

EFFECTIVENESS OF ROLE PLAYS ON PROCESS-ORIENTED BEHAVIOUR IN DAILY WORK PRACTICES: AN ANALYSIS IN THE FINANCIAL SERVICES SECTOR

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Leyer, Michael, University of Rostock, Rostock, Germany, michael.leyer@uni-rostock.de

Hirzel, Ann-Kathrin, Frankfurt School of Finance & Management, Frankfurt, Germany, a.hirzel@fs.de

Moormann, Jürgen, Frankfurt School of Finance & Management, Frankfurt, Germany, j.moormann@fs.de

Abstract

We examine whether role plays have the potential to advance process-oriented behaviour (i.e. employees perform their activities while considering other activities and colleagues in the process) of employees in daily work practices. Process-oriented behaviour is difficult to achieve. In our paper we argue that role plays in which participants take over fictitious roles are a promising learning method. However, effects of role plays on subsequent behaviour in daily work practices are missing so far in the literature. Our results from 153 participants of a financial service institution reveal that the role play used has a statistically significant impact on employees' process-oriented behaviour in terms of their cross-functional coordination, their process knowledge and their continuous process reflection, but not on employees' process awareness. Given that outcome, we argue that despite the application costs, role plays are beneficial for companies to train their employees in process orientation. Moreover, we show that there is no impact of the penetration level (number of employees trained per department) on the process-oriented behaviour of the individual employee. Hence, every single employee matters. Thus it is not necessary to wait for a company-wide roll-out. Initial pilot projects can be started and employees can be trained independent from their team.

Keywords: Business process management, process-oriented behaviour, role play.

1 Introduction

Turning a company into a process-oriented organisation is seen as a competitive advantage contributing significantly to a company's success (Davenport, 1993; Hammer and Champy, 1993; Burlton, 2001; McCormack and Johnson, 2001; Skrinjar et al., 2008). Process-oriented organisations are expected to have a higher level of adaptability to market changes, are faster in delivering high-quality output and show a greater degree of responsiveness to customer needs (Hammer and Champy, 1993; Braganza and Bytheway, 1997). However, the majority of organisations are still function-oriented with employees showing function-oriented behaviour (Hammer, 2007).

In order to realize the described benefits, employees have to adopt process-oriented thinking and consequently have to perform their tasks following a process-oriented behaviour. Compared to function orientation, process orientation is a cross-functional and customer-oriented way of thinking and working (McCormack, 2001). Employees still work in their departments, but know the related tasks within their process, coordinate their work with fellow workers in this process and are interested in their col-

leagues' overall outcomes. Thus, employees' behavioural change towards process orientation in their daily work is crucial to ensure a sustainable transformation of the company. However, such behaviour is difficult to achieve, as the way of thinking has to be changed (Nonaka, 1994).

To become process-oriented requires employees to have the ability (i.e. task and context-specific knowledge Howells, 1996) and cognitive capabilities, as well as a willingness (i.e. intrinsic and extrinsic motivation; Tang et al., 2013) to change their daily work towards a cooperative and integrated procedure (Kumar et al., 2010; Tang et al., 2013).

The process of behavioural change can be supported by different learning methods in a broad variety of settings, ranging from leadership and teacher training to psychotherapy (Mann, 1956; Mann and Mann, 1960; Bandura, 1977; Kidron, 1977). However, the benefit of learning methods is context-dependent and limited research has been conducted so far in the area of learning process-oriented thinking (Leyer and Wollersheim, 2013). The latter authors show that learning-by-doing is superior to using documentation when it comes to learning process-oriented thinking.

A promising application of learning-by-doing is the usage of role plays (Mercado, 2000; Sturges et al., 2009; Paschall and Wüstenhagen, 2012; Chen and Martin, 2015). Role plays can be defined as an interactive process that involves participants assuming specified responsibilities – that is, a 'role' – and performing specific tasks (Solem, 1960; Börner et al., 2012). Prior work is indicating that role plays have a positive effect for learning process-oriented thinking (Börner et al., 2012). However, employees not only have to grasp process-oriented thinking for the sheer purpose of learning it, but should apply it in daily work practices (Tang et al., 2013).

Despite commonly cited shortcomings encountered with role plays, such as high application costs and a lack of acceptance (Andrew and Meligrana, 2012; Paschall and Wüstenhagen, 2012; Chen and Martin, 2015), role plays seem to be superior compared to traditional training methods, such as lectures (Martin et al., 2014). Because of the interactive and reflective process, role plays have the potential to promote sustainable changes in behaviour (Chen and Martin, 2015). Thus, the identification of a successful training method is promising in saving company resources, increasing the chance of sustainability on their path towards process orientation and outbalancing associated costs (Chen and Martin, 2015).

Hence, the research question of this article is: Does the usage of role plays lead to sustainable process-oriented behaviour? None of the above-mentioned studies investigates whether employees show process-oriented behaviour after conducting a role play. This observation is in line with the general lack of empirical evidence regarding the sustainable effectiveness of role plays in behavioural change (Nestel and Tierney, 2007; Andrew and Meligrana, 2012; Chen and Martin, 2015).

In addressing the research question, we present empirical results from a study in a mid-sized bank whose employees experienced an intensive usage of a role play. Through the experience of the role play, participants are assumed to change their behaviour towards process orientation in their daily work routine. This article is the first to report on the sustainable effect of role plays on participants' behaviour in terms of process orientation in their daily work routine.

The article is structured as follows. Section 2 provides the theoretical background on role plays as well as on workplace education and develops the hypotheses. Section 3 presents the methodology and data used. Section 4 delivers the results of our investigation, which are discussed in Section 5. Section 6 concludes.

2 Theoretical background and hypothesis development

2.1 Process-oriented behaviour on an individual level

We conduct a literature review using “process orientation” and “process(-)oriented” as search terms within EBSCO Business Source Premier using the integrated search feature, which includes ABI/INFORM Complete, Business Source Premier, Emerald ManagementXtra 150, JSTOR, PsycARTICLES, ScienceDirect and Springerlink. A total number of 22 articles could be identified as being relevant out of 2,252 hits in the databases (see Appendix).

The previous studies examine process orientation on a company level. At this level, process orientation is described as a multidimensional construct with varying conceptualizations. Articles conceptualizing process orientation range from covering the internal organisation holistically (e.g. Strategy, suppliers, clients, structure, people, culture, systems, documentation and measure of processes; Bronzo et al., 2013) to a narrow view within processes (e.g. definition, measurement, improvement; Forsberg et al., 1999). Kohlbacher and Gruenwald (2011) for example identify seven dimensions of process orientation, which range from the organisational structure to the culture of a company. On the contrary, McCormack (2001) and subsequent studies who embrace his idea (e.g. Skrinjar et al., 2008; Tang et al., 2013) identify three main dimensions of process orientation namely ownership, management and measurement of processes. Articles by Hellstrom and Eriksson (2008), Kumar et al. (2010), Kohlbacher and Gruenwald (2011) as well as Kohlbacher and Reijers (2013) present measures for process orientation on a company level and investigate the links with overall organisational performance (Kohlbacher, 2010). Measures and conceptualizations remain diverse and due to different wordings they are difficult to compare. However, similarities across the 22 articles and thus key characteristics of process orientation on a company level can be seen in adapting organisational structure, task description, goal setting, customer focus, improvement and personal responsibility to consider processes predominantly.

The concept of process-oriented behaviour is not explicitly addressed in these articles – in fact, it can be understood as a prerequisite of most of the dimensions presented in the literature (for details see Kohlbacher and Reijers, 2013). Thus, there is a lack of literature focusing on process-oriented behaviour on an individual level. Following a bottom-up approach, we argue that individual process-oriented behaviour is a critical success factor for an organisation that is implementing process orientation in its different dimensions on a company-wide level.

Hence, to implement process-oriented behaviour within an organisation, process orientation has to become a shared value that is understood and conducted by all employees within the organisation (Hellström and Eriksson, 2008; Chen et al., 2009). The individual’s process orientation is expressed in the execution of each employee’s day-to-day work routine within the process. Only if process-oriented behaviour is applied by all employees at every level of a company a transition towards a process-oriented organisation is possible (Chen et al., 2009). Thus, it is necessary to conceptualize process-oriented behaviour on an individual level to realize the potential difficulties of implementing process orientation along the company level key characteristics.

Process-oriented behaviour on an individual level is considering aspects with regard to the role of the employee and the direct links to colleagues. Based on the key characteristics of process orientation on company level, individuals should know the process (task description) as well as the linkage to customers (customer focus) and subsequent goals (goal setting) (Kumar et al., 2010; Tang et al., 2013). Furthermore, activities should be performed in coordination with colleagues (organisational structure and personal responsibility) and continuous improvement (improvement) should be done individually and together with the relevant colleagues (Forsberg et al., 1999; Nilsson et al., 2001). Employees should act in their daily work while considering these aspects to behave in a process-oriented way. The aspects are described in more detail in the following:

- Process knowledge: Chen et al. (2009) emphasize that a crucial factor for managing an organisation in a process-oriented way is the employees' knowledge of the whole process beyond the individual area of responsibility. Employees cannot visualize the overall impact of their work and therefore behave in a function-oriented way without this knowledge (Hammer, 2007; Tang et al., 2013).
- Process awareness: Another characteristic of process-oriented behaviour is the employees' awareness of customer requirements (Kumar et al., 2010) and performance indicators (cost and cycle times; Chen et al., 2009). Process-aware employees know the impact of their work with regard to customer benefits (Tang et al., 2013).
- Cross-functional coordination: Employees' cross-functional coordination is a key factor of process orientation (Forsberg et al., 1999; McCormack, 2001; Zarei et al., 2014). It enables the connectedness and team work across departments (Kumar et al., 2010) that are crucial for process-oriented companies. In addition, Babic-Hodovic et al. (2012) highlight that employees' communication with each other leads directly to the fulfillment of customer requirements, which is the major goal of a process-oriented organisation.
- Continuous reflection: Besides knowledge, awareness and coordination of processes, it is crucial that the individual continuously reflects on the processes within the company to identify existing problems (Kohlbacher, 2010) and to implement suitable improvements (Skrinjar and Trkman, 2013). Employees' commitment and involvement in continuous process improvement are major characteristics of process orientation and customers benefit enormously (Hammer, 2007; Kumar et al., 2010; Tang et al., 2013).

2.2 The importance of role plays as teaching instruments in workplace education

Role plays have long been recognized as an effective educational instrument and are widely used in industry and academia (Solem, 1960; Crane, 1972; Utgaard and Dawis, 1979; Krause and Amaral, 1994). Role plays aim to equip participants with skills and to change attitudes as well as behaviour and have been applied in a broad range of disciplines. These range from education in language skills, political science education (Shaw, 2004), cross-cultural training, business and human resources, teaching communication skills in medical education (Nestel and Tierney, 2007; Zavertnik et al., 2010; Luttenberger et al., 2014), accounting (Kern, 2000), business process improvement (Börner et al., 2012) and ecological economics (Truscheit and Otte, 2004) to industrial psychology and pre-managerial business education (Mercado, 2000). Given the lack of studies focusing on the specific application of role plays in process management education, other fields presented above are also considered in the review of the literature.

Despite its widespread application, the definition of role playing is fairly consistent (Nestel and Tierney, 2007). A role play exercise can be defined as a dynamic process that involves participants assuming a specified role – and performing tasks accordingly (Solem, 1960; Börner et al., 2012). In distinction to the term simulation, the extant literature uses the term role play (e.g. Mann and Mann, 1960; Ingersoll, 1973; Kidron, 1977; Horwitz, 1985) and role play simulation (e.g. Foster et al., 1980; Bredemeier and Greenblat, 1981; McGregor, 1993; Andrew and Meligrana, 2012; Chen and Martin, 2015) interchangeably. Thus, a role play is a specific type of simulation as participants assume a certain fictive scenario. A role play can be conducted as a paper-based version, i.e. with documents handed out to participants, or virtually in a computer-based environment (Moormann et al., 2011). There are two major types of role plays (Mann, 1956). Either a participant can be explicitly asked to take over a role that is not normally his or her own, or the individual plays his or her own role in an unusual setting that is introduced through the role play. Taking one's own role in a new setting mostly occurs in the context of behavioural change (Mann, 1956).

In general, the extant literature indicates that role plays serve as an effective teaching instrument to motivate participants to become active, improve the understanding of reading material sustainably and increase course enjoyment (Solem, 1960; van der Meulen Rodgers, 1996; Andrew and Meligrana, 2012; Chen and Martin, 2015). Participants think, watch, feel and do, which leads to a unique experience for them (Sturges et al., 2009).

The effect of role plays on behaviour is explained by the theory of cognitive dissonance. According to that theory, individuals will change their behaviour if they experience enough dissatisfaction or discord related to a certain behaviour (Festinger, 1957; Brehm and Cohen, 1962; Oshikawa, 1968; McGregor, 1993). This change can be explained by the fact that individuals have cognitive elements or knowledge about themselves, such as their past behaviour, beliefs, attitudes and the environment. If the cognitive elements are sequentially ordered, they are perceived as being consonant; in the opposite case as dissonant. Dissonance leads to the psychological tension called cognitive dissonance, which individuals experience as uncomfortable (McGregor, 1993).

Role plays imply a dramatization, in which participants are supposed to act in a role or environment that might be unfamiliar. If participants experience cognitive dissonance by reflecting their past attitudes and actions (Chen and Martin, 2015), they will change their behaviour. For instance, students alternately play the role of discriminator and victim of discrimination to reduce their racial prejudice and therefore change their behaviour towards their fellow students. Hence, cognitive dissonance can be seen as the ultimate goal of a role play that is designed to lead to behavioural change (McGregor, 1993).

However, McGregor (1993) points out that even though a role play is conducted, there is no guarantee that firstly, the participants experience dissonance, and that secondly, this dissonance leads to a change in behaviour. Individuals might deny their own behaviour in order to avoid or reduce inconsistencies and therefore no learning effect occurs. Hence, there are several prerequisites that have to be considered to enable participants' experience of cognitive dissonance.

According to Knowles and Holton (2005), a prerequisite for adult training is that the participants know why, what and how they learn. Moreover, the role play should be problem centred and the instructor should consider the individual participants' degree of previous experience in order to support the learning effect.

Furthermore, it is fundamental that participants either have an external motivation to learn, such as a promotion or a higher salary, or an internal motivation, such as a desire to increase job satisfaction and self-esteem (Knowles et al., 2005). Hence, to ensure that the process of behavioural change takes place, it is crucial that the role play is designed for the needs of adult learners as well as that participants are motivated in order to gain a real learning effect and do not protect themselves against cognitive dissonance (McGregor, 1993).

Besides the difficulty of missing motivation of the participants, some other shortcomings are commonly encountered with role plays in the extant literature. Firstly, role plays induce higher application costs such as time and resources necessary to prepare and implement the role play for both sides – initiator and participants – than traditional training methods (Andrew and Meligrana, 2012; Paschall and Wüstenhagen, 2012; Chen and Martin, 2015). Secondly, employees might not accept the role play due to a lack of contact with reality regarding the roles or constraints within the role play (McGregor, 1993; Andrew and Meligrana, 2012). Thirdly, there is also a risk that participants might misunderstand their role and interact based on false assumptions (Paschall and Wüstenhagen, 2012). Hence, without sufficient resources and the understanding and acceptance of employees a company might fail to apply the training method successfully. However, most of the problems which are encountered with role plays are also present in real world working environment, such as a lack of motivation or misunderstanding within employees which supports the realistic nature of role plays (Andrew and Meligrana, 2012). The majority of the reviewed studies indicate that the results by the role play outbalance their induced costs.

Role plays are widely used in the health-care context to improve communication between medical employees, such as doctors and nurses, and their patients. Articles by Nestel and Tierney (2007), McIlvried et al. (2008), Zavertrnik et al. (2010) and Luttenberger et al. (2014) confirm the effectiveness of role plays on the communication skills of their participants. Moreover, this relation is also tested and confirmed by Horwitz (1985) in the context of language classes.

Mercado (2000) confirms the effectiveness of role plays as a teaching instrument for an undergraduate business curriculum. He indicates that role plays may provide better cognitive and behavioural learning and thereby confirms the outcomes of studies by Foster et al. (1980), Bredemeier and Greenblat (1981) as well as Read and Kleiner (1996).

Another major application of role plays can be found within environmental education. Paschall and Wüstenhagen (2012) examine role plays as educational instrument to sensitize management students to environmental issues. Given their outcome, role plays lead to a significant increase in students' understanding on that topic compared to classroom instructions. The emotional involvement as well as the confrontation with a real world problem is not replicable in classroom settings and lead to a unique learning experience through role plays (Paschall and Wüstenhagen, 2012).

Martin et al. (2014) review several training methods reported in the literature so far and confirm that role plays are more effective than other training methods, since they support the direct application of new content to a simulated trial-and-error situation without consequences.

Chen and Martin (2015) examine role plays as teaching instrument in adult environmental education to promote sustainable change in behaviour. According to the authors, role plays address the following four criteria focusing on change to characterize an effective educational program: (1) Focusing on change rather than knowledge transfer, (2) focusing on a real-world scenario to increase the personal involvement and lead to passionate reactions, (3) highlighting external and internal factors that affect current behaviour and finally (4) implying a problem-solving approach with a reflection process that leads to a solution.

However, since results are context dependent and most role play studies take place in settings that are not business related, a one-to-one transfer from other research fields is not suitable. The only role play within the domain is described in Börner et al. (2012). Reported results show that the feedback on the role play has been extremely positive on average and that participants' motivation during the role play is high. Consequently, more than 80% of the participants indicate that their process-oriented thinking has been changed or fostered directly after the role play. This evaluation is performed directly after the role play, not covering how an improvement between the pre- and post-behaviour was induced by the role play. Thus, the question remains whether the participants also sustainably change their behaviour in their daily work routine. Thus, there is a gap in the literature on the sustainable effectiveness of role plays. Existing articles predominantly use a post-test immediately after the role play takes place that does not cover the application of the knowledge learned.

Given this background, it is expected that process-oriented behaviour as an application of process-oriented thinking can be positively changed, as conceptualized in Section 2.1. Hence, the following hypotheses are formulated:

H1.1 Learning process-oriented thinking with a role play has a sustainable positive impact on achieving process knowledge in employees' daily work routine.

H1.2 Learning process-oriented thinking with a role play has a sustainable positive impact on achieving process awareness in employees' daily work routine.

H1.3 Learning process-oriented thinking with a role play has a sustainable positive impact on achieving process coordination in employees' daily work routine.

H1.4 Learning process-oriented thinking with a role play has a sustainable positive impact on achieving process reflection in employees' daily work routine.

Ingersoll (1973) and Horwitz (1985) point out that group role plays have several advantages compared to traditional role plays since a higher number of members actively participate. Their results for uni-

versity students and language classes support the effectiveness of role plays if the whole class is involved. Group education is best suited to supporting individual change in attitude and behaviour (Ross, 1984); the author tests and confirms the effectiveness of group education in adjusting the behaviour of patients in a health-care setting. Wright (1995) describes the effect of group role plays on establishing ethical behaviour in a business environment. This effect is also described by Singh et al. (2002), who examine the effectiveness of a group role play on improving the family friendliness of child psychiatric treatment teams (as groups) in the organisational context. In order to change the behaviour of team members towards patients, Singh et al. (2002) point out that it is especially important that the team as a whole goes through the example – for instance, bad behaviour against a patient in the role play – in order to build up their own shared understanding of correct behaviour. Given this background, we test whether the level of penetration – that is, the number of employees per team who are trained – has an impact on the process-oriented behaviour of the individual. Hence, the following hypotheses are formulated:

H2.1 The level of penetration in a team has a positive impact on achieving process knowledge in employees' daily work routine sustainably.

H2.2 The level of penetration in a team has a positive impact on achieving process awareness in employees' daily work routine sustainably.

H2.3 The level of penetration in a team has a positive impact on achieving process coordination in employees' daily work routine sustainably.

H2.4 The level of penetration in a team has a positive impact on achieving process reflection in employees' daily work routine sustainably.

3 Methodology

3.1 Role play setting

As a role play we use KreditSim, which is the only one employed for learning process-oriented thinking and described in the literature in detail (Börner et al., 2012). KreditSim is a paper-based role play which simulates a loan application process. Participants in the role play take over different roles in the loan application process, such as specialists in collateral and credit rating, interest calculation, loan approval, quality check, the respective organisational unit heads, messenger or controller of the fictitious bank. The role play is conducted in teams up to twenty employees and consists of three phases:

- In the first phase, participants simulate the pre-defined loan approval process that is designed in a function-oriented way and thus leads to major efficiency problems. Each participant randomly receives a job description and has to follow instructions strictly without communicating to other participants. A test round is conducted to make sure that all participants understand their roles and tasks correctly.
- In the second phase, participants are led through a process improvement procedure by the instructor. Firstly the existing process is analyzed based on indicators such as cycle time and default rate of loan applications. Secondly, tools for process improvement (Project charter, SIPOC, CTQ-Matrix and Cause-and-Effect-Diagram) are presented and applied. Participants discuss with each other to understand the tasks of their coworkers and the underlying problems in the loan process. The role play does not lead participants to 'one correct solution' for the redesigned process, but rather teaches them to identify causes of process deficiencies, such as duplicate or redundant tasks, unnecessary transportation and idle time. Thirdly, participants can redesign the process in a team by defining a new design of the process flow and new job descriptions. While the second phase itself covers the improvement aspect, participants have to design the new process considering the aspects of the individual dimensions process knowledge, awareness and coordination. These aspects

are discussed as described and the results should be used to design the new process, as they are needed in order to set up a functioning process.

- In the third phase, the redesigned process is simulated. Participants can validate the new process by measuring to what extent they have improved the process. By being part of the process they should also understand the consequences of applying process-oriented behaviour based on the thoughts of the previous phase.

3.2 Measures

According to the hypotheses, the following measures are applied. The first independent variable is the point of time: before the role play takes place as well as four months later. The time period of four months has been set to allow enough time for a behavioural change in daily work, but to minimize the effect of other influences over time. The behavioural change is regarded as sustainable in the educational context, since the role play is conducted within one day and the memory of newly acquired knowledge and skills of participants is easily gone within weeks after the training (Cohen and Bacdayan, 1994).

The second independent variable is the penetration level: To calculate this measure we divide the total number of employees in the team of the respondent through the number of employees trained with the role play in this team. Thus, participants were asked on the total number of members (including the respondent) in their team and how many colleagues were already trained.

In order to examine participants' process-oriented behaviour, the following four dependent variables are developed based on the four aspects identified on the individual level in Section 2.1. Each question to measure the variables uses a standard Likert scale ranging from 1 = 'strongly disagree' to 5 = 'strongly agree':

- **Process knowledge:** In line with the description in Section 2.1, this variable covers the process design aspects which are essential to behave process-oriented. This covers the outcome of the process, the necessary activities, the employees involved and the assigned goals (Kohlbacher and Gruenwald, 2011). Thus, employees' knowledge about the process on which they are working as well as knowledge about the goals of other organisational units is measured (Reijers, 2006). This variable is calculated as the mean of four questions in the second block of the questionnaire, shown in Table 1.

In my area of operation I know for which products my activities make a contribution.
I know the broad activities that are necessary to complete these products for external customers.
I know the employees with whom I am working on the compilation of products for external customers.
I know the goals of the employees with whom I work together including those outside my area of operation.

Table 1: Questions regarding process knowledge

- **Awareness:** Within awareness, employees should organize their daily work with respect to customer requirements. This requires knowledge about customer benefits, internal procedures to shorten cycle time for customers as well as feedback on these with indicators (Küng and Hagen, 2007). The employees' awareness of cycle time (including the costs of the process) as well as awareness of customer requirements is examined in this variable (Reijers, 2006; Rohner, 2012). It is calculated as the mean of six questions in the fourth block, presented in Table 2.

There are indicators for my activities, which are geared to the satisfaction of external customers.

I know the benefit of my activities to external customers.
The reduction of cycle time (not processing time) of customer orders together with the colleagues involved is an important goal of my daily work.
I collect similar orders for my activities to work them off as a block.
There are rules concerning the response time for internal requests.
In my area or operation I know how satisfied external customers are with the products in which I am involved in the production.

Table 2: Questions regarding process awareness

- Coordination: Coordination covers how an employee is working together with colleagues in the process cross-functionally (Kumar et al., 2011). This covers cooperation in daily workload balancing throughout the process as well as exchange on operational problems (McCormack, 2001; Zarei et al., 2014). We calculate coordination as the mean of five questions in the first block of the questionnaire, presented in Table 3.

For the processing of my products I continuously coordinate myself with all relevant parties involved including those outside my area of operation.
In my area of operation we mostly execute tasks for one product line.
In my area of operation there are regular meetings to discuss the avoidance of most frequent problems.
In my area of operation procedures for the avoidance of mistakes occurring are identified with the relevant parties involved.
There is a continuous coordination with all relevant parties involved (also outside my area of operation) of the products on which I work to avoid backlogs.

Table 3: Questions regarding process coordination

- Reflection: This variable examines whether employees continuously reflect processes in their company (Gustafsson et al., 2003; Ohlmann et al., 2008). It covers whether an employee rethinks his activities in terms of effectiveness and efficiency, uses documented information and indeed implement possible improvement sustainably (Hellström and Eriksson, 2013; Kohlbacher, 2013). We calculate reflection as the mean of the six questions in the third block, presented in Table 4.

In my area of operation I continuously reflect on how existing activities can be improved.
In my area of operation I continuously give thought to the benefit of my activities for external customers.
If I notice possibilities for improvement, I will implement them or inform the person in charge.
In my area of operation we use documented customer complaints for the improvement of activity flows.
In my area of operation implemented improvements to the activity flows are continuously checked.

Table 4: Questions regarding process reflection

3.3 Participants and procedure

In line with previous empirical studies on the effectiveness of role plays (Nestel and Tierney, 2007; Andrew and Meligrana, 2012; Luttenberger et al., 2014) a questionnaire was conducted. The questionnaire was distributed in a mid-sized bank with about 500 employees in total. Training with the described role play was conducted stepwise, with the aim of training every employee over time. Participants for each training day were selected randomly resulting in employees participating from different teams in the same training. Our sample consisted of 153 participants in the questionnaire before the role play took place and 98 participants in the second questionnaire four months later. Due to the

bank's data protection regulations, participants answered anonymously and thus a direct match of answers is not possible, although the means can be compared.

The total sample consisted of 99 male (64.7%) and 53 female employees (34.6%). One (0.7%) participant did not indicate their sex. The age of the participants ranged from 19 to 61 years; the mean age was 41 years (SD = 11.70). The average working experience was 21.9 years (SD = 12.02) and the current position had been held for 9.9 years (SD = 8.75).

3.4 Data analysis

To check the validity of scales regarding the dependent variables coordination, knowledge, awareness and reflection, a reliability analysis was conducted based on a two-sided Cronbach's Alpha test.

Regarding the first block of hypotheses, whether the role play has an impact on employees' process-oriented behaviour, a one-sided (as the hypotheses have a clear assumed direction) Mann-Whitney U-Test was conducted for all dependent variables after testing for normal distribution. The independent variable is point of time.

For the second hypothesis, a standard OLS regression was performed using the same dependent variables, but the level of penetration (metric) as the independent variable.

4 Results

4.1 Descriptive statistics

The results of the Cronbach's Alpha test show that all dependent variables are valid to describe process-oriented behaviour. For both the variables knowledge (Cronbach's Alpha=.649; Items=4) and reflection (Cronbach's Alpha=.724; Items=5), the item scale is confirmed. Coordination and reflection are adjusted by excluding one item each to reach a higher validity: coordination without the second question (Cronbach's Alpha=.774; Item=4) and awareness without the fifth question (Cronbach's Alpha=.612; Items=5). Table 5 presents the mean values, standard deviations and correlations among the variables.

	M	SD	(1)	(2)	(3)	(4)	(5)	(6)
Point of time	1.39	0.49	-	-	.27***	.15*	.12	.11
Penetration level	0.44	0.29	-	-	-.03	-.06	-.06	-.10
Process knowledge	3.58	0.74	.14*	-.04	-	.51***	.51***	.38***
Process awareness	3.31	0.73	.10	-.03	.44***	-	.39***	.57***
Process coordination	3.33	0.84	.28***	.05	.52***	.44***	-	.43***
Process reflection	3.75	0.70	.12	-.08	.34***	.54***	.37***	-

Table 5: Descriptive statistics, reliabilities and correlations among variables (N=153; M=Mean, SD=Standard Deviation; above main diagonal: Pearson correlations; below main diagonal: Spearman's nonparametric rank correlations; * $p < .05$; ** $p < .01$; *** $p < .001$; two-tailed tests.

By examining the rates of improvement of the four dimensions of process-oriented behaviour, one can see that process knowledge improves by 6.4%, process awareness by 2.6%, coordination by 13.2%, and reflection by 3.2%.

4.2 Test of hypotheses

Hypothesis H1.1 examining whether learning process-oriented thinking with a role play has a sustainable positive impact on process-oriented behaviour with regard to knowledge is also confirmed (U(6171.5), $p < .05$).

Hypothesis H1.2 stating that learning process-oriented thinking with a role play has a sustainable positive impact on achieving process behaviour in terms of awareness (U(6482), $p = .054$) cannot be confirmed.

Hypothesis H1.3 stating that learning process-oriented thinking with a role play has a sustainable positive impact on achieving process-oriented behaviour with regard to coordination can be confirmed (U(4832), $p < .001$).

Moreover, we observe a statistically significant relationship between the role play and achieving sustainable process-oriented thinking with regard to reflection (U(6317.5), $p < .05$). Thus, we can confirm H1.4.

For our second set of hypotheses, we test whether the level of penetration has an influence on an individual's process-oriented behaviour.

Regarding hypothesis H2.1, we do not observe a statistical influence between the level of penetration and sustainable process knowledge (ns (-0.470), $R^2 = -0.014$) of the participants. A statistically significant influence of the penetration level on process-oriented behaviour can also not be found for the dimension of awareness (ns (-0.448), $R^2 = -0.015$). Hypothesis H2.3, which states that the level of penetration has a sustainable positive impact on achieving process-oriented behaviour with regard to coordination (ns (-0.217), $R^2 = -0.018$), cannot be confirmed. Finally, hypothesis H2.4 stating that the level of penetration has a sustainable positive impact on process-oriented behaviour in terms of reflection (ns (-0.710), $R^2 = -0.009$) cannot be confirmed.

5 Discussion

Our results show a high, significant increase in coordination after conducting the role play. Hence, the results of Horwitz (1985), Nestel and Tierney (2007), McIlvried et al. (2008), Zaverntnik et al. (2010) as well as Luttenberger et al. (2014) regarding the effectiveness of role plays on participants' communication skills can be confirmed for the context of process-oriented behaviour. In particular, group role plays such as KreditSim enable the whole group to become active and work as a team. Hence, communication within the group is improved and there is training in understanding of others' roles. Besides the team work during the role play, participants can use the facts and knowledge obtained in the role play as a basis for arguments and discussions with other colleagues (Börner et al., 2012). Börner et al. (2012) indicate that the most striking experience after conducting KreditSim is that communication and interaction between participants go far beyond the role play. Through the role play participants become aware of the fact that they greatly benefit from communicating with each other. The authors cite a statement of one of the role play participants summarizing how role plays enable enhanced communication: 'This was the first time we talked with each other instead of about each other' (Börner et al., 2012). Regarding these arguments, our article is the first that empirically confirms such a sustainable increase in communication after conducting a role play in the context of process-oriented behaviour.

The empirical evidence of a significant sustainable increase in process knowledge confirms the effectiveness of role plays as an educational instrument for adult training. In line with prior work (McGregor, 1993; McCarthy and Anderson, 2000; Mercado, 2000; Zaverntnik et al., 2010; Luttenberger et al., 2014), our results confirm the effectiveness of role plays in equipping participants with new knowledge and skills. Our results also confirm that role plays support a better sustainable recall of process knowledge through direct application in a real-world scenario and increase course enjoyment through active participation.

Moreover, our results show a significant increase in process reflection. This outcome is surprising since reflection is supposed to be very hard to implement. To actively reflect the existing process, thus realizing weaknesses and coming up with potential solutions, a high level of confidence in dealing with process improvement is required among employees. Through active involvement within the role play the confidence of the individual participants in dealing with process improvement is increased sustainably. Since the role play participants have to find a solution to a real-life problem the learning experience becomes more effective and it is easier for the participants to apply their new skills immediately in their work routine. This result is in line with studies by Walford (1981), Kern (2000) as well as Chen and Martin (2015).

However, despite the effectiveness of role plays as a teaching instrument in the workplace, participants' process awareness has not been increased significantly. An explanation might be that process awareness implies a deep understanding of the whole end-to-end process, from customer order to product delivery. Process awareness implies that participants have knowledge of the contribution of their work for the external customer. Such a deep understanding of process-oriented behaviour might not be acquired after the experience of one role play. Given our findings, it might be interesting to repeat the role play more than once in order to acquire a deeper understanding of process awareness and check our results for robustness.

Finally, our research shows that the impact of the level of penetration cannot be confirmed for any of the dimensions of process-oriented behaviour. An explanation might be found in the current structure of the bank. The bank aims to become process-oriented by conducting role play training stepwise, with the aim that all employees are trained over time. However, as long as a company does not implement a process-oriented structure – that is, a cross-functional organisational structure that connects the departments along the process – an individual's process-oriented behaviour does not closely depend on the process-oriented behaviour of the co-workers in the process. Since the bank has just started the transformation towards becoming a process-oriented organisation, our analysis concerning the influence of the level of penetration to individual behaviour might not yet have taken effect.

6 Conclusion

This article is the first empirical study that examines whether using a role play to generate process-oriented thinking leads to a sustainable process-oriented behaviour among the individual participants. Our research offers two major contributions towards a further understanding of process orientation.

The first contribution is that role plays are useful for the sustainable creation of process-oriented behaviour to replace function orientation within an organisation. Although role plays induce higher application costs in terms of time and resources than traditional education methods, we argue aligned with the extant literature that the results clearly outweigh the costs. We deliver empirical evidence that the role play KreditSim has a positive impact on process-oriented behaviour with regard to improving cross-functional coordination, employees' process knowledge as well as employees' reflection, but is less effective for improving employees' awareness of cycle times and customer requirements. Hence, the practical implication of these findings is that organisations on the road to process orientation should initially apply role plays to change the behaviour of employees in their daily work. To increase the effect of the role play it should be repeated after a certain time, which we assume should not be more than one year, while keeping the cost of the role play training in mind. An alternative would be to use a one-time role play, which our results suggest can have positive effects, and to accompany employees in follow-ups with trainers. These trainers could build on the role play experience and show employees how to transfer the lessons learned into daily work routines. Alternatively, team managers could take over this role in guiding their subordinates.

The second contribution is that the number of employees trained has no statistical impact on individual process-oriented behaviour. This result is surprising, since it has been assumed so far that process orientation is a shared value that should be present for all employees. Given our outcome, it seems that

employees can act in a process-oriented way in their daily work regardless of the level of process orientation of their colleagues. Hence, every single employee matters, thus it is not necessary to wait for a company-wide roll-out. Initial pilots can be started and employees can be trained independently of their team. Going further, there is no strict need to have top management support, but divisions can start with such training relying on middle management support only.

There are several limitations to take into account. Firstly, our questionnaire experiment might be conducted in other banks or organisations in other industries to enlarge the generalizability of the results. So far, our conclusions in this article are solely derived from empirical evidence conducted at a single bank. Secondly, role plays might suffer from acceptance in a professional environment through a lack of acceptance of the employees and from the management because of high costs. We did not calculate the cost in comparison to other training methods, but as argued within literature, the costs typically outweigh the benefits. Thirdly, due to the anonymity required by the bank, a direct match of answers is not possible. This fact has limited the data analysis. Finally, we do not have a control group that would allow us to test the impact of the role play on the employees. However, due to the fact that process-oriented behaviour is difficult to achieve, it can be assumed that participants do not become more process-oriented over time without any training. Moreover, no other training method was used since companies typically are not willing to try different training concepts on the same topic. Hence, even without an additional control group, the positive impact of the role play can be asserted by our data.

Further research could explore the effect of repeated role plays on the process-oriented behaviour of employees in the long-term going beyond a period of four months. Moreover, future research on the penetration level of repeated role plays during different stages of a company's transformation towards process orientation might provide valuable insights.

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Appendix

Articles identified for “process orientation” and “process(-)oriented”
Babić-Hodović et al. (2012)
Bronzo et al. (2013)
Chen et al. (2009)
Forsberg et al. (1999)
Gustafsson et al. (2003)
Hammer (2007)
Hellström and Eriksson (2013)
Kohlbacher (2010)
Kohlbacher (2013)
Kohlbacher and Gruenwald (2011)
Kohlbacher and Reijers (2013)
Kumar et al. (2010)
Kumar et al. (2011)
Küng and Hagen (2007)
McCormack (2001)
Nilsson et al. (2001)
Reijers (2006)
Rohner (2012)
Škrinjar et al. (2008)
Škrinjar, Trkman (2013)
Tang et al. (2013)
Zarei et al. (2014)