collected and researchers organised these statements into categories that included usefulness, ongoing, acknowledgement, time, ease of use, security, mainstream, support, and exposure to risk (Table 2). These categories helped in the subsequent analysis but were not shown to the individuals who participated in the sort.

Table 2 Categories of statements as determined by the researchers responding to the question: *"What would (from your point of view) help you to contribute to the TE?"*		
Category Type	**Number**	**Example Statement**
Usefulness	11	If I could see tangible benefits to customers
Ongoing	2	Knowing that this type of system is going to be around " for the long haul" and not be a "flavour of the month"
Acknowledgement	10	If contributions were recognised and rewarded
Time	2	If I had the time to contribute
Ease of Use	12	If I could easily get attachments in right format before entering
Security	5	If confidentiality issues are resolved
Mainstream	5	If it was universally regarded as a necessary job function
Support	6	(39) If it had a specialist entry person / editor
Exposure to Risk	4	(16) If I knew it wouldn't make me redundant

3.2 The Sort

The statements generated by the Concourse concerned "What would (from your point of view) help you to contribute to the TE?" and individuals sorted the statements in accordance with the instructions "the extent to which you agree or disagree with the statements." A 'forced sort' methodology was applied where each statement need to be placed in one of the provided squares on the Q Grid. The process involves correlation and by-person factor analysis where the analysis is performed not by variables, such as traits, or statements, but rather by persons, where people correlate to others with similar views based upon their sorts. The three factors (opinion types with reference to contributing to the TE) were titled as shown in Table 3.

Table 3 ***18 Sorts in 3 Factors**** *(Reflected Negative Factor)*		
	Interpreted as:	**Sorts per Factor**
1	Corporate Knowledge Worker (CKW)	7
2	CKW with Customer Focus *	4
3	Main Stream View *	7

The following section includes the high agree (positive) and the high disagree (negative) statements from each of the Factors and the respective Factor scores, which indicate the relative level of the statements. The aim is two fold: first, to see the continuality among the high and positive statements: and second, compare the prior with the high negative statements and the contrast between them. This comparison is done with each of the Factors in turn so as to allow for a more rigorous examination of the Factors, both individually and in comparison with each other.

Factor 1 – "Corporate Knowledge Worker" (CKW)

For Factor 1, the ten (10) statements given the highest weighting are shown in Table 4.

Table 4 ***Factor 1 - Strongly Agree Statements***

High Positive Statement	**Z-Value**	**Category**
If I thought the system wasn't going to be redundant in couple of years	2.064	Ongoing
If its usefulness was apparent	1.595	Usefulness
If I could see tangible benefits to customers	1.539	Usefulness
If it was of more value	1.520	Usefulness
If I had the time to contribute	1.520	Time
Knowing that this type of system is going to be around "for the long haul" and not be a "flavour of the month"	1.388	Ongoing
If the system allowed direct entry of existing data without the need to re-format	1.351	Ease of use
If I thought someone was going to read what I wrote	1.295	Usefulness
If it accepted dot points/not essay	1.051	Ease of use
If I could easily get attachments in right format before entering	1.051	Ease of use

Table 5 *Factor 1 - Strongly Disagree Statements*		
High Negative Statement	**Z-Value**	**Category**
If I knew it wouldn't make me redundant	-1.013	Exposure to Risk
If contributions were recognised and rewarded	-1.032	Acknowledgement
If it had an improved authentication process	-1.220	Security
If contributions were tracked to me so that my boss can see my contributions	-1.257	Acknowledgement
Knowing who was reading it	-1.370	Acknowledgement
If it provided the ability to make anonymous entries	-1.426	Exposure to Risk
If I could use it in focus groups with limited team members	-1.539	Security
If there was a Wiki award	-1.782	Acknowledgement
If guys in the control room could browse it in the middle of the night	-1.895	Usefulness
If there was a Wiki newsletter	-2.008	Acknowledgement

For Factor 1, the ten (10) statements given the lowest weighting are shown in Table 5.

Factor 1 contains the statements most aligned with a good corporate knowledge worker - concerned with the value and usability of the TE.

The main concern of the individuals is the ongoing use/status/reliability of the TE. The other positive statements reflect a desire for ease of use and for client feedback. The negative statements indicate that CKWs are not concerned about acknowledgement, awards and job security.

Factor 2 – Reflected (Negative Factor) CKW with Customer Focus

The following statements are the strongest agreement statements for Factor 2; the ones following these are the strongest disagreement statements. For Factor 2, the nine (9) statements given the highest weighting are shown in Table 6.

Table 6 *Factor 2 - Strongly Agree Statements*		
High Positive Statements	**Z-Value**	**Category**
If it gave something back to the organisation	1.995	Usefulness
If I had the time to contribute	1.448	Time
If the system captured info requests - so you could write on a topic for a known audience.	1.408	Support
If confidentiality issues are resolved	1.215	Security
If customers could access the information	1.201	Usefulness
If it was of more value	1.188	Usefulness
If I could see tangible benefits to customers	1.161	Usefulness
If the objectives was made clear	1.128	Usefulness
If I thought the information was useful to the users	1.121	Usefulness

For Factor 2, the nine (9) statements given the lowest weighting are shown in Table 7. Factor 2 also reflects the views of the CKW and its focus on customers. There is concern and a desire for assurance, that confidentiality issues will be resolved and that the objectives be made clear, i.e. tangible benefits of the TE. The negative statements showed a disregard for additional rewards or acknowledgement. They were not concerned with acknowledgement, publicity, or any possible negative impact on their job security.

Table 7 *Factor 2 - Strongly Disagree Statements*		
High Negative Statements	**Z-Value**	**Category**
If I was not limited by my ability to contribute	-1.101	Exposure to Risk
If I knew it wouldn't make me redundant	-1.188	Exposure to Risk
Having people who could capture information for me as its produced	-1.368	Support
If it had a specialist entry person / editor	-1.448	Support
If I thought the system wasn't going to be redundant in a couple of years	-1.415	Ongoing
If it provided the ability to make anonymous entries	-1.502	Exposure to Risk
If it was linked to STI (an incentive scheme)	-1.515	Acknowledgement
If there was a Wiki newsletter	-1.949	Acknowledgement
If there was a Wiki award	-2.276	Acknowledgement

Factor 3 –Negative Factor - Main Stream View

For Factor 3, the five (5) statements given the highest weighting are shown in Table 8.

Table 8 ***Factor 3 - Strongly Agree Statements***		
High Positive Statements (Reflected)	**Z-Value**	**Category**
If I had the time to contribute	1.752	Time
If it was universally regarded as a necessary job function	1.700	Mainstream
If it was linked to STI	1.607	Acknowledgement
If there was a higher level of commitment to Wiki from management	1.246	Mainstream
Knowing that this type of system is going to be around "for the long haul" and not be a "flavour of the month"	1.129	Ongoing

For Factor 3, the three (3) statements of Table 9 were given the lowest weighting:

Table 9 ***Factor 3 - Strongly Disagree Statements***		
High Negative Statement (Reflected)	**Z-Values**	**Category**
If I thought that customers wanted information added as part of their project	-1.002	Usefulness
If it provided the ability to make anonymous entries	-1.433	Exposure to Risk
If I knew it wouldn't make me redundant	-1.677	Exposure to Risk

Factor 3 reflects the views of those who want the TE to be ‘mainstream; and acknowledged as an ongoing part of their work. It contains the individuals whose statements are both concerned about their status, how they will be acknowledged and whether the TE will fully supported by management. Note, however, that the statement “If it was linked to STI” could be a surrogate for mainstream rather than a concern about acknowledgement and reward since STI job goals are always assigned in key performance areas. They are not concerned with being made redundant or being able to make anonymous entries.

4. Analysis of the results

4.1 The Factors as revealed from the Q-Study

The study revealed the following three factors representing clusters of participants with similar opinions.

Factor 1: This Factor consists of individuals whose statements are most aligned with a progressive and dedicated 'corporate knowledge worker'. They are concerned with how useful the TE is for knowledge sharing and expect that it is easy to use. It is interesting to note that CKWs in this particular organisation are not concerned with acknowledgement, which goes against the assumed innate need by workers for recognition (Pfaff & Hasan 2006a) This defies Wiki critics who have pointed that a disadvantage of the Wiki is that there is no recognition of authorship because pages can be freely written or edited by anybody. Although this group of workers may not all be young workers, people on this Factor exhibit characteristics typical of 'Gen Y', the generation that has grown up in the digital age. For them it is natural and rewarding to share information and knowledge using new social technologies on the Internet (Li & Bernoff 2008). They do this at home so expect to do so at work as a normal part of what they do.

Factor 2: The people who make up this Factor like those in Factor 1, are concerned with the value and its usefulness of the TE. However the CKWs on this factor also have a strong customer focus in their selection of "usefulness" statements. The workers on Factor 2 are willing to share knowledge not because it is natural but because it has the potential to improve their service to customers. The openness of the Wiki invites opportunities for improvement so that coordination and corporate learning across product groups and departments will become easier. The usefulness of the Wiki depends on its CKWs to contribute and maintain this growing repository of knowledge in the organisation. In response to CKWs concerns about assurance and confidentiality issues, it is assumed that management hires competent employees, and thus any inaccurate entries will either be corrected voluntarily by the original contributor, or by others. Qualified peers will be responsible for

information quality and for acquiring information with a strong customer focus. The Wiki is, therefore, an information repository whose relevance and accuracy undergoes continuous peer review.

Factor 3: People in Factor 3 are concerned with how mainstream the TE is. They currently see it as experimental and something extra to do. As everyone at work is time poor, these workers would do their bit to maintain the Wiki content if management directed that this should be a component of the central organisational business process and a recognised part of their job. They are also not comfortable with the free-form nature of the Wiki and so they would also like someone to be responsible for specifying the type of content that it is intended to contain. For instance, reports, reference articles and other useful information pertaining to their research and projects could be made available on the Wiki so that the Wiki will 'write itself'. They would like the Wiki to be an information commons where project managers could include regular updated information of their projects on the Wiki and encourage workers to make it part of their ongoing work routine to put up new reports and edit old entries to update the data. Another concern of these workers is whether the TE will be always be fully supported by management.

4.2 Interpretation as Activities

As understood in Activity Theory, human activity is a dialectic relationship between subject (a person or people) and the object of work (which includes its purpose) or, in other words activity provides a holistic unit of analysis for people doing things together. Ostensibly the use of the TE to store information could be considered one activity, namely the employees (the subjects) creating a store of corporate knowledge (the object), and this almost certainly reflects the view of organisational management. However the factors identified by the Q-study could be considered to reveal three separate activities, each with a different object or purpose and undertaken by a different cluster of employees as follows.

The Activity of Factor 1: CKWs are subjects engaged in the activity of knowledge sharing for its own sake (i.e. knowledge sharing is the object of the activity). They are motivated by the capability and open form of the Wiki. These CKWs use the TE in an informal and interactive way. They may even

spend, or even waste, too much time on this activity and enter content without consideration of its relevance or importance. They may not be careful about the spelling and grammar of their entries and be more interested in sharing their knowledge than setting up a well structured knowledge repository for practical access and application. An outcome of their activity will however be increased content in the TE, much of which could be valuable to the organisation. This is consistent with the representation of the activity of knowledge work depicted in Figure 3.

The Activity of Factor 2 – These CKWs are subjects engaged in the activity of creating a knowledge store (a concrete object) that will improve customer service the main motive of the activity as shown in Figure 4. These subjects are motivated to create a useful resource for the organisation so will probably give time and effort to the structure of TE, making it easy to retrieve useful knowledge, and they will be more careful about the standard of English. They will only put up what they think would be useful and may ignore other content that they believe does not do this but may have other value.

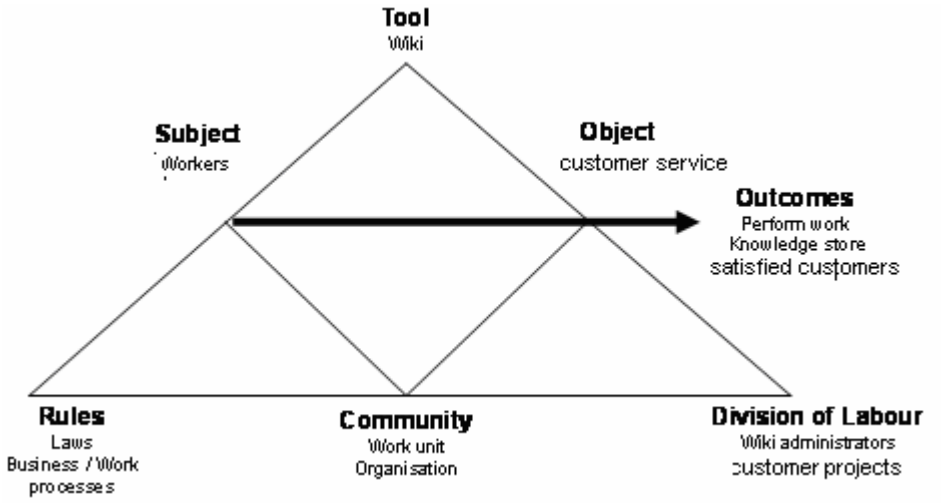

Figure 4. The activity triangle for knowledge work with a customer focus (Factor 2).

The Activity of Factor 3 – These traditional workers are subject engaged in the activity for which they were employed, as mandated by management, to conduct research and development for the company. This is their normal work activity and determines their motive for using the TE as shown in Figure 5. They do not give much credence to the usefulness of the TE content but would make entries if this were made a part of their job description. They would probably spend time making sure they did not

put up anything that was controversial or did not look right as they would be conscious of doing the right thing as determined by management. The Wiki would not be a work tool that came easily to them.

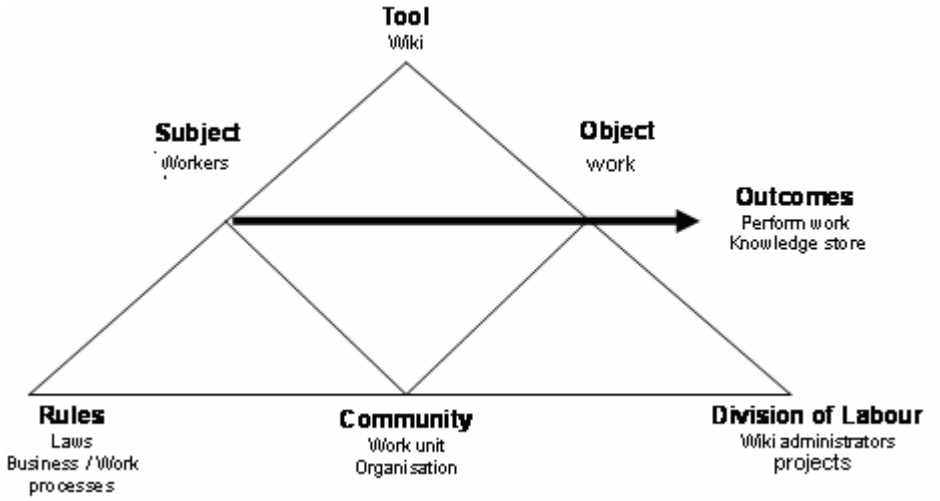

Figure 5. The activity triangle for the mainstream workers of Factor 3.

As a knowledge repository the TE will become much more valuable to the company as more people contribute more useful content. So one of the expected outcomes of our research activities was that it would encourage more people to see its value and purpose, and hence they would make more entries. This outcome would be more likely if management understood that the activities of the subjects on the different Factors have different motives and perceived purpose. At the same time they should acknowledge that this is not a value judgment that any of these activities are any better or worse that any other. They do however need to be considered separately by a manager wanting to increase employee contribution. As the different type and form of content from different activities may not sit well with others there may need to be separate spaces in the TE for each activities. The interactive discussion from activity 1 needs to be separated from structured content of activity 2 and from activity 3 to decide where more formal content (project reports, minutes of meetings etc) goes – in the TE or just as lists or links.

4.3 A Review of the KMS Critical Success Factors

The study of the TE has focussed on the activities through which knowledge workers make contributions to a corporate Wiki. The findings of the study not only add to our understanding of KMS in general but also demonstrate some aspects of Wikis that distinguish them from more traditional organisational systems. There is less tangible investment of resources in a Wiki, with little expenditure on the software and the initial design leaving users to develop the content and structure. There may however be a greater commitment of intangible resource in changes to organisational culture. Table 1 contains a list of CSF developed for traditional KMS. In Table 10, we indicate how these may need some expansion or revision for the case of corporate Wikis based on our research.

Table 10 The KMS CSFs of Table 1 augmented with findings from the Wiki study

KMS CSF	Comments regarding Corporate Wikis
A knowledge strategy that identifies users, sources, processes, storage strategy, knowledge and links to knowledge	Still important but allow for emergence of these elements
Motivation and commitment of users including incentives and training	Even more critical with a Wiki because of its participatory nature
Integrated technical infrastructure, including networks, repositories, computers, software and KMS experts	A Wiki encourages links and references to other knowledge sources
An organisational culture and structure that supports learning and the sharing and use of knowledge	Critical for success with a Wiki where management must allow democratisation of corporate knowledge work
A common enterprise-wide knowledge structure that is clearly articulated and easily understood.	A Wiki structure emerges from the users rather than imposed top-down
Senior management support including allocation of resources leadership and training	Wikis are a challenge on this one as they allow democratisation of knowledge thus changing power structures associated with knowledge in organisations
Learning organisation	Critical always but with a Wiki, learning becomes the responsibility of all CKWs
The KMS has a clear goal and purpose	The goal and purpose of a Wiki may initially be broader and more exploratory
Measures are established to assess the impacts of the KMS and use of knowledge, as well as verification that the right knowledge is being captured	Measures need to be in keeping with the open nature of a Wiki
The search, retrieval and visualisation functions of the KMS support facilitated use of knowledge	Usability is important but this has been a criticism of some Wiki software
Work processes are designed that incorporate knowledge capture and use	Critical: knowledge work needs to be part of the job description, explicit workload agreements with appropriate rewards and incentives
Knowledge is secure / protected	Knowledge and users' are perceived to be safe

5. Conclusion

As the impending retirement of Baby Boomers loom closer, the retention of corporate knowledge becomes more crucial. The path to decentralisation of IS, and hence KMS, control is seen as a pragmatic, step-by-step approach, which can achieve its aim only in the long run. The Wiki is in line with such a pragmatic approach to the incremental evolution of corporate KM. It is in the management's interest to support the Wiki as a KMS because the Wiki will be maintained by CKWs and acquire and disseminate "living knowledge". For future sustainability and a demonstration of management support, corporate incentives should be given so that the new generation of employees will be CKWs who are motivated and fully committed to contributing and maintaining a Wiki. Management is encouraged to take a discretionary approach in terms of rewarding participation, productivity, quality articles and good ideas.

The Wiki has been described as a democratisation of knowledge (Hasan & Pfaff, 2006). In previous research with corporate Wikis, organisations that favour a top down management approach can be seen as undermining the process of the democratisation of knowledge. Management of this case study acknowledged this fact and is committed to finding a solution to maximise the potential of their CKWs through the use of the Wiki. The feedback obtained from employees has given management a valuable insight into CKWs' expectations of the value and usability of a Wiki and greater management support is required for the sustainability and further development of the Wiki. In keeping with the theme of democracy and promoting a non-threatening, ubiquitous environment for employees to elicit helpful feedback, Q Methodology was chosen. The Q study demonstrated its effectiveness to community building activities, open discussion, reflection, individual decision making and providing outcomes that can guide the development and use of ubiquitous knowledge creation and dissemination technologies. Activity Theory has informed the interpretation of results in that it provides a language to describe the less tangible outcomes of the research. It is expected that Activity Theory will inform the directions and structure of future research. This will provide a holistic and dynamic framework for study with a focus on collective activity for the advancement of knowledge work where all employees ubiquitously participate in the co-creation of store of corporate knowledge for effective knowledge based practice.

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