KNOWLEDGE MANAGEMENT, SHARING AND ERP SYSTEMS IN A SMALL COMPANY

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Abstract — **Knowledge sharing, tacit knowledge and knowledge management have always been a very important subject in today's business, as companies are very keen to keep information. Staff redundancy, and employees moving to other companies because of the recession, has made loss of information more frequent. This paper describes some examples of lack of knowledge sharing and what effect it has had on the company studied. It starts by examining the literature, and then discussing the case study in detail, ending with a potential solution, currently being tested, and conclusions.**

Keywords-Management;Sharing; Validation

I. INTRODUCTION

The difficulties in transferring the tacit and explicit knowledge into the Enterprise Resource Planning (ERP) system, validating this knowledge and the process of putting all of this together into a knowledge management (KM) system has been a challenge for Small to Medium Sized Enterprises (SME)s in the UK.

This case study was done at a joinery enterprise based in the UK, this SME specializes in woodwork, designing different kinds of door sets and windows. It has around 29 employees, ten of them work on designing, planning and administration, and the other nineteen are based on the shop floor building the doors. Their customer base includes a wide range of organizations like banks, building societies, local authorities, housing associations, government departments, retailers, commercial and industrial clients, and of course individual customers.

It is a manufacturing company, which has been in the business dating back to the 1830s; they do very high quality work that uses first rate materials, investing in trained operatives and comprehensive research and development.

It was the first to do 'secure by design' door sets, and all of their products types can be produced from PEFC (Programme for the Endorsement of Forestry Certification) & FSC (Forest Stewardship Council) or independently verified sustainable source materials, with chain of custody.

This paper will present a literature review of ERP systems, SMEs, knowledge sharing, followed by a description of the ERP system implementation in the SME, what problems were found, focusing on the knowledge sharing issues, brief description of the results and expected outcomes of using this system.

At the end of the paper conclusions and future work are drawn.

II. LITERATURE REVIEW

SMEs use knowledge to manage their daily work. It may be explicit and held in documents, an information system, ERP, or tacit and held in employee's minds. When an ERP system is adopted by SMEs, it tends to be simple. Most SMEs consider cost when thinking about an ERP system, and are reluctant to invest after start-up. However, some SMEs take into consideration the changes an ERP system can do to their business, mainly those looking for future development and growth.

ERP is a system made to manage all information and functions in a company from many departments and data stores, it's very important to use ERP system in a company where information is being shared easily, and securely.

Research has shown ERP systems are very complicated processes in practice. In theory an ERP has to solve a lot of business problems, and should transfer all of the knowledge in a business environment efficiently into a database where everything can be connected together (Leknes 2006).

As implementing ERP would lead to changes within the organization, there is a possibility that some employees will be made redundant. Haines and Goodhue (2003) stated that the difficulties in transferring this knowledge between the different departments, and actors like employees, and customers have shown an interest in how KM may support ERP system.

KM is defined according to the Knowledge Board in 2004 as planned activities and processes for managing knowledge in order to enhance the competitiveness through better use and

creation of individual and collective knowledge resources (Sedera et al., 2004). KM often relies on the information technology available, which relies on capturing employee's knowledge and filtering it according to what the job needs. Gathering all of this important tacit and explicit knowledge and transferring it into the database of the system needs working on the knowledge management techniques, and doing this successfully will lead to the next phase of the KM process of knowledge validation. Without this sharing and validation process, Probst (2000), the ERP system loses its credibility with employees and this is one of the things that happened in the SME (Case Study), where employees no longer believed in the importance of the system.

Metaxiotis (2009) stated that in today's business, the success of an organization depends on how they manage their knowledge. Therefore, different scholars and researchers have found several different steps and tools in order to achieve successful knowledge management within the organization. Dieng et al (1999) suggested that each firm should have their own corporate memory, which will include non-computational document-based, knowledge based case-based and distributed corporate memory. Dougherty (1999) argues that knowledge management can use Information Technology (IT) as a tool of assistance.

Ghobadian and Gallear (1997) stated that in a small enterprise with a small number of people are usually united together under the same values and thinking, which implies that it's easier for smaller organizations to change and implement knowledge management. It is usually easier to create a knowledge sharing environment in a smaller organization than a larger one.

Wong (2004) said that in smaller organizations the cultural values and beliefs of the employees can be influenced by the owners. This can be a problem if the owner doesn't trust his employees or doesn't encourage the sharing and transferring knowledge environment. In this case, the owner can obstruct the development of knowledge rather than develop it.

In the SME under study it's reversed, the employees do not trust the owner with transferring the knowledge, and that's due to some serious decisions that were taken earlier that led to business failure.

Failure of the knowledge sharing and validation process, not understanding what is happening with the system and not contributing in the work usually leads to rejection of the system from employees. According to Durikova and Gray (2009) an ERP System must be implemented with care in order to encourage contributors to go for this challenge and provide valuable points to get the desired results from knowledge management system. They have also noted in their hypothesis that contributing in the implementation can enhance employee's perception of knowledge quality and their faith in the system.

Leknes (2006) found that some of the barriers to knowledge validation and knowledge sharing between different work departments are caused by system unreliability and lack of training as well as the information overload and change management, and how this might be solved by following a knowledge management communication process between the implementer and the people involved in the system.

The role of knowledge management is very important in a business environment as it increases the interaction and share of knowledge between people, which enhances the organization's information overflow.

III. METHODOLOGY OF RESEARCH

As the SME under study is a high quality industrial company they have invested in training operatives and comprehensive research and development, and for that they have allocated some funding for the implementation of ERP system to minimize the number of hours spent in work duplication.

The research started by undertaking business process analysis of the SME business processes by interviews, formal and informal which was done with management, administration employees and with shop floor workers and also by reviewing documents about the work process within the company.

Interviews were repeated from time to time, and lasted between 10 minutes to an hour with different employees, all information was gathered, studied and a working plan was established.

Informal interviews proved to more efficient, as employees were more comfortable sharing their knowledge, views about the ERP system, and also their work problems and plans.

IV. ANALYSIS

According to previous research done on the same case study (Bani-Hani 2010), the SME faced a lot of problems that led to the need of an ERP system, problems that occurred because of the current manual processes, these problems are listed briefly below followed by the barriers to implementing and using the ERP system:
Problems:
- Information loss, as paper work is not filed properly, which makes it easy to mislay or lose important documentation.
- Sales enquiries are not tracked, so finding a job manually impacts upon their time.
- Staff retirement, when employees leave or on holiday, it's almost impossible to take over their work.
- Due to lack of information system, pricing jobs and products are calculated manually, which takes time, especially with big order for a new building site.

- Information is entered manually into excel sheets, which increases the risk of incorrect information (no field validation).
- Accounting problems - if an invoice is lost, long-term funding problems may occur, and lead to financial risk.

Barriers found while implementing the ERP system:
1. Low educational skills.
2. Unskilled employees, especially IT illiterate employees, make it difficult to implement an ERP system, and this requires training.
3. Lack of training due to financial costs and lack of time.
4. Lack of motivation for employees to endorse the new system.
5. A map should define every activity at the organisation. It should include a step-by-step process for every information flow, but this is missing in most SMEs as it needs time to develop and usually need outside experts which is almost impossible due to financial problems.

In the SME an ERP system was installed two years ago, and until now, this system has not been used properly, as employees are still using excel sheets for the work. Making purchasing orders, customer quotes, and even when it comes to printing any of these orders, they use a customised template in word document where they have to write everything manually.

Due to the barriers listed earlier in this paper, the SME was not able to make the system work, employees with low skills, and lack of training, financial problems and many others have led to this failure.

The work process in the SME starts from a customer call for quoting, and if this quote is won it then goes through sales order, job management, scheduling, AutoCAD drawing, sending it to the purchasing department and Shop floor, and when the door is ready its then sent to delivery and shipped to the customer.

Now through this long process a lot of problems occur that lead to serious trouble and also have led to delays in implementing the ERP system in the SME, in this section these problems will be analyzed and discussed in details.

The three main problems that happen in the SME are; at the stages between quoting, AutoCAD and purchases. In the first problem, we mainly found that parts are named differently.

Employees use different ways for naming the products, each department of those uses a different naming system.

For example a door lock can be named "Access control" in a quoting stage, but the AutoCAD drawers will call it "AC803F30" (Access Control number 803 used for Fire resistant door for 30 minutes) and then Purchasing will call it "Almd AC80330FD" (company called Almand Access Control number 803, 30 minutes fire resistant). This already causes confusion; however it was only discovered while implementing the ERP system. However, everyone refused to change to one naming format. Some were saying how hard it is to use this format of names, since they're familiar with the current one for years, and so we had to find a way to write them differently where everybody can work on the system. The ERP system highlighted the problem and a solution to allow the correspondence between various naming conventions was sought.

Sorting this problem, will avoid duplication of parts on the system, and will help with consistency of quotes since it pulls parts directly from the latest up to date ones which will lead to less errors and money loss.

Hypothesis (1): Parts named in one format succeed, no duplication on the system, errors will be eliminated.

The second problem that was found through following the work processes, were with the purchasing orders, when an employee does a purchase order they fill the order with some tacit information, not up to date prices, and send it to suppliers. When they check the prices on the purchase order, they make the call to the employee to let them know about price changes. The employee is supposed to update the price somewhere to keep a reminder but they do not update the price or save it, which leads to differences between purchase orders and invoices they get from suppliers and this causes trouble for the finance department where they need to verify this with the purchase orders employee every time, which is time consuming since they do around 350 purchase orders every month.

Hypothesis (2): the purchase order employee, enter latest prices into the ERP system, so purchase orders are up to date, avoid finance calls, supplier calls, and be able to compare prices between different suppliers which will help with taking better decisions of where to buy from.

The third problem found was with stock control, when the final drawing is sent to the shop floor, they check what is in stock and send purchase orders department for missing parts, so they either buy the missing part or sometime send different parts from the ones written in the drawing according to availability, and here the problem starts as they do not inform any other colleagues of this change, when a customer calls later on for a spare part or damaged one, looking at the files, they would send the one written there which then doesn't match the one on the door, and this causes problems with customers.

Hypothesis (3): full work process is entered into the ERP system, and from quotes to shipment, will help track any changes if a different part is pulled from stock for that certain

job, and will keep the record for future enquiries from customers.

One last problem occurred was with accounting – the accountant had some personal problems and needed to leave the SME, and since there was no system for tracking invoices, some were lost, and the new accountant made some assumptions about the financial situation in the company according to the papers available, the manager made some major steps and decided to add a new line to the company which cost a lot of money, after signing the contracts it was found that the situation was not as described earlier, and this led to long-term funding problems, and put the SME at financial risk.

After that serious steps had to be taken, mainly staff redundancy, major cuts in other employee's wages, and also having to cancel many jobs coming to the company, due to the financial exposure and lack of working cash flow.

Hypothesis (4): all invoices are saved into an ERP system, employee retirement or redundancy would not affect the company as everything would be saved and can be found, financial problems would be reduced.

V. CONCLUSION

Knowledge sharing and validation are important aspects to SMEs and these are the right stages that lead to knowledge management.

This paper has presented the problems and barriers at the case study, and has identified what is mainly holding the ERP system implementation from progressing, which is in particular the resistance to change.

Limited conclusions can be drawn from this paper as work is still in progress. There was internal resistance to change evidenced by the years this is taking to work and the persistent complaint that ERP system's were too complex.
The system of spread sheets used was no more complex than the ERP offered but it was familiar. A great deal of training is required. The next phase of this research would be to prove

changes the ERP system would make to the SME and identify effective ways for improving the business. The barriers and problems identified are currently going through a validation process to help this and other SMEs like it solve their business problems.

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