Knowledge Management Audit
of a SME in New Zealand

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Abstract
This paper is about the findings of a knowledge management audit conducted on a SME in Christchurch, New Zealand. The knowledge management audit is a very new thing among the SMEs but the importance of knowledge sharing and knowledge retention is of immense importance. This paper also explores the significance of informal knowledge sharing and Communities of practice, importance of culture in SMEs and justifies implementation of reward system as a catalyst of knowledge sharing by using game theory.

Keywords: Knowledge Management, Knowledge sharing, Communities of Practice, Knowledge Management Audit, Game Theory.

Introduction
The purpose of this audit is to examine the attitudes and beliefs of MakeTXT.com employees and organisational norms towards sharing knowledge within the organisation. Another objective was to find correlation between knowledge management and Game theory.

The organisation use a paper-based system and a computer assisted system by making an archive for documentation of their developments, so that it can be accessed at any time through the intranet as well as through the Internet. On top of that they also conduct weekly meetings as well as annual meetings to analyse their failure and to congratulate the success. Formal as well as the informal meetings take place and they are productive with outcomes that are able to be actioned.

Background
MakeTXT.com Limited is a Christchurch based innovative software Development Company dedicated to providing solutions to the rapidly expanding SMS/MMS text messaging market. The company works primarily with telecommunications companies and marketing agencies, providing a one-stop-solution for companies wanting to utilise SMS/MMS technology to raise brand awareness, build customer loyalty and generate revenues.

For the last two years it has focused on building a unique all-in-one SMS application development environment call MakeTXT.com. This is an integrated development environment engine for SMS that allows us to build, test and deploy SMS
applications fast. MakeTXT.com technology provides a new and innovative approach to software development allowing well-designed complex SMS applications to be built, tested and deployed faster, easier and more cost effectively than other tool sets. They have recently signed an agreement with Telstra Australia to distribute their rugby game throughout Australia and discussions are in play with Nudge Mobile for the UK distribution rights of their Java games. They are also developing a game called Bungy Master and the mission of the company is to tackle the European, Japanese and US markets in the near future. MakeTXT™ Java games developed especially for mobile phones are the forerunner of a new breed of games and applications based on "real world" experiences. Most importantly the games developed by them are unique because of the proper blend of “Kiwiana”.

Corporate culture is definitely focused on client’s needs and internal perspective to allow their staff to grow. They also understand the importance of looking and thinking outside the square. The organisation stand on a platform of quality and integrity and the unique combination of talents and experience of the key peoples allow the organisation to bring a holistic approach to research and development. The organisation believes that it should be the culture of the organisation to share and exchange the knowledge within the organisation.

Research Methodology
The audit instrument consists of one set of questions primarily taken from “(Hylton, 2002)”, “(Alavi and Leinder, 1999)” and “(Tirana, 2002)”. Permission was given by MakeTXT.com to interview key players and the sample included representatives from senior management to the developers. Interviews lasted approximately 30 to 45 minutes and were transcribed for the purpose of analysis. Thorough and detailed interview transcripts were produced for each interview containing interview questions and interviewee responses to questions. I have interviewed the Top management of this organisation, Technical Manager and the developers. The Knowledge Audit Questionnaire was distributed to each of them and this analysis is based on the findings of the questionnaire. MakeTXT.com also gave permission for the findings to be published in the conference using their trade name.

Findings and Results
Senior management was focused on high-level domains of as finance, environment, and marketing. They indicated a need for knowledge that will allow strategic planning to move the company forward and enable continuous improvement. They also mentioned that competitive edge and competitive advantage were critical factors with which they were concerned. Some of the more salient concerns were centered on external factors that affect their business. As a mobile application development company, they need to be aware of the market scenario and the requirements of the clients, market and different actors of the value chain.

The senior management admitted that the wealth of knowledge exists in the company and it is very much necessary to tap the existing knowledge and to find out the potential knowledge within the organisation. They maintain an archive of the documentations of applications and the benefit is that it helps them to access the knowledge that is necessary to them. This central repository helps them to not ‘reinvent the wheel’. People in organisation do not ‘reinvent the wheel’ because they know
where they can find the knowledge they need. Weekly meetings are conducted to exchange ideas and different issues are shared and discussed. They attempt to get the solution to a problem or congratulate the success. They also ensure that the knowledge can flow freely within the organisation. The best way to get knowledge in this organisation is simply by “asking”.

All of them think that the organisation knows the process of knowledge flow but as the organisation is growing there is an increasing demand of maintaining the process of the knowledge flow. They think that IT can be used to capture knowledge to some extent but to share tacit knowledge IT may not be very helpful. “Solution lies in mind and not the databases” this famous quote supports this idea of decentralization of knowledge.

The organisation does not have a knowledge map but they are interested in using the knowledge map. They are well aware of the benefits associated with the knowledge-maps. Knowledge Map is important to produce and conserve new value, improve decision-making and will make them better prepared for the future.

They narrated that the organisation use paper-based as well as computer based knowledge documentation system. Most of the knowledge is codified by using the computer system and paper-based system is only a hardcopy output.

All of them think that, it should be the culture of the organisation to share and exchange knowledge. The people within the organisation who do not want to share the knowledge are not only destructive towards the organisation but also towards themselves. No rewards for sharing knowledge as such, except recognition of the contribution.

All of them agreed that they know what they should know. This is absolutely critical because otherwise the organisation will constantly re-invent the wheel and put lot of time and money in the duplicating effort.

They pointed out that within the organisation the knowledge of the staff are not captured properly and more documentation should be done in order to codify the knowledge. This area needs some special consideration, as the valued knowledge of the staff is not entirely captured. The scheduling and training development areas are also critical since they directly impact staff effectiveness. Interviewee responses to the disadvantages of sharing knowledge as time consuming and time spend to codify knowledge may affect the speed of development. Some comments in this area are: “…we know that we have to give stress on documentation.”; “Documentation kills time, codes are self explanatory.”; “Documentation is important, good code is not sufficient for new comers.”

They think that the organisation knows the process to reduce their knowledge deficiencies. This is important because otherwise they could not improve their performance.

They listed various external sources of knowledge that enable them to act. These include news sources, market surveys, research publications, industry experts, business journals, and Internet. Financial statements, peers, subordinates, and personal education were included in the list of internal sources of knowledge.

They also agreed that the programmers in this organisation have adequate technical documents available for reference purpose. Organisation has adequate computers, networking and data base facility available and management send people to seminars and workshops who are proactive.
Respondents also agreed that availability of technical documents and reports promotes knowledge sharing. Computers and networking portals facilitate and promote knowledge sharing. Availability of knowledge Sharing activities like seminars and workshops promotes Knowledge Sharing. Presence of interest groups/communities of practices or other social gathering for sharing technical knowledge promotes Knowledge Sharing. From the answers it is also evident that cooperative attitude of colleagues promotes Knowledge Sharing. A strong group feeling is necessary for promoting knowledge flow and effective sharing of knowledge is essential for Knowledge Sharing. Lastly, they also agreed that alignment between employees and organisations value system is necessary for Knowledge Sharing.

MakeTXT.com fortunately does not have a high turnover rate. There are 5 developers and if one of them left MakeTXT.com then he will take 20 percent of knowledge with him, to capture this untapped knowledge is essential. Also I observed that, people have some knowledge that is very tacit. This includes knowledge about dealing with errors, making deals, conceptual thinking, designing, testing etc. This knowledge is personalised and could benefit others in the company if it could be captured.

Analysis and Recommendations

The analysis and recommendations presented in this document are based on organisation’s perspective. It is also recommended that there be an attempt to elicit more responses and revisit the analysis before any of the recommendations presented later are implemented. The analysis and results are also based in part on informal interviews with upper management and developers. This was necessary to gather pertinent information and to gain some understanding of the corporate culture. Before any recommendations are followed through, a fuller Knowledge Audit should be conducted.

“(Skyrme, 2003)” said that, the companies could use knowledge to secure a strategic advantage. They can generate greater value through the knowledge in products, people and processes.

Knowledge Base

It is evident from the interviews and audit that MakeTXT.com would be able to curb the "knowledge sharing gap" by eliciting knowledge from staff members on a more active basis. The key is to formalise the knowledge as soon as possible so that it isn't lost when an employee leaves the company. With the advent of the Internet, a number of standards have arisen that allow for easy collection of knowledge through HTTP forms. This can be used through the Internet or on Web Servers on the company Intranet. A Lessons Learned knowledge base can be easily created to elicit knowledge. Knowledge Management tools allow the integration of heterogeneous sources of information. They also create the facilities for knowledge sharing in the way of intelligent indexing, agents, and groupware.

Staff Development/Skills Assessment

In order to facilitate better training to produce better staff and therefore better results, Maketxt should implement a program to identify what skills staff members
have and what skills they need to do their job. This could involve a Knowledge Inventory in specific departments of the company. Each employee could fill out an Experience Form with his or her relevant skills and knowledge. This could be kept as a simple database for all employees to access. This would aid MakeTXT.com in five ways. First, they could identify what critical skills their staffs do not possess. Second, it would help them identify leaders qualified to lead in-house training sessions. Third, it would create a Knowledge Base so that people could easily identify who might possess the knowledge to answer their questions. Fourth, it would reduce the risk related to deployment of the exact human resource for definite projects. Finally, the investment in training will likely elicit feelings of greater loyalty from the employees. This may help to lessen the high turnover rate. Employees will often stay with a company longer if they feel it is responding positively to their needs and taking an interest in their careers. The Strength and weaknesses of different employees should be measured accurately in order to get maximum benefit.

Communities of Practice

In my opinion MakeTXT.com is presently practicing Communities of Practice. This allows people with like needs to get together to discuss topics that interest them at least once in a week. This informal practice leads to knowledge sharing and transfer that cannot be achieved by a computer-based system. It will essentially allow for the transfer of tacit knowledge from one person to another. People who have attended conferences or training sessions can pass that knowledge on to their fellow workers.

Best Practices

MakeTXT.com could implement a Best Practices Program. This will require an analysis of their core competencies. From these, they will be able identify in which categories they want to implement Best Practices. It is vital to make better use of the knowledge that already exists within the firm, for example by sharing best practices. It is important to know what we know; the first knowledge management initiative of many companies is that of installing or improving an Intranet. MakeTXT.com also needs to codify its best practices.

Use of Internet

MakeTXT.com has various knowledge needs that can only be met by outside sources. They are news sources, trade and industry sources, government regulation, etc. It is impossible for any person to monitor all of these sources of knowledge. A good solution to this problem would be using Internet effectively to collect data. The corporate portal could have been another solution, as they are growing so it is wise for them to think about a corporate portal.

Knowledge Management & Game Theory: Concept of Reward system

A more detailed response suggested that currently, knowledge sharing is embedded in the company culture of MakeTXT.com; there is no reward or incentive attached to knowledge sharing. For example, “there are no rewards we can give staff for sharing knowledge, except recognition”. Most of the developers think that they do not have any problem in sharing knowledge but also consider that “knowledge is power.”
Individual’s behaviour of knowledge sharing is similar to \textit{prisoner’s dilemma}. When an employee joins a workplace he/she has two options related to knowledge sharing.

1) To share knowledge with others
2) Not to share knowledge with others.

Let us call the strategy (1) as co-operate and strategy (2) as non-co-operate. There are two players in this game. First player (\textbf{Player 1}) is the employee and all other employees at the workplace can be regarded as the second player (\textbf{Player 2}) in this game.

Now the players will decide whether to share their knowledge or not and we can divide the decision making process into four different scenes.

\textbf{Scene 1:}
If Player 1 shares knowledge and others also share knowledge then everyone will have a payoff of ‘K’.

\textbf{Scene 2:}
If Player 1 shares and others do not then Player 1 will get 0 payoff where as others will get a payoff of ‘K’.

\textbf{Scene 3:}
If others share but not Player 1 then it would be ‘0’ payoffs for others but Player 1 will get a payoff of ‘k’.

\textbf{Scene 4:}
If no one shares their knowledge then the payoff would be 0 for everyone.

The standard matrix would be:

\begin{center}
\begin{tabular}{c|cc}
1/2 & Co-operate & Non co-operate \\
\hline
Co-operate & k, k & 0,k \\
Non Co-operate & k,0 & 0,0 \\
\end{tabular}
\end{center}

\textbf{Dilemma for Player 1} is that, he/she does not know if Player 2 is going to share knowledge (Co-operate) or is not going to share knowledge (Non-Co-Operate). The rationality implies that each player tries to maximize his/her payoff. In order to maximize his payoff Player 1 will consider two scenarios.

1. If Player 2 shares knowledge
   In this case if he shares he gets a k, but if he does not then also he gets a k. In this case he will gain knowledge irrespective of his strategy.

2. If Player 2 do not shares knowledge
   In this case sharing will give him/her 0 (zero) payoff but Player 2 get a payoff of ‘k’, and not sharing will give everyone a 0 (zero) payoff. In a competitive work environment where colleagues are often competitors, to maximize the payoff Player 1 will not share knowledge. Using the similar logic Player 2 will also not share knowledge.

So the Nash equilibrium in this case is the fourth cell (0, 0) which is not the best case scenario. This strategy profile indicates that each player plays a best response to the strategies of the other players. We all know that all of the individuals in the group will benefit from knowledge sharing, if we know others will share then we will share
and all will benefit but how will we know that others will do the same that we can get benefit from.

Now, if we introduce reward, i.e. if Player 1 participates in knowledge sharing then he/she will be rewarded. Let the reward be \( r(k, i, f) \) i.e. a function of knowledge gain, incentive and fame or recognition.

Now the modified matrix would look like:

<table>
<thead>
<tr>
<th></th>
<th>Co-operate</th>
<th>Non Co-operate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-operate</td>
<td>( r(k, i, f) ), ( r(k, i, f) )</td>
<td>( r(0, i, f), r(k, 0, 0) )</td>
</tr>
<tr>
<td>Non Co-operate</td>
<td>( r(k), r(0, i, f) )</td>
<td>( r(0), r(0) )</td>
</tr>
</tbody>
</table>

Here, \( r(0) = 0 \)

Now if we define \( r(k, i, f) = (k+i*f) \) then the reward matrix reduces to:

<table>
<thead>
<tr>
<th></th>
<th>Co-operate</th>
<th>Non Co-operate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-operate</td>
<td>( k+i<em>f ), ( k+i</em>f )</td>
<td>( i*f, k )</td>
</tr>
<tr>
<td>Non Co-operate</td>
<td>( k, i*f )</td>
<td>0,0</td>
</tr>
</tbody>
</table>

So if we put a reward such that \( i*f < k \) such as, if incentive attached to knowledge sharing is greater than the knowledge retention then we can see that knowledge sharing is the best strategy.

So the conclusion is that “Knowledge sharing is not a natural phenomenon.” No body wants to share knowledge if there is no benefit attached to it. This is called prisoner’s dilemma and can be found in many competitive situations and real life activities. In knowledge management a similar situation may also arise. If someone shares knowledge and other does not share theirs with him then others will improve their performance compare to him. We have to keep in mind that colleagues are often competitors in real life. Since the initiator does not benefit if the rest do not follow, so he has no initiative to initiate. The findings are:

1. Knowledge sharing is not a natural phenomenon.
2. Reward system will play an important role to facilitate knowledge sharing. Knowledge sharing can be embedded in the culture of an organisation and an incentive can be attached to encourage knowledge sharing. (E.g. Ernest & Young)
3. Top management or CKO whose role will be like a catalyst who will initiate, monitor and measure knowledge sharing.

When MakeTXT.com will deal with a large number of employees then they have to consider about the reward system to encourage knowledge sharing.

Conclusions

One of the practical problems of developing knowledge strategies or adding a knowledge dimension to other strategies is the complex nature of knowledge. Converting Knowledge to a more explicit form such as documents, processes, databases etc is important this is referred to as "decanting the human capital into the structural capital of an organization" by \("(Skyrme, 2003)\)”. Next important factor is Enhancing tacit knowledge flow through better human interaction, such that the knowledge is diffused around the organisation and not held in the heads of a few. According to \("(Nonaka and Takeuchi, 1995)\)” in Japan various 'socialisation' activities support this kind of
knowledge flow that by its very nature also sparks the generation of new ideas and knowledge. Add some basic elements of good human resource management, including a stimulating environment, personal development plans, motivation and suitable reward and recognition system as knowledge sharing awards and stock options, and then there is less chance of best knowledge workers wanting to leave.

In MakeTXT.com the seven levers of knowledge dimension as described by “(Skyrme, 2003)” are important. They need, Customer Knowledge to develop deep knowledge sharing relationships. They also need to understand the needs of their customers. They have to articulating unmet needs and identify new opportunities. Business Environment Insights will help them to systematic environmental scanning, including economic, technology, social and environmental trends and Competitor analysis. Organizational Memory for Knowledge sharing, Best practice databases and Directories of expertise and Online documents, procedures and discussion forums and easy knowledge sharing using Intranets. MakeTXT.com should have ready and realistic answers to questions in order to developed strategic advantage through the application of knowledge. They should have clear and explicit links to business strategy.

They should be knowledgeable about knowledge. That means real understanding of the knowledge advantage. A compelling vision and architecture is their added advantage. Knowledge leadership and champions are not needed, as the Top management is the source of inspiration. Systematic knowledge processes is also vital. A well-developed knowledge infrastructure with personnel systems geared to recognising and rewarding individual and team knowledge contributions. They have to have a proper measuring system like a knowledge management scorecard. I think they are in the right path in order to embrace knowledge management.

References