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Using role-play based simulation to acquire tacit knowledge in organisations: The case of KreditSim

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Abstract. Knowledge creation and application is crucial for organisations to cope with ever increasing competition. The business-relevant knowledge is reflected in the processes of a company. A process largely consists of tacit knowledge which is embedded in practice or experiences. Acquiring this type of knowledge is crucial for improving business processes. 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 and senior managers to acquire and apply tacit knowledge, a role-play based simulation program has been developed. This kind of simulation allows for a learning environment close to the workplace. The case of KreditSim shows how this coaching method actively involves employees and improves awareness of and participation in business process improvement. After identifying the deficiencies in their early process, the learners improve their process in a new simulation run. In this way, the tacit knowledge about processes is externalised, delivered, refined and reused. Social learning is also supported for process knowledge creation and sharing.

Introduction

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 characterised by a set of connected activities necessary to deliver a defined business outcome (Davenport/Short, 1990). Starting point for designing a business process is the aspired business outcome which depends on the customers´ demands. Within a business process, employees using IT systems and other resources transform input into output. Thus, a company can be seen as a bundle of business processes containing the knowledge to produce goods and services (Inkpen/Dinur, 1998).

Business process thinking has become a major topic in management. In fact, turning a company into a process-oriented organisation is seen as a competitive advantage and fundamental to its success. Such an organisation is more adaptable to changes in the market, faster in delivering output, superior in terms of quality and more responsive to the needs of customers (Hammer/Champy, 1993). But a process-oriented company requires different knowledge compared to a function-oriented organisation (Kugeler/Vieting, 2003). This process-oriented knowledge is mostly tacit knowledge (Hawryszkiewycz, 2010).

To ensure a permanent improvement of processes not only explicit knowledge but also tacit knowledge has to be deployed. A major question of process-oriented companies is how the necessary tacit knowledge can be acquired. The aim of this paper is to present KreditSim, a role-play based simulation, which facilitates the acquisition of tacit knowledge in an organisation. The paper is organised as follows. First, we describe the kind of knowledge embodied in business processes. Second, options for knowledge acquisition in the context of business process management are presented. One promising approach to acquire process-aware knowledge is to use role-play based simulations. To demonstrate the effects of this type of simulation the case of KreditSim will be presented. Finally, we will draw conclusions on the usage of role-plays for acquiring tacit knowledge

Process-aware knowledge

Business processes reflect what a company is doing, i.e. how services are delivered and goods are produced. In this sense, processes can be understood as the DNA of a company – similar to that of human beings. They contain the information how the resources of a company are combined. The interaction of the employees' activities, their knowledge and the IT applications used leads to a unique combination of resources (the DNA) that distinguishes a company from its competitors. Hence, two companies having the same resources and competing in the same market can perform differently due to better or worse processes based on the varying combinations of resources.

Since business processes are the foundation for production, the management of the process-related 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/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 Nonaka (1994) differentiates 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. Still, it is possible to transfer tacit into explicit knowledge to a certain degree. Three basic types of knowledge can be distinguished in the context of business processes (Hawryszkiewycz, 2010):

- The basic type of knowledge is *explicit knowledge* in terms of traditional process documentation. 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 Modelling Notation (BPMN) or Event-driven Process Chains (EPCs) (Barber et al., 2003).
- Additional to process documentation, there exists *explicit knowledge* as a result of monitoring and analysing the process performance. This knowledge mainly addresses the management of a company based on key performance indicators of a certain business process. But this kind of knowledge can also be useful for employees working within a process. It is useful to improve the process but does not substitute the implicit knowledge which is necessary to perform the task itself.
- The major type of knowledge in processes is *tacit knowledge* of the employees performing particular 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.

In summary, 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 may try to increase the percentage of explicit 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, tools 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 a true image of reality. Processes themselves are intangible leading to difficulties in understanding processes.
- 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.
- Tacit knowledge is very hard to learn from explicit sources of knowledge. It is more easily gained through experience and communication with others.

Subsequently, explicit knowledge delivers valuable information but is not helpful to acquire the tacit knowledge which is necessary e.g. for process-oriented thinking. Regarding the gap between function-oriented and process-oriented thinking, companies have to acquire this tacit knowledge to be successful. Therefore, it is important to support employees in acquiring, sharing and applying tacit knowledge.

Acquisition of tacit knowledge
In literature three generic options for the acquisition of tacit knowledge, such as process-aware knowledge, can be found:

- *Socialising:* Following this approach, 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 a vital part of this approach (Earl/Scott, 1999). Knowledge is gained through "learning by doing" (Levitt/March, 1988). According to Nonaka (1994), experiencing is connected to socialising – as experience has to be shared between people – but both are not necessarily intertwined.
- *Using explicit knowledge:* According to Nonaka (1991) tacit knowledge can be acquired based on explicit knowledge. The latter can be the result of an externalisation of tacit knowledge in publicly comprehensible forms like documentations (Nonaka, 1991; Snowden, 1998).

Thinking about the most effective option, *use of explicit knowledge* is the weakest one. The amount of tacit knowledge which can be learnt by explicit knowledge is limited (Hawryszkiewycz, 2010). Learning by simply *experiencing* is useful, but also restricted as employees have to learn on their own. Additionally, experiencing on the job is combined with a high risk of failures due to a trial and error acquisition of knowledge (Levitt/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 even decide for a different competitor. *Socialising* appears to be 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 socialising with experiencing (Nonaka, 1994).

Role-plays in workplace settings
Role-plays represent a specific type of simulation in which participants adopt particular responsibilities, i.e. a "role." The deployment of role-plays can pursue different goals and can support four categories of learning (Klippert, 2009):
- *Content and factual learning:* The acquisition of knowledge and facts, understanding explanations and phenomena, recognising relationships and evaluating hypotheses provide the basis for all other types of learning.
- *Methodological and strategic learning:* Here, the focus is on structuring, organising and arranging the acquired knowledge. This encompasses 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/Schwarzkopf, 2006). Employers increasingly expect this type of methodological competence, in addition to subject-matter competence, from prospective employees.
- *Social and communicative learning:* Utilising 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 recognise and bring out his or her own talents and abilities as well as to develop reasoned ethical values and moral concepts (Hechenleitner/Schwarzkopf, 2006).

Commonly 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 process of acquiring tacit knowledge can be supported by role-plays as depicted in Fig. 1. *Socialising* and *experiencing* have been identified as the most promising ways to acquire tacit knowledge. Both belong to the categories *Social and communicative learning* and *Affective learning* covered by role-plays (Börner/Uremovic, 2010). Hence, the latter are well suited to support organisations in retaining tacit knowledge. The simulation KreditSim, which will be described in the following section, can subsequently be used to acquire, share and apply tacit knowledge incorporated in processes.
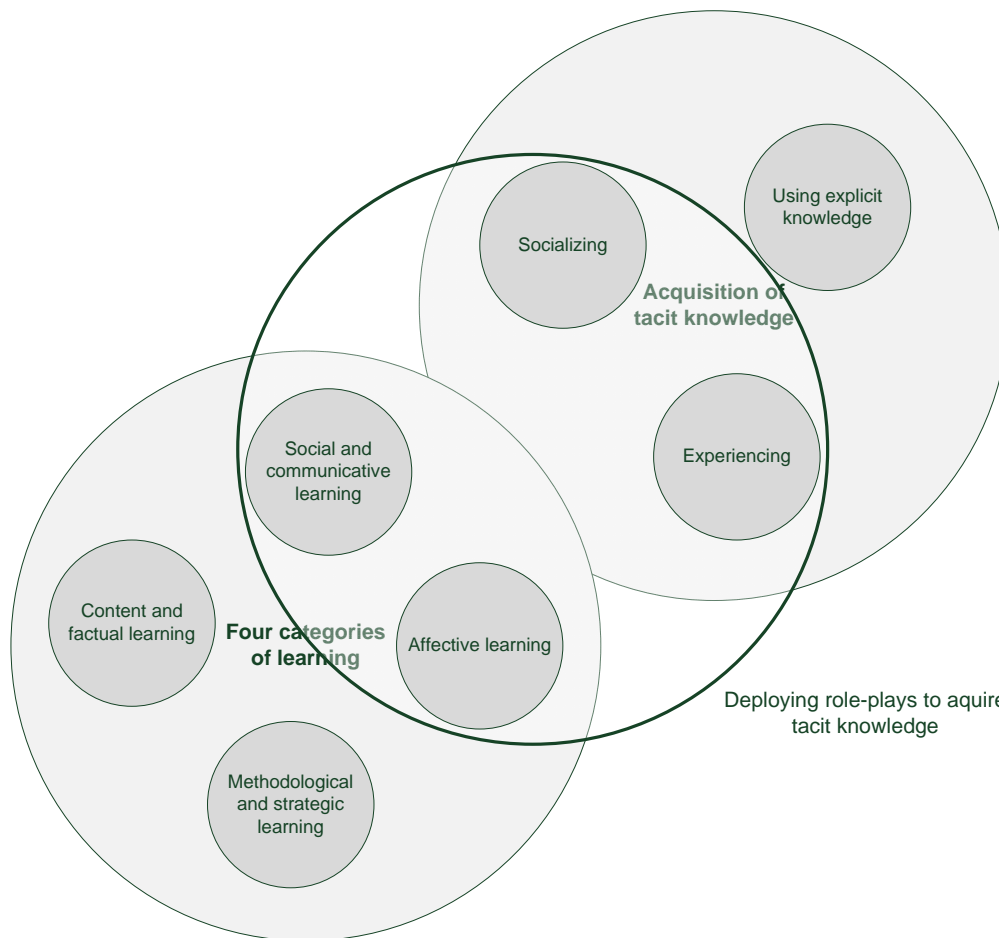
Fig. 1: Interaction of learning categories and tacit knowledge acquisition

Concept of KreditSim

KreditSim is a paper-based role-play designed to convey the idea of process thinking as well as opportunities and effects of business process improvement (Börner et al., 2009). 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 within the application processing as well as reducing the long cycle time can only be accomplished by a holistic, cross-functional analysis.

To gain first-hand experience of the loan approval process and its subsequent improvement, facilitators usually 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, i.e. the current process. This phase is standardised and predetermined through the use of the game material and adherence to the role-play instructions. The second phase focuses on optimising the existing process. This approach serves as the foundation for designing a new and optimised loan approval process. In phase three, participants simulate the improved process. Results from the new process are captured and compared with the results from the original process.

Phase I. In this phase the loan approval process of Home Loan Bank is simulated. Prior to starting phase I, the facilitator has to prepare the simulation room. He arranges the work stations in the predefined floor layout 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 work tasks. 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 goal is to process as many error-free loan applications within 20 minutes as possible. Subsequent to the simulation run, the facilitator guides participants in the analysis of the process. In a first step, the incorrect loan applications are analysed and documented according to the quantity and type of errors. In accordance with the facilitator's expectations, seminar participants easily recognise the need for process improvement when looking at the large number of processing errors and the long cycle time. The facilitator can then move on to phase II, the optimisation of the loan approval process.

Phase II. The facilitator can freely decide how to conduct the optimisation of the loan approval process in phase II. In principle, the optimisation can utilise the entire spectrum of available process improvement tools. Especially those tools that are most frequently applied in the financial services industry (Heckl et al., 2010) can be nicely illustrated through KreditSim. It is important to note that there is no "one correct solution" for the redesigned process. Instead, participants learn to identify causes for process deficiencies such as duplicate or redundant tasks, unnecessary transportation and idle times. This empowers them to adjust and thus improve the process. Besides designing a new process flow, participants also develop new job descriptions and a different floor plan in this phase.

Phase III. Here, the newly developed loan approval process is validated by a new simulation run. Now, the participants prepare the simulation room by themselves. This includes arranging the floor layout of work places and distributing the new job descriptions and work material. After this second simulation run, participants are able to measure to what extent they have succeeded in improving the process. For this purpose, they will e.g. count the number of correct loan approvals and compare their results with the previous simulation run. Experience reveals that in every case a significant improvement in process performance can be achieved. Participants are usually extremely pleased with their results. Oftentimes, additional ideas for further improvements are generated during or after the second simulation run, resulting in lively and fruitful discussions among participants.

Conclusion

Processes are the DNA of a company. Process-related knowledge of employees is a major success factor for the performance of a process and, thus, for the entire company. But such knowledge is often tacit knowledge. Only fractions of that knowledge are accessible in explicit form to a company's employees. Aiming at acquiring process-aware tacit knowledge, organisations have to think about ways to train their employees.

Since role-plays 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 an intersubjective available manner. Due to problems like visualising processes in 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. Socialising and experiencing have been identified as the most promising approaches to acquire tacit knowledge. As described above, 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. 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 socialising – and, thus, social and communicative learning – is crucial to acquiring tacit knowledge and that KreditSim serves as a valuable enabler.

Despite all positive experience gained so far, there is 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 has been used up to now, facilitators were able to observe that tacit knowledge about processes was freely passed on among colleagues. Yet, there is no systematic approach to acquiring and sharing this kind of knowledge in KreditSim. Most information was not expressed by purpose but more or less randomly. Improving KreditSim in order to ensure an acquisition of tacit knowledge would be a valuable contribution of further research.

So far, all participants of the role-play were willing to contribute to the improvement of the simulated process and shared their knowledge with colleagues – even when the seminar group had been composed of participants

from different banks. Even those who had initially been sceptical about the role-play participated with increasing enthusiasm. 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 further possibilities to spark employees' interest in process improvement and share their tacit knowledge about business processes.

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