

KNOWLEDGE VALIDATION IN SMES

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Abstract: Knowledge Validation is a challenge in Small to Medium Sized Enterprises, SMEs, as most of the available information is held in peoples minds as tacit knowledge, or saved on each employees PC without sharing or common validation. This case study is based on a company in Leicester after installing an enterprise resource planning (ERP) system. The underlying reasons for these problems were due to the distributed and tacitly held knowledge where the assumptions in one part of the company were inconsistent with other parts. The paper analyses the main problem of validating knowledge in more detail and has identified the consequences of failing to do this. Challenges are discussed and highlighted in the paper, which concludes at the end the importance of Knowledge Validation and identifies some solutions.

1 INTRODUCTION

Implementation of an ERP system has always been a hassle, where communication between employees, the system, and the change management is a very complicated process.

The difficulties in transferring the tacit and explicit knowledge into the ERP system, the validation of this knowledge and the process of putting all of this together into a knowledge management (KM) system has been a challenge due to the barriers of installing a KM in an SME which will be described in this paper.

This study was done as a case study at JCK Joinery, an enterprise based in Leicester specializing in designing different kinds of door sets and windows. JCK has 29 employees, 10 of whom work on designing, planning and administration, and the others actually build the doors. Their customer base includes a wide range of organisations.

Section 2 is a literature review of ERP systems and KM. Section 3 describes how the research is to be conducted. Section 4 describes how things are being done without the ERP system. Section 5 gives a description of the JCK ERP system and Section 6 describes the barriers to implementation and the expected changes and benefits of using this system.

The results are then discussed, followed by a conclusion and future work.

2 LITERATURE REVIEW

Enterprise Resource Planning, or ERP Systems, is a complex process in practice. In theory ERP could solve a lot of problems, by centralising the knowledge into a database (Leknes, 2006).

The difficulties in transferring this knowledge between the different departments, and actors have shown an interest in how KM may support an ERP system (Haines and Goodhue, 2003).

KM is defined according to the Knowledge Board in 2004 as planned activities and processes for managing knowledge 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 the job needs. After this and after gathering all of this tacit and explicit knowledge and transferring it to the database of the system, here comes the importance of the knowledge validation process! And without this (Probst et al., 2000) validation process, ERP system loses its credibility with employees and this is one of the things that happened in JCK Joinery, where employees no longer believe in the importance of the system.

Failure of the knowledge 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 (Durikova and Gray, 2009) 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 employees perception of knowledge quality and their faith in the system.

According to one paper (Leknes, 2006), it was found that some of the barriers to knowledge validation and knowledge transfer between different work departments is 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 increase the interaction and share of knowledge between people which enhances the organization's overall knowledge base.

ERP system integrates work between all functional departments from Purchasing, employee's management, Scheduling, Inventory management, production to shipping, and payroll management.

Then if ERP system's can be this helpful to organizations, and if it can solve problems in organizations, why does it have many negative reports! What are the barriers to using it?

3 METHODOLOGY

This research in JCK Joinery started by undertaking business process analysis of the JCK Joinery business processes then interviews, formal and in formal was done with management, administration employees and with shop floor workers. Reviewing official and unofficial documents within JCK.

Interviews were repeated from time to time, and lasted between 10 minutes to an hour with different employees, and all information were gathered studied and a working plan were set in order. This research also went through a study of different ERP systems and why JCK Joinery has chosen this product for solving their business problems. Many factors have affected JCK Joinery when choosing the product and one of the main factors was the financial issues along with the requirements of the business.

Further study was done about how the processes in JCK are done, the orders, purchases, certification,

door making, and how all of these are done manually by employees and how it can be customised into the ERP system.

4 HOW THINGS ARE BEING DONE AT THE MOMENT?

Work process flow:

One of the main processes in JCK Joinery has been studied by one the researchers which is the Production process of a door, and here is a brief description of how things are being done:

1. A customer makes an order by email or by the phone.
2. A quote is created by the estimator using spreadsheet and sent back to customer.
3. The customer is asked to verify that the details are correct.
4. If the quote is verified a pricing list is produced using another spread sheet and then sent back to the customer for approval.
5. The design and quote are then changed if they are unacceptable.
6. If the quote and design are agreed it goes a detailed design is made.
7. The design is then sent back to customer to sign off the order.
8. Once the signed copy has been received this is then passed on to the floor for production.

This process takes days to complete in JCK, and if the order is a big one, for a new building with different kind of doors, indoors, outdoors, security doors, mobility doors, then this would take longer.

When a door is ordered a pricing spread sheet is used to calculate the price of the door. With time the estimator memorised the prices in it, and it has been found that these have not been revised for the last two years and not updated according to the purchasing orders, which led to losing money.

This is one of JCK's problems which is happening due to manual processes, and the errors occurring because of it is huge.

For that the Configurator was proposed, in order to be able to reduce the number of hours this is taking, number of errors as all information will be pulled from a database, plus that every quote will be saved into the system, no need for paper work.

5 WHAT THE NEW SYSTEM WILL PROVIDE FOR THIS PROBLEM (CONFIGURATOR)

For the past few months a researcher have been working on a Configurator, and there was a lot of challenges in customising it, some of these are related to the barriers mentioned below, which was caused of lack of employees knowledge in IT basic tools, and some others was due to the lack of encouragement of using the ERP system. Employees no longer have faith, and don't believe in the change it would make.

One of the mistakes when doing the Configurator, was its complexity as it was two pages, with more than 100 boxes to fill and pick, and that was confusing to employees not knowing much about computers, they refused to use it, as it was complicated and not user friendly. So with interviews and tests including employees in the steps, we have eliminated boxes and made it simpler.

In the Configurator, which is an aid to design and produce doors, one for an FD30 door, a standard door for 30 minutes fire rating, was changed about 4 times. The first one didn't have all requirements for the door, and the second was too complicated for employees, with showing and hiding fields facilities, and then after sitting with the estimator and discussing things thoroughly we have found that these are the only requirements for the FD30 door unless there was special cases which we will not go through at this stage of the implementation. After showing this to everyone in JCK it was discussed that going through this might take longer time than required and the best idea if we can set defaults for making this door. Once you open it, you have all defaults for an FD30 door and then you just check and do any changes if required, this will minimise the number of errors and reduce the time required for making any quote.

Defaults were all set, and the final Configurator for this door was ready to be used.

In this Configurator there were some requirements to choose from first, things like Mobility, Secure by design, Chain of Custody, fire rating and location.

Then the structural opening, which will be allocating the height and width, and finishing with the glass and hardware attached to the door. All of these boxes are attached to the database, where all parts used in JCK are listed, and connected to purchasing orders to be able to pull prices and to calculate the door price when doing the quote.

And here we have faced another problem which was with validating the knowledge in the Configurator. Employees were saving prices differently into their excel sheets, using what they have which wasn't

up to date and prices were very different from.

And here we started gathering receipts, talking to the employee doing all the purchasing, and trying to verify prices, and do all the mathematical equations to get the right door price, and while going through this process, another problem was found which was with the different names of the parts used in the door making. Employees know different ways of naming the products and were refusing to change to the new names which were required by the ERP system, and which are used when purchasing. Some were saying how hard it is to use this format of names, for that we had to find a way to write them differently were everybody can work on the system.

All part names were printed out from the ERP system, and there was around 3000 parts available there, and have decided on one person who would take the time to do this job, remove un used parts which were added two years ago, rename the parts with the help of the researcher and go through the prices, and trying to verify them with the purchasing order. Some were named with the manufacturer first, others with the kind of hardware, some was depending on the height and width of the door. Rules had to be set for the name and how to deal with them in the Configurator.

Working on this along with the ERP system Provider Company and the researcher, verification of prices have been done and the testing process is in progress.

Hypothesis (1):

Configurator may work, solving all the validation problems in JCK Joinery and will eliminate all kind of errors that was happening earlier!

Hypothesis (2):

Configurator may work faster than the excel sheets used in the quotes orders.

Hypothesis (3):

When Configurator works properly this will affect the quality of work positively and make the business flow easier.

6 PROBLEMS AND BARRIERS

According to previous research on JCK, problems that led to the need of an ERP system, barriers to installing and using it have been listed as follows:

Problems:

- Loss of information, documents are not filed and a lot of paper work flows through the organisation, which makes it easy to mislay or lose.
- Sales enquiries are not tracked, so finding a job needs to be done manually, which takes time.

- Staff retirement or attrition - when employees leave or are off on holiday, it becomes near impossible for employees to take over their work.
- When a customer enquires about a new job pricing and product details are calculated manually, taking long time, especially for big orders.
- Data is entered manually into spread sheets, which increases the risk of incorrect information.
- Accounting problems - if an invoice is lost, long-term funding problems occur.

Barriers:

1. Low tech SME's attract people with low educational skills, as educated people prefer larger organisations where salaries are higher and work situations are more stable.
2. Unskilled employees make it difficult to implement an ERP system, as they require many hours of training.
3. No motivation for employees to use the new system.
4. Lack of training due to financial costs and lack of time.
5. Lack of process mapping, a map should define every activity at the organisation. It must include a step-by-step process for information flow.

In JCK this system had been installed, two years ago. And until now had not been used properly, employees still use spread sheets to make orders, customer quotes, and even when printing orders, they use a customised template in a word document where everything is written manually.

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

7 CONCLUSIONS

Knowledge Validation is an important aspect to any organization and this case study has presented the problems at JCK, what solutions were presented and what were the barriers to these solutions.

This paper has identified and analysed problems and barriers, in particular resistance to change.

Some limited conclusions may be drawn, first is that even though the user gives a thorough specification there is a mismatch between what the user claims to want and what they actually want. Secondly, there is an internal resistance to change evidenced by the

number of Configurators offered to the user and the persistent complaint that they were too complex.

The system of spread sheets used by JCK was no more complex than the Configurators offered but it was familiar. The newest Configurator has many of the properties of the old Configurators but is becoming accepted. A great deal of training is required.

The next phase of this research would be to prove changes the Configurator would make to JCK and identify effective ways for improving the business. The barriers and problems have been identified and will go through a validation process to make the change to JCK and be able to help other SMEs like JCK solve their business problems.

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