USING ROLE-PLAYS TO ACQUIRE PROCESS-ORIENTED KNOWLEDGE IN ENTERPRISES

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Abstract: Process-oriented enterprises are expected to be more successful than traditional functional-oriented ones. Consequently, more and more companies want to become process-oriented. But to reach this goal a basic change of mind towards more process-oriented thinking of a company's employees is required. Therefore, the adequate support of employees to acquire process-oriented knowledge is crucial for organisations. Unfortunately, the necessary knowledge is tacit knowledge which is not easy to acquire. While formal learning or training programs deliver explicit knowledge and skills, it is much more challenging to generate implicit or tacit knowledge out of everyday work activities. In order to help employees to acquire and apply tacit knowledge, a role-play based simulation program, named KreditSim, has been developed. This kind of simulation allows for a learning environment closely related to the actual workplace. The case of KreditSim shows how this coaching method actively involves employees and improves awareness of process-oriented thinking. The participants gain the necessary process-oriented knowledge by a guided improvement of a given functional-oriented process with deficiencies.

1 INTRODUCTION

Business process thinking has become a major topic in management. Process-oriented organisations are expected to be faster in delivering outputs, more adaptable to changes in the market, more responsive to the needs of customers and superior in terms of quality (Hammer and Champy, 1993). Consequently, turning a company into a process-oriented organisation is seen as a competitive advantage and fundamental to its success. Having these advantages in mind, many companies try to become more process-oriented.

However, empirical studies prove that the majority of companies are still function-oriented (Vergidis, Turner and Tiwari, 2008). One major reason for this might be the fact that process-oriented enterprises require different knowledge compared to function-oriented organisations (Kugeler and Vieting, 2003). The necessary process-oriented knowledge is mostly tacit knowledge which has to be acquired by the employees in a company (Riege and Zulpo, 2007). Tacit knowledge covers the know-how and behaviour of a person, which is implicit and linked to the specific person. The acquisition of process-oriented tacit knowledge

requires a fundamental change of mind of the employees which is not easy to accomplish. Consequently, enterprises have to train their employees to acquire process-oriented knowledge.

Here, the question emerges, how employees can acquire the knowledge necessary to perform their tasks in a process-oriented organisation. The acquisition of such tacit knowledge is most successful if it takes place in the actual work environment of employees (Ives, Torrey and Gordon, 2000).

The aim of this paper is to highlight the value of role-plays to facilitate the acquisition of process-oriented knowledge. The paper is organized as follows. First, we will describe the kind of knowledge contained in business processes. Second, options for knowledge acquisition in the context of business processes are presented. One promising approach to acquire process-oriented knowledge is to use role-play based simulations. To demonstrate the effects of this type of simulation the role-play KreditSim will be presented. Finally, we will draw conclusions on the usage of role-plays for acquiring tacit knowledge.

2 PROCESS-ORIENTED VIEW OF AN ENTERPRISE

Employees involved in business processes tend to have a limited view by focusing on their functional position. As a result, employees often do not realize that their work is part of one or more business processes. Figure 1 shows a generic example of a company with three departments. There are two ways to look at such an enterprise: (1) The function-oriented view and (2) the process-oriented view.
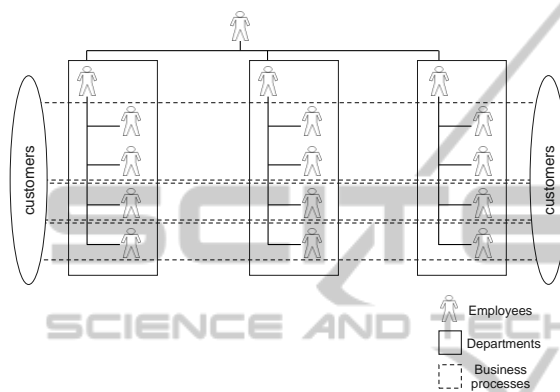

Figure 1: Functional- vs. process-oriented view of an enterprise.

In a function-oriented organization production takes place as a series of tasks in which every employee focuses on a specific function. This leads among other disadvantages to a high number of employees being involved in the production process to fulfil a customer demand without any of them being responsible for the overall result. In the worst case, employees receive inputs to perform their respective tasks and do not even know from whom it is delivered. Similarly, they might not know who the receiver (i.e. the employee who performs the next step in the process) of their output is.

Contrary, in a process-oriented organization, less employees work on one customer order and ideally, a pro cess owner is responsible for the outcome (Kugeler and Vieting, 2003). According to the resource based view, each company depends on resources such as employees, machines, IT systems and buildings to produce goods or services for its customers (Wernerfelt, 1984). The resources itself do not incorporate business value but their combination to create an output like goods or services does. This combination is conducted within business processes. A business process (the term process is used synonymously here) is characterized by a set of connected activities necessary to deliver a defined business outcome (Davenport and Short,

1990). Starting point for designing a business process is the aspired business outcome which depends on the customers' demands. Based on the customer need, all necessary activities are processed to deliver the demanded good or service to the customer. Within a business process, employees, machines and IT systems transform inputs into outputs. Thus, a company can be seen as a bundle of business processes containing the knowledge to produce goods and services of the company including supporting activities (Inkpen and Dinur, 1998). Employees having process-oriented knowledge are aware of the context in which they are performing their tasks.

3 CHARACTERISTICS OF PROCESS-ORIENTED KNOWLEDGE

Since business processes are the foundation for production, the management of the process-oriented knowledge is a key factor for the success of a company. If this knowledge is not captured, stored, shared and applied a company is likely to fail (Lucas, 2010; Paroutis and Al Saleh, 2009). But, business processes are virtual constructs. The intangibility exacerbates the awareness of employees for a process-oriented view. Trying to identify the knowledge embedded in processes suggests differentiating between explicit and tacit knowledge. Explicit knowledge can be stored and is independent from a certain person. Tacit knowledge can not be stored and is strictly associated to individuals Nonaka (1994). Even though explicit and tacit knowledge differ in their basic nature, it is still possible to transfer tacit into explicit knowledge to a certain extent (Lee, 2000). Three basic types of knowledge can be derived in the context of processes (Hawryszkiewycz, 2010):

- The basic type of knowledge is *explicit knowledge* in terms of traditional process documentations. Within these documentations the intangible process is made explicit. It is shown how the resources necessary to produce a good or a service have to be combined. This includes information about necessary tasks, their order, responsible employees, IT-systems involved et cetera. The way process knowledge is captured differs significantly among organisations. More or less sophisticated approaches range from Excel-based task lists to comprehensive

documentation based on professional software using standardised notations like Business Process Modeling Notation (BPMN) or Event-driven Process Chains (EPCs) (Barber, Dewhurst, Burns and Rogers, 2003).

▪ Additional to process documentation, there exists *explicit knowledge* as a result of monitoring and analyzing the process performance. This knowledge mainly addresses the management of a company based on key indicators of the production process. But this kind of knowledge can also be useful for employees working within a business process. It incorporates complementary information to improve the process but does not substitute the knowledge which is necessary to perform the task itself.

▪ The major type of knowledge in processes is *tacit knowledge* of the employees performing the tasks. Tacit knowledge is a combination of cognitive processes and physical facts determining how a person behaves to solve a problem (Hawryszkiewycz, 2010). For instance, one employee may perform better than another having the same working conditions and yet it is not possible to capture the reasons for this difference.

As a result, tacit knowledge is a major source of knowledge in companies. Often, tacit knowledge vanishes as employees change their jobs or leave the company. In order not to lose this vital knowledge, an organisation can try to explicit the tacit knowledge. Explicit knowledge in terms of process documentation for example is very helpful. Processes are made visible on paper or on screen and employees can better understand the meaning of their activities, techniques and information systems within a process. But in real-world settings several problems occur (Nonaka, 1994):

▪ Explicit knowledge still remains abstract, as documentations are limited in delivering an image of reality. Processes themselves are still not tangible leading to difficulties in a process-oriented thinking.

▪ The effort to keep explicit knowledge up to date is high. The world is changing fast and so are customers and as a result the company's employees and processes, too. As a result, process documentations are often not reflecting the existing activities in processes.

▪ Tacit knowledge is very hard to learn from explicit sources of knowledge. It has to be gained through experience. It can only be

acquired by employees based on experiences or transferred by other people.

Subsequently, explicit knowledge delivers some information but is not helpful in acquiring the tacit knowledge which is necessary for process-oriented thinking. Due to the intangibility of processes, tacit knowledge is a key factor in performing tasks effectively and efficiently. A company forcing the change towards a process-oriented organization has to align explicit knowledge but mainly focus on tacit knowledge. It is very important that employees know how to perform their tasks having a process-oriented thinking. If employees do not have the necessary tacit knowledge the shift will fail (Oakland and Tanner, 2007).

As a result, it is important to support employees in *acquiring* and *sharing* tacit knowledge. Thus, the acquisition of tacit knowledge is a major topic in companies, which will be discussed further on.

4 POSSIBILITIES OF LEARNING TACIT KNOWLEDGE

In literature three general options for the acquisition of tacit knowledge, such as process-oriented knowledge, can be found:

▪ *Socializing*: Within this option, events should be set-up, allowing employees to share tacit knowledge through joint activities (Nonaka, 1994). In this context (Snowden, 1998) proposes that tacit knowledge can be shared through psychosocial mechanisms and released through trust and its dynamics.

▪ *Experiencing*: Acting, e.g. performing tasks, is another option to learn tacit knowledge (Earl and Scott, 1999). A vital part of this option is "learning by doing" (Levitt and March, 1988). To accelerate experiencing (Nonaka, 1994) experiencing should be connected to socializing, as experience has to be shared between people.

▪ *Using explicit knowledge*: According to (Nonaka, 1991) tacit knowledge can be acquired based on explicit knowledge. The latter can be the result of an externalization of tacit knowledge in publicly comprehensible forms like documentations (Nonaka, 1991; Snowden, 1998).

Thinking about the most effective option to acquire tacit knowledge, use of *explicit knowledge* is the weakest one. The amount of tacit knowledge which can be learnt by explicit knowledge is limited

(Hawryszkiewycz, 2010). According to a study by Lee (2000) the amount of learning tacit knowledge by sharing it is about 90 per cent of total knowledge sharing.

Learning by simply *experiencing* is very useful, but also restricted as employees have to learn on their own. Additionally, experiencing on the job is combined w ith a high risk of failures due to a trial and error acquisition of knowledge (Levitt and March, 1988). This could be a problem, as an organisation's success depends on efficient processing of tasks. While the employee is making mistakes customers will become upset or will decide for a different competitor. *Socializing* is very promising, as it allows for a proper exchange of tacit knowledge. Due to a lack of application, employees often do not acquire all available tacit knowledge. Applying newly learned facts, contents and methods actively and, thus, experiencing the effects contributes significantly to the acquisition of tacit knowledge. Considering this background, role-play simulations seem to be a promising approach as they combine socializing with experiencing (Nonaka, 1994).

5 ROLE-PLAY-BASED SIMULATIONS

Role-play-based simulations as presented in the following are one specific type of simulation. Participants adopt particular responsibilities, i.e. "roles." Usually, detailed descriptions about tasks are given to each participant of the role-play. In practice, different objectives can be pursued by the facilitation of role-plays. Depending on these objectives they can support four categories of learning according to Klippert (2009):

- *Content and factual learning*: The acquisition of knowledge and facts, understanding explanations and phenomena, recognizing relationships and evaluating hypotheses provide the basis for all other types of learning.
- *Methodological and strategic learning*: The focus is on structuring, organising and arranging the acquired knowledge. This entails the ability to independently apply, reflect or further develop learnt lines of reasoning, working techniques, problem-solving or learning strategies within a subject-matter or cross-functional context (Hechenleitner and Schwarzkopf, 2006).

Employers increasingly expect this type of methodological competence, in addition to subject-matter competence, from prospective employees.

- *Social and communicative learning*: Utilizing the learnt facts and knowledge as a basis for argumentation and discussion with other members in society, social competence can be developed. Central to this type of learning is a rational and responsible discourse, as such behaviour fosters teamwork which in turn serves to enhance social-communicative abilities.
- *Affective learning*: The so-called self-competence encompasses the development of self-confidence, commitment, and motivation. Affective learning enables the individual to recognize and bring out his or her own talents and abilities as well as to develop reasoned ethical values and moral concepts (Hechenleitner and Schwarzkopf, 2006).

Frequently articulated objectives of role-plays include the ability to deal with difficult situations, developing self-assurance, improving auto-perceptive and self-reflection skills, increasing motivation, and raising communicative effectiveness (Bliesener, 1994). However, it is important not to pursue too many objectives with a role-play. An overload of differing objectives may unsettle participants with little previous role-play experience and thus inadvertently result in a defensive attitude towards the role-play (Broich, 1994).

The acquisition of tacit knowledge can be supported by role-plays as depicted in Figure 2. *Socializing* and *experiencing* have been identified as the most promising ways to acquire tacit knowledge. Both belong to the categories *social & communicative learning* and *affective learning* covered by role-plays (Börner and Uremovic 2010). Hence, the latter are well suited to support employees in gaining process-oriented knowledge.

Nevertheless, there is very little evidence of role-plays used in a business context. If role-plays are used in companies the focus is more on knowledge transfer in general than on learning (e.g. van Laere, de Vreede and Sol, 2006). To the best of our knowledge, there is no literature on role-plays focussing on learning in a business context.

The simulation KreditSim, which will be described in the following section, can subsequently be used to acquire this tacit knowledge incorporated in processes and subsequently improve a company's processes.
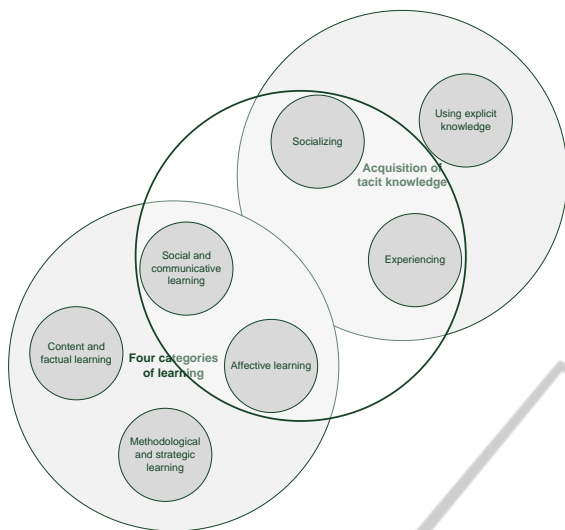
Figure 2: Interaction of learning categories and tacit knowledge acquisition.

6 KreditSim

KreditSim is a role-play designed to convey the idea of process thinking as well as opportunities and effects of process improvements. It targets employees involved in back office processes which can be found in almost every company. In our particular case the simulation KreditSim has been developed for employees in the banking industry. It deals with the processing of loan applications from new customers, being a typical back office process of banks. Participants adopt the roles of loan processing specialists, department head, controller and managing director of the fictitious Home Loan Bank Ltd. Workplaces are set up in a seminar room by the facilitator and the participants receive all necessary documents. Thus, a working environment is provided. Simulation participants have to process loan applications in accordance with their given job descriptions. Since each participant is responsible for handling only a small portion of the entire process, it becomes quickly apparent that while each participant fulfils his or her process tasks at their very best, the entire process nevertheless yields an unsatisfactory result. Eliminating errors of the loan application processing as well as reducing the long cycle time can only be accomplished through a holistic, cross-functional analysis.

To gain first-hand experience of the loan approval process and its subsequent improvement, facilitators often divide the seminar into three phases (Börner et al. 2009): The first phase consists of conducting the simulation of the pre-described loan approval process of Home Loan Bank Ltd., i.e. the current process. This phase is standardised and predetermined through the use of the game materials and adherence to the role-play instructions. The second phase focuses on optimizing the existing process. This approach serves as the foundation for developing a new and optimized loan approval process. In phase three, participants simulate the improved process design. Results from the new process are captured and compared with the results from the original process.

6.1 Initial Situation in the Role Play

The role play KreditSim is typically conducted as part of a one-day or two-day training seminar. At the very beginning, the moderator introduces the current situation that serves as a starting point for the role play KreditSim, providing the following overview: "Home Loan Bank Ltd. is a regional bank that specializes in real estate financing. The bank maintains four branch offices. In these branch offices, sales specialists for real estate loans and financing advise potential customers. The decision whether or not to approve a loan application is made at headquarters. Sales specialists attach particular importance to timely and accurate processing of the applications they have submitted to headquarters. Their requirements are expressed with the following quality criteria:

- Processing of the loan application with an approval or rejection decision within four days (in the role play this equates to four minutes),
- determination of the correct credit rating, and
- consideration of customer requirements (e.g. interest rates or payment terms)."

The moderator prepared the process for the first simulation round and therefore knows that based on conducting and thus experiencing the loan approval process at Home Loan Bank Ltd. participants quickly realize that these requirements cannot be met. In most cases, the decision concerning a particular loan application will take nine or ten days (i.e. minutes in the simulation). In addition, there will be frequent errors in the credit rating, resulting in incorrect decisions concerning the approval of loan applications. Finally, very often specific customer requirements will not have been sufficiently addressed during the processing of the loan application. Therefore, the moderator can easily convince participants of the necessity to analyze and optimize the loan approval process.

To support the first-hand experience of the loan approval process and its subsequent optimization, moderators often divide the seminar into three phases: The first phase consists of conducting the simulation of the pre-described loan approval process of Home Loan Bank Ltd., i.e. the current process. This phase is standardized and predetermined through the use of the game materials and adherence to the role play instructions. The second phase focuses on optimizing the existing process. The moderator guides the participants often using tools within the DMAIC (Define, Measure, Analyze, Improve, Control) cycle, which is the central procedural method of Six Sigma (Pande, Neumann and Cavanagh, 2000). This approach is very helpful as foundation for developing a new and optimized loan approval process. In phase three, participants simulate the optimized process design. Results from the new process are captured and compared with the results from the original process.

6.2 Phase I: Simulation of the Loan Approval Process

In phase I, the loan approval process of the Home Loan Bank is simulated. Prior to starting phase I, the moderator has to prepare the simulation room. He arranges the work stations in the predefined floor layout (Fig. 3) and distributes the job descriptions. Each participant chooses one of the prepared work stations randomly. The job descriptions help the participants to become familiar with their working tasks.
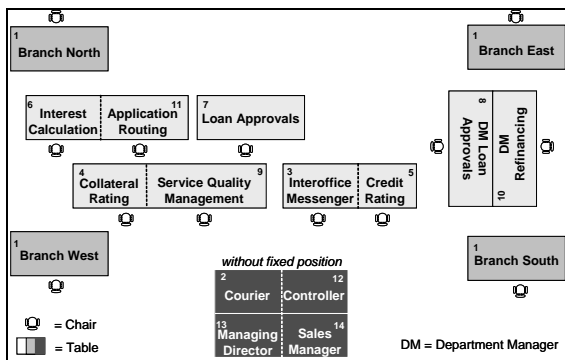

Figure 3: Floor plan.

In order to address potential start-up problems and to avoid any misunderstanding, a trial run of the simulation is conducted first. Then, the actual simulation of the loan approval process begins. The objective is to process as many error-free loan applications within 20 minutes as possible. This objective has to be achieved within the requirements

of the quality criteria, namely time (a maximum of four minutes per application), correct credit rating, and consideration of additional customer requirements. Each minute the branch offices submit loan applications via a branch courier to headquarters. Within a short time, it becomes apparent that the given process results in significant problems.

Subsequent to the simulation run, the moderator leads participants in the analysis of the process. The incorrect loan applications are analyzed according to quantity and types of errors.

Generally, most applications will contain a time error, i.e. their processing required more than the allotted four minutes. An incorrect credit rating occurs frequently as well. An analysis of "Work-in-Process" provides an indication of how many incomplete loan applications have accumulated at each step of the process, highlighting bottlenecks within the process. An analysis of the processing times provides insights concerning the individual processing times of each function within the overall loan approval process (e.g. Collateral Rating). An optional analysis can be conducted for the total processing time for each loan application, since such data has been captured on each loan document. The significant differences in the processing times echo participants' perception that some colleagues were unable, in spite of greatest work efforts, to handle the volume of incoming loan applications while other colleagues spent a significant amount of time waiting for work to arrive.

In accordance with the moderator's expectations, seminar participants easily recognize the need for process optimization when looking at the large number of processing errors and the long processing times. The moderator can then move on to phase II, the optimization of the loan approval process.

6.3 Phase II: Optimization of the Loan Approval Process

The moderator can freely decide how to conduct the optimization of the loan approval process. Most important is the guidance of the participants towards a process-oriented driven improvement of the loan process. In principle, the optimization can utilize the entire spectrum of available tools for process improvement. If seminar participants are already familiar with a methodology for improving processes like Six Sigma, they should be given their free choice concerning which of the tools to use.

Process measurement and analysis can be conducted using the data that were collected during

the first phase of the simulation (quantity and types of error analysis, Work-in-Process analysis, processing time analysis). After the analysis, participants should be given sufficient time for the Improve-Phase to optimize the loan approval process. It is important to note that there is not "one correct" solution for the redesigned process, but that participants instead learn to identify causes for process deficiencies, such as duplicate tasks, redundant tasks, or unnecessary transportation and idle times, and that participants are in a position to accordingly improve the process. Besides designing a new process flow, participants also develop new job descriptions and a different floor plan.

6.4 Phase III: Simulation of the Optimized Loan Approval Process

The newly developed loan approval process is validated by a new simulation. Now, the participants prepare the simulation room, arrange the floor layout of working places, and distribute the new job descriptions. The new simulation only needs to take 10 minutes this time. The participants are now able to measure to what extent they have been able to improve the process by counting the amount of correct loan approvals within the given timeframe and comparing the results to the previous simulation.

Experience shows that in every case a significant improvement in process performance can be observed. Participants are usually extremely pleased with their results. Oftentimes, additional ideas for further improvement are generated during or after the second simulation run, resulting in lively and fruitful discussions among participants.

7 CONCLUSIONS

Process-oriented knowledge of employees is a major success factor for the performance of a process. Enterprises training their employees have to keep in mind that such knowledge is tacit knowledge. Only fractions of that knowledge are accessible in explicit form to a company's employees. Aiming at acquiring process-oriented tacit knowledge, organisations have to think about ways to train their employees.

Since role-plays amongst others encompass social and communicative learning, they can contribute to the acquisition of tacit knowledge. In many companies, knowledge about business processes is mainly bound to individuals and not explicated in a publicly available manner. Due to problems like visualising processes in a written form or updating such documentation promptly, explication of this knowledge might not be the best way to reduce the dependency on single persons. It is often more helpful to support other employees in acquiring this tacit knowledge. Socializing has been identified as the most promising approach to acquire tacit knowledge. As shown previously, the role-play KreditSim can contribute to acquire, share and apply knowledge about a company's business processes. Employees are stimulated to communicate. In their common effort to improve a business process, they learn from one another and share their tacit knowledge.

The most striking and fascinating experience facilitators make after conducting the role-play KreditSim is that discussion and interaction between participants go far beyond the simulation. Often, techniques and tools learnt while playing KreditSim are instantly applied to the participants' daily business processes. Not only do participants exchange tacit knowledge through intensified discussions. They even become aware about the fact that they benefit from such an enhanced communication. Statements like "This was the first time we talked *with* each other instead of *about* each other" are an evidence that socializing – and thus social and communicative learning – is crucial to acquire process-oriented knowledge and that KreditSim serves as a valuable enabler.

Despite all promising experience gained so far, there are a number of limitations that might constrain the success of a role-play in general and KreditSim in particular. In all seminars, in which KreditSim was used so far, facilitators were able to observe that tacit knowledge about processes was passed on among colleagues. Yet, there is no systematic approach to acquiring and sharing this kind of knowledge in KreditSim. Most of it was not expressed by purpose but more or less randomly. Improving KreditSim in order to ensure a proliferation of process knowledge would be a valuable contribution of further research.

Up to now, all participants of the role-play were willing to contribute to the improvement of the simulated process and thus shared their knowledge with colleagues. Even those who had been sceptic about the role-play in first place participated with increasing enthusiasm in the role-play. However, there is no guarantee that participants are always willing to contribute to the simulation's success. Hence, for future research it is worthwhile to look into possibilities to spark employees' interest in process improvement and share their tacit knowledge about processes.

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