



**UNIVERSITÄT PADERBORN**  
*Die Universität der Informationsgesellschaft*

# **FACULTY OF BUSINESS ADMINISTRATION AND ECONOMICS**

## **Working Paper Series**

---

Working Paper No. 2020-09

### **Workarounds as Generative Mechanisms for Restructuring and Redesigning Organizations— Insights from a Multiple Case Study**

Verena Wolf, Christian Bartelheimer and Daniel Beverungen

December 2020

---



# Workarounds as Generative Mechanisms for Restructuring and Redesigning Organizations— Insights from a Multiple Case Study

**Verena Wolf**

Paderborn University  
verena.wolf@uni-paderborn.de

**Christian Bartelheimer**

Paderborn University  
christian.bartelheimer@uni-paderborn.de

**Daniel Beverungen**

Paderborn University  
daniel.beverungen@uni-paderborn.de

**Abstract.** Workarounds are goal-driven deviations from standard operating procedures, performed to overcome obstacles constraining day-to-day work. Related research has elicited antecedents and types of workarounds but not investigated how and why workarounds diffuse in an organization, leaving their mark on co-workers, IT artifacts, and organizational structures. Drawing on organizational routines and business processes as complementary theoretical lenses, we perform a multiple case study to elicit how and why workarounds occur and impact organizations. We start by pinpointing workarounds as individual temporary fixes for technology, or for organizational, and strategic misfits in organizations. Once established, workarounds can diffuse in an organization if observed by or communicated to co-workers, initiating processes of restructuration and re-design on an organizational level. If appropriate governance structures are in place, workarounds can become official work practices or trigger the innovation of processes and IT artifacts that resolve their underlying misfits. Our results provide unique empirical insights into the mechanisms of bottom-up initiated change in organizations, substantiated by integrating previously unconnected theory on organizational routines and Business Process Management (BPM).

## 1 Introduction

Workarounds are goal-driven deviations from standard operating procedures that employees perform to resolve perceived constraints at work. These activities are rarely acknowledged on an organizational level (Alter, 2014; Laumer et al., 2017). Workarounds have been much discussed with regard to technological change (Röder et al., 2016) where they were found to be a natural consequence of digitalization, "as new controls inspire new workarounds" (Pentland et al., 2020, p. 20). Employees establish workarounds to cope with a perceived poor task-technology fit (Goodhue and Thompson, 1995) in their established routines (Safadi and Faraj, 2010).

Workarounds performed in an organization can have both negative and positive consequences. On the negative side, workarounds can diminish an organization's ability to effectively and efficiently control and perform its operations, leading to loss of control, facades of compliance, inferior process quality, loss of revenue, fraud, or penalties (Alter, 2014). On the positive side, workarounds can serve as a source of improvement, creative flexibility, or innovative capacity (Petrides et al., 2004; Röder et al., 2014) that organizations can use to adapt or innovate their operations. Most organizations still neglect the potential of their employees to innovate their day-to-day performances on-the-fly. Thus, even if workarounds can constitute a positive non-conformance with defined business processes (Beerepoot and van de Weerd, 2018; Röder et al., 2016) that have manifested in the day-to-day work of employees and proven their superiority, their potential as a mechanism for bottom-up process innovation in organizations remains overlooked.

Although workarounds are commonplace in organizations (Li et al., 2017) they are still under-investigated and under-theorized (Pollock, 2005). Previous research is limited to identifying antecedents and types of workarounds, to elicit how and why employees work around perceived constraints on an individual level (Wolf and Beverungen, 2019). However, we know little about the consequences of workarounds for co-workers, the form and function of IT artifacts, and the constitution of organizations as social system (Tucker et al., 2014). Seminal work on communities of practice (Wenger and Snyder, 2000), organizational learning (Nonaka and Takeuchi, 2011), socio-materiality (Cecez-Kecmanovic et al., 2014), and the duality of structure and agency in social systems outlined by structuration theory (Giddens, 1984) strongly suggest that these effects must exist and can be

discovered. It is also likely that all three effects are intertwined, forming complex patterns resulting from the workarounds performed on an individual level.

So far, established theories and methods lack the explanatory power to fully identify the complex consequences of workarounds. BPM focuses on designing IT artifacts that enable process execution, but lacks consideration of the complex consequences of unforeseen actions—including workarounds—performed by process participants. Likewise, Organization Science focuses on the interplay of people and organizations as social systems, but tends to view IT artifacts as structures that exert material agency on routines, while not treating them as man-made objects that can be altered in purposeful acts of design. Since contemporary organizations are socio-technical systems, in which humans employ IT artifacts to perform their day-to-day work, we posit that we need to integrate both strands of research to investigate more thoroughly the diffusion and consequences of workarounds in organizations. Consequently, we formulate our research question as follows: “*How and why do workarounds occur and diffuse in an organization, impacting co-workers, IT artifacts, and structures in a socio-technical system?*”.

We conduct a multiple cases study to examine workarounds as generative mechanisms for bottom-up innovations of business processes in organizations. Investigating nine workarounds from three cases, we provide theoretical contributions on an individual and on an organizational level. First, we conceptualize three types of misfits—organizational, technology, and strategic misfits—in organizational routines, which can lead to the occurrence of workarounds. Second, if observed or communicated, workarounds may have complex consequences beyond their individual initiators, leaving their mark on the enactment of performative routines by co-workers, on the form and function of IT artifacts, and on organizational structures. We provide empirical evidence to explain how and why workarounds act as generative mechanisms for bottom-up process innovation and organizational change, which occasionally take place without being noticed or steered on a managerial level—an effect sometimes referred to as *drift* (Ciborra, 2001). *En passant*, we analyze, integrate, and extend BPM and organizational routines literature to equip other researchers with a new and powerful theoretical lens with which to investigate and manage workarounds.

The paper unfolds as follows. In Section 2, we review related research on workarounds, and present BPM and organizational routines as complementing

theoretical lenses for investigating the occurrence, diffusion, and implementation of workarounds in organizations. In Section 3, we describe and justify our multiple case study approach. In Section 4, we present a coding table that guided our inductive data analysis, before we present and analyze nine workarounds identified in three case organizations. The discussion in Section 5 elicits the occurrence and consequences of workarounds, explaining how and why they leave their mark on co-workers, IT artifacts, and organizational structures. Section 6 concludes the paper with a call-for-action to align process mining and case study research for investigating workarounds further.

## **2 Theoretical Background**

### **2.1 Workarounds as Individual Performances**

Organizations are socio-technical systems, which consist of two mutually dependent sub-systems, i.e., a social system and a technical system (Bostrom and Heinen, 1977). The technical system refers to the technology and processes that are used to support human needs and achieve organizational goals (Fischer and Herrmann, 2011). The social system is concerned with dynamic organizational relationships and actors' capabilities, using IT artifacts in a social context (Sarker et al., 2019). Social structures result from a continuous transformation with emergent behavioral patterns (Fischer and Herrmann, 2011). Social and technical structures mutually appropriate each other (DeSanctis and Poole, 1994). Actors use technology to perform tasks. Depending on the degree of task-technology fit, technology might constrain their ability to achieve work goals or allow individuals to achieve their goals (Leonardi, 2011). Vice versa, actors also have the capacity to physically change technology or to use it differently than intended by its designers while performing tasks to achieve their goals (Leonardi, 2011).

The rapid speed of technology innovations accelerates innovation cycles (Fichman et al., 2014), creating challenges for employees at all organizational levels to overcome. Organizations often struggle to keep up with the speed of changes in their environment (Gimpel and Röglinger, 2015). In an unstable and complex environment, organizations need to adapt more often (Lee et al., 2011). On the one hand, this need to adapt constitutes an opportunity for organizations to

grow their business; on the other hand, adaptation is subject to high levels of uncertainty and risk (Lee et al., 2011). Likewise, standardized business processes are often not designed to adapt to new disruptive technology or, they become outdated when new work approaches emerge (Breu et al., 2002), creating misfits related to technology and organizational structure that are a common cause for the occurrence of workarounds (Alraddadi et al., 2018).

In socio-technical systems, misfits can emerge from technical or social sub-systems. However, previous research has only marginally explored types of misfits that might cause employees to perform workarounds (Ejnefjäll and Ågerfalk, 2019; Wolf and Beverungen, 2019). Thus, we consolidate this research to conceptualize three types of misfits. First, a *technology misfit* points to insufficient technology or processes that constrain employees in performing their work (Safadi and Faraj, 2010). Second, an *organizational misfit* reflects a discrepancy between a defined pattern of a process and its actual performance by employees (Azad and King, 2012; Wolf and Beverungen, 2019). Third, *strategic misfit* refers to IT artifacts that are misaligned with an organization's strategy or government policies (Röder et al., 2014; Wolf and Beverungen, 2019).

Misfits constrain employees in performing their day-to-day work effectively and efficiently. To find a viable solution, employees perform intra- and extrapolation, since humans are capable of inferring the unknown from the known (Ariely and Carmon, 2000). In doing so, employees start testing multiple options for overcoming a misfit (Thelen and Smith, 1996). This behavior can result in the emergence of workarounds. Workarounds have been defined as goal-driven changes in business processes that humans perform to overcome misfits constraining their work (Alter, 2014; Röder et al., 2014). Workarounds differ from related concepts like deviance, non-compliance, and others (see Appendix Tab. 5) in that they are goal-oriented and purposeful actions, are process-centered or IT artifact-centered, and may entail both positive and negative consequences. While the mismatch between performed work and designed processes was first identified in the mid-1980's (Woltjer, 2017), informal work practices—such as workarounds—are more commonplace in organizations than expected (Petrides et al., 2004).

Workarounds have been researched on an individual level, identifying what types of workarounds exist and how and why people perform them. Workarounds enable employees to perform their day-to-day work activities (Goh et al., 2011)

through reflecting on how work practices can be improved (Petrides et al., 2004). Reasons for conducting workarounds include a misalignment of goals (Ignatiadis and Nandhakumar, 2009), insufficient process and system design (Alojaiiri, 2017), situational constraints (such as time and work pressure; Alter 2014), or organizational policies (Ignatiadis and Nandhakumar, 2009). Workarounds can manifest as artifact-centered or process-centered deviance (Weinzierl et al., 2020). On an individual level, workarounds are usually perceived as positive deviations since they enable employees to improve the effectiveness and efficiency of their work, but they can also have both positive and negative consequences on an organizational level (Alojaiiri, 2017; Pinto et al., 2018). On the positive side, they can be a source for improvement, creativity, or mitigate inefficiencies, obstacles, and anomalies (Alter, 2015). On the negative side, they can result in a loss of control, revenue losses, errors, inefficiencies, compliance problems, or inferior process quality (Alter, 2015; Boudreau and Robey, 2005; Hunt and Jackson, 2010). Depending on the nature of their consequences, workarounds can trigger different reactions from co-workers and supervisors, including adoption, ignorance, prevention, and redesign (Beerepoot and van de Weerd, 2018).

Since workarounds are improvisations or creative acts that employees apply to perform their day-to-day work, they are often regarded as temporary fixes (Koopman and Hoffman, 2003), which are not intended to become permanent solutions (Koopman and Hoffman, 2003). However, since workarounds are embedded in a social system, they are influenced by the system's social rules and norms, making them more than a mere improvisation by individual actors in response to a misfit (Malaurent and Karanasios, 2019). In line with structuration theory (Giddens, 1984), we posit that workarounds—like all human actions—can also manifest as organizational structures. Previous research, however, is inconclusive about how this manifestation takes place. On the one hand, workarounds are mostly treated as emergent phenomena and as a black box, viewing them as outcomes rather than as dynamic change processes (Alraddadi et al., 2018). On the other, workarounds have also been called a source of emergent "change when they illuminate a path toward greater efficiency or effectiveness" (Alter, 2014, p. 1049). Recent research proposed that workarounds can affect co-workers' subsequent activities (Wolf and Beverungen, 2019), trigger the re-design of business process and technology (Röder et al., 2015), and be institutionalized in an organization's structure (Alraddadi et al., 2018). However, no theory is available to

date to explain how and why these effects manifest and what conditions must be in place for the manifestation to work.

## 2.2 Theoretical Lenses for Eliciting the Occurrence and Consequences of Workarounds

### **Business Process Management as a Theoretical Lens for Studying Workarounds**

BPM is a fundamental sub-discipline of IS that investigates the structuration of repetitive and predictable processes (van der Aalst, 2013) to achieve a desired outcome in an organizational context. A business process is "a set of logically-related tasks performed to achieve a business outcome" (Davenport and Short, 1990, p. 4), involving "a number of actors and objects [...] that collectively lead to an outcome that is of value to at least one customer" (Dumas et al., 2018, p. 5). Business processes are supposed to represent best practices and, therefore, are assumed to describe the most appropriate way to conduct work activities in organizations (Alter, 2015).

The BPM lifecycle is a framework that comprises six phases—identification, discovery, analysis, redesign, implementation, and monitoring—that any business process iteratively follows in the continuous pursuit of increasing the efficiency and effectiveness of an organization's value creation (Dumas et al., 2018). In the latter phases of the BPM lifecycle, IT artifacts—including constructs, models, methods, and instantiations (March and Smith, 1995)—are designed to prescribe the most effective and efficient way of performing a process. However, IT artifacts—including process models—can never be conceptually complete. A designer can never obtain and address all relevant requirements, since the number of requirements is inherently infinite (Alexander, 1964), constituting a need for continuous and iterative process (re-)design and evaluation (Hevner, 2007). To reduce the need for redesigning processes, organizations educate process participants on how a process ought to be conducted to minimize deviations from the designed process model. Training can be formal—performed by experts—or informal, e.g., observing co-workers performing their day-to-day work to acquire knowledge about how a process ought to be executed (Dunford and Perrigino, 2018).



Dependencies among the activities constituting a process exhibit three coordination patterns: Flow, share, and fit (Malone et al., 1999). Flow describes how the output of one employee's activity becomes the input of another employee's activity. Share refers to multiple actors accessing the same resources when performing an activity, while fit refers to multiple actors producing the same output (Malone et al., 1999). In contrast to mass transaction processes, some types of processes—including highly creative processes—may not exhibit the same level of coordination and structure (Hall and Johnson, 2009) and cannot or should not even be modeled beforehand (Hall and Johnson, 2009; Seidel et al., 2010). The requirements of how to handle a process “[...] can be viewed as a result from the dynamism of the organizational and business environment” (Valença et al., 2013, p. 14). If anticipated at design-time, process variability (Frei et al., 1999) can be addressed by implementing different control flows into process models, to enable process participants to deal with unforeseen circumstances or specific customer needs.

Beyond the variability built into process models, process participants enact work within dynamic, constantly changing, and self-organized, socio-technical systems (Arrow and McGrath, 1995). Consequently, participants aiming to fulfill their day-to-day work often end up improving processes to realize specific business objectives (Becker et al., 2009) by implementing "workarounds [which constitute] knowledge about the information systems but in the context of work needs" (Safadi and Faraj, 2010, p. 4). These workarounds in turn constitute an inherent part of business processes (Röder et al., 2015), because they help process participants to solve misfits that arise in process models (Maurer et al., 2012). While workarounds are often a first-order solution to problems (Röder et al., 2015), the diffusion and consequences of workarounds in organizations can be described as a secondary design process in which "functions and content emerge during interaction, modification, and embodiment of the system in use" (Germonprez et al., 2011, p. 662). Basically, organizations that are aware of workarounds and analyze how process participants work around pre-designed process models can integrate this knowledge into the next iteration of process re-design (Cresswell et al., 2017).

BPM—particularly process mining—provides methods and tools for discovering the actual enactment of activities across all instances of a process, represented as workflow nets that usually become very complex due to the number of deviations present in process instances (van der Aalst, 2011). Conformance checking is aimed at (automatically) detecting deviations of process instances from process models,

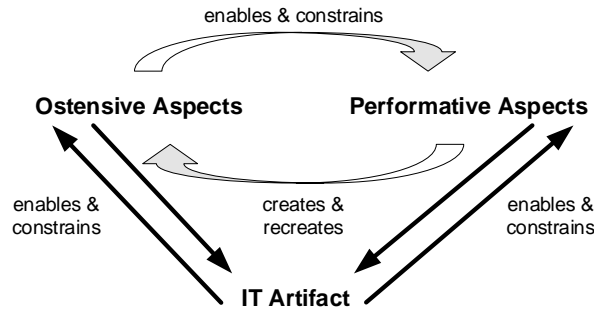
based on analyzing event logs supplied by process-aware information systems (e.g., workflow engines) (van der Aalst, 2013). Interpreting the results of process mining and isolating workarounds might lead organizations to set up a project for redesigning a process and its IT artifacts accordingly.

However, much of the BPM literature still views deviations from predefined process models as undesirable and non-compliant behavior (Hadasch et al., 2016), even if acknowledging that deviations are often required to fulfill practical requirements that were not specified in a process model (Brander et al., 2011). Recent call for actions have claimed that “a broader version of BPM should consider actual work practices and actual performance results and not just process models” (Alter and Recker, 2017, p. 66), acknowledging the fact that workarounds not only exist but also diffuse in organizations where they function as a “stimulus for change and not only capture the reactive part of flexibility” (Valença et al., 2013, p.28). Hence, describing and explaining how and why workarounds occur, diffuse in, and are implemented by organizations seems a logical next step towards further understanding drift and bottom-up innovation of processes.

### **Organizational Routines as a Theoretical Lens for Studying Workarounds**

As a source of flexibility and continuous change, workarounds are also discussed in organizational routines literature (e.g., Beerepoot et al. 2018; Feldman and Pentland 2003). Organizational routines are continuously emerging systems with internal structures and dynamics (Pentland and Feldman, 2005). They consist of ostensive and performative aspects (Latour, 1984), which are closely related to the concepts of structure and agency, as featured in structuration theory (Giddens, 1984). Ostensive aspects refer to abstract, cognitive regularities and expectations that enable participants to guide, account for, and refer to the specific performance of a routine (Becker and Zirpoli, 2008; Feldman and Pentland, 2003). Performative aspects describe actual enactments of a routine by specific people at a specific time and under specific conditions (Becker and Zirpoli, 2008; Feldman and Pentland, 2003). Both aspects are enabled and constrained by technology—including IT artifacts—that exert material agency on each aspect and their interplay (Beverungen, 2014), as visualized in Fig. 1.

When employees enact routines, they can follow the ostensive aspects of a routine by focusing on what they should do (Alter, 2014), but they can also choose to “act otherwise” (Giddens, 1984, p. 14) by implementing a temporary workaround



**Figure 1:** Framework of Organizational Routines (based on Beverungen (2014) and Pentland and Feldman (2008))

that might become persistent (Alter, 2014; Feldman and Pentland, 2003). The workaround can emerge in response to external changes, through reflexive self-monitoring, or in response to facing an obstacle. Employees may perceive affordances of an IT artifact individually (Leonardi, 2011), invoking the performance of a workaround, which can gradually manifest as a new ostensive pattern of the routine if it is performed frequently enough (Alter, 2014; Rerup and Feldman, 2011). Hence, by enacting a workaround in the performative aspects of a routine, employees alter the potential repertoire of activities that creates and recreates the ostensive aspects of the routine (Feldman and Pentland, 2003). However, purposeful acts of modifying or redesigning the material or physical properties of an IT artifact are not considered as part of change in organizational routines (Leonardi, 2011).

Employees may experiment with various options to work around a perceived misfit (Safadi and Faraj, 2010), for example by searching for an expert opinion, a website, or by following a trial-and-error approach (Alojairi, 2017). If employees are experienced with a system or business process, they may discover new ways of performing their day-to-day work more efficiently (Safadi and Faraj, 2010). Workarounds are not always performed by individuals on their own but, being subject to influence by organizational norms, information systems, and the activities of co-workers, they can also be socially constructed and therefore be based on mutual consent (Dunford and Perrigino, 2018). Socially constructed workarounds can be explained by “common stressors”, which multiple employees are exposed to, e.g., job demand or environmental stressors (Dunford and Perrigino, 2018). Moreover, once a workaround becomes established in an employee’s routines, it

can become accepted by co-workers as an agreed work practice (Dunford and Perrigino, 2018).

Employees interpret, appropriate, and use IT artifacts in different ways (Malaurent and Karanasios, 2019). Extant research has remained silent on how workarounds in organizational routines can initiate an IT artifact's redesign to enhance task-technology fit. First results indicate that a regular enactment of workarounds might have the power to transform co-workers' activities (Wolf and Beverungen, 2019), the form and function of IT artifacts (Röder et al., 2015), and organizational structures (Alraddadi et al., 2018; Azad and King, 2012). This way, workarounds may diffuse through communication (Dittrich et al., 2016) and observation (Safadi and Faraj, 2010). Considering organizations as socio-technical systems allows to recognize the recursive relationship between information systems and the routines of social actors (Beerepoot et al., 2018). While organizations try to achieve a fit through a gradual process where the system and the organizational context are "mutually adapted" (Maurer et al., 2012; Woltjer, 2017), workarounds can also have a cascading effect and induce other workarounds (Alraddadi et al., 2018) or misfits (Maurer et al., 2012; Woltjer, 2017). Despite first indications that workarounds can have these consequences, an in-depth examination of workarounds as generative mechanisms for restructuring and redesigning IT artifacts and organizational structures is still missing.

### 3 Research Method

When contemporary and complex social phenomena cannot be clearly separated from their real-world context and researchers have little or no control over them, case studies are a suitable method for researching operational links—guided by *how and why* questions (Yin, 2017). By applying case study research, we seek to explain how and why workarounds are performed by individuals embedded in organizational routines and their impact on co-workers, IT artifacts, and organizational structures. Workarounds are a complex phenomenon and are inextricably linked to the socio-technical context in which they are established (Malaurent and Karanasios, 2019).

We implemented a qualitative research approach that considers the social, technological, and organizational context of individuals conducting their day-to-day work

in organizations (Kaplan and Maxwell, 2005) to elucidate the occurrence, diffusion, and multi-faceted consequences of workarounds. We adopted critical realism as philosophical paradigm to explain the occurrence and diffusion of workarounds through social structures, actions, and contextual conditions within an organizational setting (Wynn and Williams, 2012). To this end, we collect data on employee's experiences in their day-to-day work to understand the events and underlying phenomenon (Wynn and Williams, 2012) of workarounds in business processes and organizational routines. In our multiple case study, we analyzed three cases, as summarized in Tab. 1. We purposefully selected these cases, which are subject to a replication logic to ensure high robustness of our insights (Yin, 2011). In each case we investigated how workarounds in a business process impacted on the performance of co-workers, on organizational structure, and on IT artifacts. The business processes differed in terms of their scope, governance, degree of IT support, maturity, variability, interdependence, degree of creativity, degree of formalization, frequency, and stability (c.f. Tab. 6 in the Appendix). The diversity of the processes and their contextual embedding led us to assume that the impact of workarounds would also differ across cases, but "for anticipatable reasons"—a property of theoretical replication (Yin, 2017, p. 57).

Following the general advice by Yin (2017), we identified and analyzed multiple sources of evidence for each case. Primary sources of evidence included organizational documents, direct observations, and semi-structured interviews. Documents included process models, work descriptions and standard operating procedures, e-mails, spreadsheets, and lists that employees used for performing their day-to-day work. Interviews were conducted with several informants involved in the same business process. This approach was intended to reveal the different perspectives that stakeholders take in a process and to substantiate the significance of the collected data. We reached a point of saturation when we no longer obtained any new information regarding the phenomenon under investigation. In total, we performed 23 semi-structured interviews and numerous informal conversations, each lasting between 30 and 77 minutes. The results of the interviews were audio-recorded and transcribed to extract rich insights from all the notes, audio recordings, and documents. The different types of evidence were carefully triangulated (Yin, 2017) to accurately identify different consequences of workarounds.

The object of investigation in Case 1 is the starter-changer-leaver process performed by the IT division of a large media company. The process had recently been changed

by introducing a new workflow engine designed to digitalize the process and make it more efficient. In Case 2 an auditing process was analyzed, which is performed by one of the *big four* international auditing companies. The process is performed for external clients and also bridges the company's front-stage (consultants working at the client's facilities) and back-stage (shared service center). This process was being established at the time of our investigation and was still in considerable flux. The object of investigation in Case 3 is a process of resource planning and allocation for courses in a public university. This process had remained unchanged for a couple of years. While the process bridges several organizational units in the university, there is no single IT artifact to support it.

For each case we conducted qualitative content analyses on the data retrieved (Mayring, 2004). Content analysis of existing documentation helped us to gain meaningful insights into individuals' workarounds that they established in their organizational routines and finally provided an impetus for change. For this purpose, electronic coding in a team was performed with the support of a computer-assisted qualitative data analysis software, namely MAXQDA.

Following state-of-the-art advice on analyzing qualitative data (Mayring, 2004), we organized data analysis in three basic steps, consisting of data reduction, explication, and structuring. For data reduction, we first paraphrased the statements from the interviews by cutting text components that are not content-bearing. Then we generalized the statements to an appropriate level of abstraction, i.e., extract the sentence kernels and re-testing them to ensure they are representative (Mayring, 2004). Based on theoretical insights about the occurrence and diffusion of workarounds in Section 2, the data were coded by abstraction and categorization (Mayring, 2004).

We performed a within-case analysis before the resulting insights were compared across cases. Analyzing and comparing data of multiple cases on a particular phenomenon minimizes the risk that "[...] findings are not merely the result of idiosyncrasies of the research setting" (Cavaye, 1996, p. 237). A cross-case analysis is a standard procedure to consolidate and generalize insights obtained from different cases, to prepare the findings for a discussion in light of previous research, and to draw fundamental conclusions on the investigated topic (Miles and Huberman, 1994). From the cross-case analysis, we identified recurrent patterns emerging from our data that we summarized in six propositions.

	Case 1: Media, Services, and Education	Case 2: Professional Services Network	Case 3: Public Institution
<b>Industry</b>	Media (Service)	Auditing (Service)	Education (Service)
<b>Size</b>	126,000 employees	276,000 employees	2,500 employees
<b>Type</b>	for-profit	for-profit	not-for-profit
<b>Number of Interviewees</b>	eight	six	nine
<b>Roles of Informants</b>	process owner, HR, corporate IT, property managements, employer branding, corporate audit, data security, education management	senior consultant, shared service center clerks, director, process owner, manager procurement	work group secretaries, room managers, administrative officer, research assistant, students, examination officer
<b>Total Duration</b>	320 minutes	234 minutes	566 minutes
<b>Interview Type</b>	face-to-face, via telephone, and video chat	face-to-face, via telephone, and video chat	face-to-face
<b>Documents</b>	process demonstration, informal conversations, firm presentation, PDF and excel files	process documentation, PDF and excel files, process demonstration	SharePoint lists, excel files, e-mails

**Table 1:** Introduction and Replication of the Three Cases

## 4 Occurrence and Consequences of Workarounds

### 4.1 Theoretical Focus of the Analysis

Prior to analyzing the cases, we developed a coding scheme that is based on existing concepts and constructs in research on BPM and organizational routines (Dubé and Paré, 2003). For this purpose, we carefully studied the literature to identify a preliminary set of constructs (Dubé and Paré, 2003). While BPM focuses on the design and use of IT artifacts for performing organizational tasks, organizational routines focus on exploring how structure and agency constitute and re-constitute each other as a duality. To investigate how and why workarounds occur, diffuse, and implement in organizations by constituting new organizational routines, we integrated both theories, departing from previous research on integrating organizational routines and technology (Feldman and Pentland, 2003), and on incorporating the design of IT artifacts into this interplay (Beverungen, 2014).

The coding scheme includes three analytical dimensions: Workarounds' settings (I), their occurrence (II), and their consequences (III), inspired by Laumer et al. (2017). These dimensions constitute the conceptual frame of our coding table (see Tab. 2), which we used to analyze data from all three cases. Departing from related research, we started by performing an initial coding step to identify workarounds

in one case, along with their properties and diffusion mechanisms. The first phase of our data analysis led us to make small adjustments to the coding schema to increase its conceptual clarity and precision in order to complete rendition of the workarounds (Hartley, 2004). Then, we analyzed the data obtained from the first case with the revised coding scheme, as recommended by Dubé and Paré (2003). In this way, we carefully aligned data and theoretical constructs, which ensures high internal validity (Hartley, 2004). Since no inconsistencies or ambiguities occurred in the second data analysis phase, the coding schema reached saturation, comprising of nine categories that further specify the three dimensions. We applied the final scheme to the complete data set, comprising all three cases.

**Dimension 1: Setting.** We examined the setting in which workarounds occur by analyzing whether employees received formal training, informal training, or no training on how to perform their tasks and how to use IT artifacts to conduct their work activities (1). This allowed us to identify if employees are familiarized with the intended structures and processes in an organization or whether they needed to draw their own subjective conclusions about the structures and processes that were governing their work. Further, we coded the cases regarding the core elements, in terms of organizational routines (i.e., identifying the routine's ostensive and performative aspects) and the business process (i.e., identifying the process's type and instantiations) (2). Since we set out to investigate digitalized processes—that tend to drift (Pentland et al., 2020)—and in which employees used technology to conduct their day-to-day work, we also analyzed which types of IT artifacts the informants used to perform their work. To gain a deeper understanding of the dependencies among tasks, we coded the tasks' type of coordination, comprising the three patterns of flow, share, and fit (3) (Malone et al., 1999).

**Dimension 2: Workaround Occurrence.** In order to understand why workarounds emerge, we conceptualized three types of misfits, drawing from our theoretical framework: Technology misfit, organizational misfit, and strategic misfit (4). A technology misfit refers to a lack of alignment between IT artifacts and the tasks performed by employees. An organizational misfit points to inconsistencies between the ostensive and performative aspects of a routine. A strategic misfit refers to IT artifacts that are not appropriately aligned with the ostensive aspects of a routine. In addition, we analyzed whether a workaround is socially constructed or individually constructed, to explore the constitutive mechanisms that trigger workarounds (5). Regarding the workaround type (6), we distinguished between



Setting (I)			Workaround Occurrence (II)			Consequences (III)																				
Training (1)	Core Elements (2)	Coordination (3)	Misfit (4)	Construction (5)	Workaround Type (6)	Implementation (7)	Diffusion Mechanism (8)	Affected Subject (9)																		
	Routines' Perspective	Processes' Perspective																								
Formal Training	Ostensive Aspect	Process Type	Flow	Technology Misfit	Socially Constructed	Artifact-centered	Bottom-up Process Redesign	Observation	Co-Worker's Activities																	
"Conducted by experts designated by the organization, outside the context of day-to-day work" (Dunford and Perrigino, 2018, p. 17).			"Flow dependencies arise whenever one activity produces a resource that is used by another activity" (Malone et al., 1999, p. 429).			"Workarounds occur because technology that is used does not fit realities and contingencies of day-to-day work" (Alter, 2014, p. 1049).			"Workarounds are a socially constructed, multilevel phenomenon, meaning that they are influenced by others (e.g., group norms and coworkers)" (Dunford and Perrigino, 2018, p. 7).			"Generativity arises in the small, from the bottom up" (Mending et al., 2020, p. 210).			"They are tangible behaviors that can be captured by observation" (Safadi and Faraj, 2010, p. 8).			"Workarounds of an individual employee can affect activities performed by other employees and thereby, change work routines on an organizational level" (Wolf and Beverungen, 2019, p. 1).								
Informal Training	Performative Aspect	Process Instance	Share	Organizational Misfit	Individually Constructed	Process-centered	IT Artifact Redesign	Communication	IT Artifact																	
"Inexperienced or newly hired employees observe managers or co-workers in the context of day-to-day work (mimic behavior)" (Dunford and Perrigino, 2018), p. 101).			"The instances are the specific cases where the process is executed" (Pentland et al., 2011, p. 3).			"Sharing dependencies occur whenever multiple activities all use the same resource" (Malone et al., 1999, p. 21).			"Workarounds emerge either from obstacles to getting work done or from goal misalignment of stakeholders" (Röder et al., 2014, p. 3).			"Researchers have presented computer workarounds as largely individual acts of resistance" (Azad and King, 2012, p. 275).			"Bypass of process parts" (Oumazgin and Soffer, 2016, p. 311).			"When individuals interact with the structure, a different pattern of technology usage is likely to emerge" (Dunford and Perrigino, 2018, p. 22).			"Talk enables routine participants to collectively reflect on the routine and work out new ways of enacting it" (Dittrich et al., 2016, p. 678).			"Workarounds either entail adjusting routines, or using the technology in a way that diverged from the intended use" (van den Hooff and Hafkamp, 2017, p. 13).		
No Training	IT Artifact	Fit	Strategic Misfit	Prevent Workaround					Organizational Structure																	
"Constructs, models, methods, and instantiations are each artifacts" (March and Smith, 1995, p. 260)			"Fit dependencies arise when multiple activities collectively produce a single resource" (Malone et al., 1999, p. 22).			"Management-related causes of workarounds [...] feign compliance to management goals" (Laumer et al., 2017, p. 336).			"Developing countermeasures to prevent a workaround from happening" (Beerpoot and van de Weerd, 2018, p. 3).					"Workarounds may actually be institutionalized (persistent)" (Azad and King, 2012, p. 359).												
"Poorly trained employees who use instantiations are each artifacts" (Dunford and Perrigino, 2018, p. 18).						Ignore Workaround			"Not taking any action regarding the workaround" (Beerpoot and van de Weerd, 2018, p. 3).																	

Table 2: Coding Table

artifact-centered workarounds—directed towards using an alternative IT artifact or using an IT artifact differently than intended by their designers—and process-centered workarounds that employees perform to bypass activities in a business process.

**Dimension 3: Consequences.** We conceptualized three dimensions for elucidating the consequences of workarounds. First, we investigated their implementation (7), distinguishing between bottom-up process re-design, IT artifact re-design, prevention of workarounds, or ignorance of workarounds if no countermeasures are enacted. Next, we analyzed workarounds' diffusion mechanisms (8). In this regard, we examined if a workaround spreads via communication or observation. Finally, in line with our framework, we identified three potentially affected organizational elements (9), distinguishing between co-worker's activities, IT artifacts, and organizational structure.

## 4.2 Case Description and Within-Case Analysis

We identified nine workarounds that strongly impacted the business processes and organizational routines in the analyzed cases (see Tab. 3). For each workaround, we performed an in-depth analysis to provide a *thick description* (Yin, 2017) of the setting, the workarounds' occurrence, and their consequences for co-workers' activities, IT artifacts, and organizations, outlining the peculiarities of each of the three cases.

**Case 1:** The first case represents a multi-national media, services, and education company. The analyzed process was implemented by the IT department to support Human Resources (HR) with performing their daily business, supplying them with a workflow and corresponding system—referred to as *Starter, Changer, Leaver (SCL)*. The process aims to support HR in coordinating onboarding activities (*starter*), performing HR-related changes (*changer*), and dealing with offboarding for employees leaving the company (*leaver*). The process is performed ad-hoc and on an irregular basis, triggered by employees starting, changing, or quitting work in that organization. Multiple business units are involved in performing the process, including HR, information technology (IT), property management, and the employee's respective department. Until Spring 2019, the organization used PDF checklists, excel lists, e-mails, and phone calls to coordinate the corresponding

tasks. In the course of a large restructuring project—for which we had access to the project documentation—the PDF checklists were replaced by a proprietary software that was implemented as a workflow engine to enact a prescribed workflow for starter, changer, and leaver activities. We observed that for any role involved in the process, the system provides different user rights and graphical user interface (GUI)s, i.e., an employee can only see the information and tasks that are relevant to her own roles and routines. After implementing the SCL system in the organization, all employees received an official introductory presentation by IV1—the process owner who was responsible for implementing the SCL system. The HR department instantiates the process by looking up a staff ID number in the enterprise resource planning (ERP) system and subsequently enters this ID number into the SCL system. This activity triggers a workflow that can take different paths, depending on whether the respective employee will join, change, or leave the organization. In any subsequent activity, the employee responsible for the task is informed via an automated e-mail notification, informing her about the required activities. After completing the activities, an employee marks the respective activity it as 'done'. Then, the next employee receives a notification about her task, and so forth, until all activities in the process have been completed (see a process model in the Appendix Fig. 4: Process Model of Starter-Changer-Leaver). Along this SCL process, we identified three substantial workarounds.

The first workaround was introduced by HR to overcome a *technology misfit* regarding a missing data field to specify the type of change request (cf. Tab. 7 in the Appendix). In particular, employees in HR start a new instantiation of the SCL process to update the personnel data of an employee, e.g., a name change caused by marriage or an address change caused by a relocation. However, the implemented workflow system was unable to distinguish between different types of change request. Thus, all the activities of the change workflow had to be executed, even though some of them were redundant in some cases, e.g., technical equipment was not required to be checked when performing a name change workflow. In response to this inefficiency, IV2 from the HR department and her co-workers agreed to perform an *artifact-centered workaround* and started using an existing free text field to add a comment on the particular reason for initiating a change process.

"I have to enter it [the type of change request] manually in a comment field but the colleagues still cannot see immediately which change actually is requested." (IV2)

The second workaround was performed by all employees in the central IT department to overcome an *organizational misfit* (cf. Tab. 8 in the Appendix). It became apparent that the business units involved interpreted the roles of changers and leavers quite differently. The HR department declared employees that left a subsidiary to join another entity of the organization as a leaver (from a legal perspective). As the central IT department received the notification that an employee is leaving the organization, they permanently deleted their access permission and corresponding users in their system. Often, they realized much later that the employee had not actually left the organization, but only changed the legal corporate unit. In that instance, the central IT department needed to create a new user ID for that employee, although changing the access permission would have sufficed. To overcome this organizational misfit, IV3 came up with the idea to implement an *artifact-centered workaround* to only deactivate users instead of deleting them.

"A leaver could be someone who actually leaves the company or someone who changes the legal entity of our organization. We do have colleagues who moved between the business units within the company, so that the mailbox can often be adapted and not deleted. Even though we get a leaver notification, my colleagues and I already know that "we have to be careful not to delete everything immediately", to allow for re-activating the account later." (IV 3)

The third workaround in this case occurred on a regular basis due to an *organizational misfit* (cf. Tab. 9 in the Appendix). While the SCL system was designed to administrate full-time employees, part-time staff—including interns and consultants—were not covered by the system. Thus, to be able to create logins for part-time employees, the HR department decided to initialize the process without using the SCL system at all. Correspondingly, the organization did not create a user ID for those employees. A user ID, however, was mandatory for instantiating a process in the SCL system. Thus, IV3 and his colleagues decided to initialize the process by using a PDF form (an artifact that was used before the SCL system was implemented), comprising a range of questions about the work-space equipment, authorization, and technological equipment (e.g., mobile phone, tablets, or laptop

computers). This *artifact-centered workaround* was socially constructed, constituting a viable way of handling starters outside the SCL system on which they had "decided at some point in the course of time" (IV3).

"Sometimes, we simply use the former questionnaire again or request the information via e-mail." (IV3)

**Case 2:** The second case study was conducted at a professional services network organization that has established multiple subsidiaries across the globe. We analyzed a support process for auditing, i.e., conducting a financial examination regarding the correctness and completeness of invoices, revenue data, and financial statements for Business-to-Business (B2B) customers. The organization compares revenue data with transaction data by reviewing the corresponding documents (e.g., purchase orders, delivery notes, invoices, etc.). This process is called *cut-off testing* and was outsourced and off-shored from the headquarter to shared service centers in Germany and Poland a few years ago, in order to save costs. While the auditing consultants are in direct contact with the company's customers, collecting the necessary documents (either digitally or as paper-based files that must first be digitized) and doing the actual audit, the employees in the shared service center were responsible for performing the cut-off testing process—the necessary pre-processing of data that was performed in advance of the actual audit. Cut-off testing was conducted manually on a daily basis, but was often delayed or required consultants to perform additional document checks. In 2019, the organization decided to implement a proprietary software application that is based on machine-learning algorithms to support semi-automated document checking of PDF files. We refer to this well-documented application as *Software A*—the organization provided handbooks, manuals, and best-practice examples that we could access. The goal of implementing Software A was to support the shared service center in cut-off testing, to realize efficiency and quality gains and, thus, improve the accuracy and velocity of the cut-off testing process (see a detailed process model in the Appendix Fig. 5: Process Model Cut-Off Testing). After finalizing cut-off testing, the employees in the shared service center generated a report that was imported into a platform—called *Software B* here—from which the consultants retrieved the data they needed for performing the auditing process.

The first workaround was implemented by the shared service center right at the start of the cut-off testing process to overcome an *organizational misfit* (cf. Tab. 10

in the Appendix). It became apparent that the shared service center often received other document types than the PDF files they expected, e.g., word documents, screenshots, or handwritten notes that could not be processed by Software A. Consequently, any other incoming type of documents needed to be converted into a PDF format. In addition, an upload of revenue data required a tabular structure, as is implemented in SAP ERP. Thus, any revenue data that were exported from other ERP systems needed to be transformed into the obligatory input format. Consequently, IV 2 from the shared service center reported on how and why he performed a *process-centered workaround* by doing a manual consistency check, i.e., checking the format of the documents and converting them before proceeding with their upload into Software A for cut-off testing.

"What they actually do is to check the document delivery, control for Word documents, and then, transform formats that the tool cannot process. That's actually a workaround." (IV2)

The second workaround was caused by a *technology misfit*, since Software A was unable to detect distinct font types (like handwritten notes) or foreign alphabets (like Cyrillic letters) (cf. Tab. 11 in the Appendix). Hence, the semi-automatic document checking and matching process of the uploaded documents (representing transaction data) with the revenue data did not work properly, solely displaying the matching rate (ranging from 0%–100%). Hence, the employees in the shared service center implemented an *artifact-centered workaround* by checking all documents manually and identifying those that remained unmatched.

"The engagement teams need to add some additional information. If something is not extracted by Software A, we still need to go back to the original documentation, look up this information, and enter it manually." (IV1)

Since Software A was based on machine learning algorithms and was still trained in day-to-day work, the matching rate stagnated at 80%–90%. As employees in the shared service center detected incorrectly matched documents and other errors, they had no option but to correct these data directly in Software A, which indicates a *strategic misfit*. In order to provide correct results for the consultants, the employees of the shared service center manipulated the Excel file that was generated at the end of the cut-off-testing process, claimed IV2. This way, they

performed an *artifact-centered workaround* by typing in missing data, inserting columns to display additional data, and adding comments about incidents in the cut-off-testing process (cf. Tab. 12 in the Appendix).

"Afterwards, you'll get a changeable Excel report. If software A has extracted and matched 80 %, which would be great, you'll have to do the remaining 20 % manually by typing it in the report." (IV3)

**Case 3:** The third case study was performed at a public institution for education, in which employees had to conduct activities for the purpose of planning teaching schedules twice a year. Since the different (*professorial chairs*)—representing independent work groups within a department of a faculty—implemented decentralized organizational structures, managed independent budgets, and did not directly interrelate with each other, the course scheduling process was, in effect, an inter-organizational process. This conceptualization is in line with others, who declare processes as inter-organizational if "[...] each department has its own organizational structure" (Debois et al., 2018, p. 401). The process was established gradually over a period of six years, after the CEO's decision to introduce Microsoft SharePoint as a collaboration tool. Twice a year, SharePoint was primarily used by the faculty's central administrative office to collect data about upcoming taught courses, which the professorial chairs offered. The process was initiated by the institution's central administrative office announcing deadlines for the planning process. These deadlines were then scheduled by the business faculty's office and forwarded to the professorial chairs via e-mail, informing them about the deadlines they needed to comply with when entering their course information in SharePoint. After the deadline had expired, the administrative office copied the data from SharePoint into an Excel file and sent it to the institution's central room management office. Central room management assigned adequate rooms for the classes, using a paper-based timetable and a physical planning board. Once the rooms had been assigned, room management entered the room numbers for the courses in the Excel file and sent it back to the faculty's administrative office. The overall process required continuous coordination activities to be performed among the stakeholders involved and was subject to substantial variations due to the independence of each business unit, i.e., the professorial chairs (see a detailed process model in Appendix Fig. 6: Process Model of Module Planning). Based on triangulating the data from this case, we identified three workarounds.

The first workaround was implemented by the professorial chairs' assistants to overcome a *technology misfit* (cf. Tab. 13 in the Appendix). This misfit was rooted in the perception that SharePoint did not provide sufficiently detailed documentation of all course-related information for the professorial chairs. Hence, IV1, IV2, and IV3, all of whom were responsible for planning the courses for their respective professorial chairs, individually set up their own Excel files in which they entered all relevant course data (*IT artifact-centered workaround*).

"For this purpose, I have created an excel list. This list includes all semesters and I can copy information from the previous semesters for the new one. But I can also add other information like preferred dates for specific modules." (IV2)

A second workaround was implemented by the central room management office to overcome a *strategic misfit* (cf. Tab. 14 in the Appendix). After the business faculty's administrative office collected all course information from the professorial chairs in SharePoint, they forwarded a list with the course planning data to central room management via e-mail. As the room and course booking tool—called Software C—did allow double-booking while not providing a lucid time table, IV4 from room management opted for using a manual planning board in her office, implementing an *artifact-centered workaround*. She perceived a manual planning process to be the most efficient and effective way to conduct room allocation.

"At the moment we're doing this manually. It's a lot of work to do, but you get a good overview. [...] We print out all the lists and then we work through them." (IV4)

Due to the professorial chairs assistants' lack of knowledge, technological skills, or misperceptions of the activities in the course scheduling process, the third workaround was implemented to overcome an *organizational misfit* (cf. Tab. 15 in the Appendix). To remedy this misfit, some assistants implemented a process-centered workaround by simply calling or e-mailing central room management to ask for specific rooms and to influence room allocations in their favor, as IV 3 revealed.

"I write an e-mail anyway because it supports me with following up on the process. Further, I get a reading confirmation that lets me know that they have received the message." (IV3)



	Case 1: Media, Services, and Education	Case 2: Professional Services Network	Case 3: Public Institution
Workaround 1	Since there is no appropriate setting, employees use the commentary field to indicate the change that is actually requested.	Since data cannot be extracted from all document types, employees perform a manual consistency check in advance and convert documents to PDF format.	As SharePoint is perceived as not user-friendly for course scheduling, employees create their own overview in Excel.
Workaround 2	Due to the ill-defined definition of a "changer", users are not permanently deleted but de-activated to allow a later re-activation.	Not all languages can be detected by the software, requiring a manual document matching process.	Since the room planning tool is convoluted and allows double-booking of rooms, employees use a physical room management board.
Workaround 3	Since not all employees are captured in the SCL system, employees use the former PDF list as fall-back option.	Erroneous reports cannot be modified in the software, requiring a subsequent report manipulation in Excel.	Due to system inconsistencies and lacking skills of professorial chairs assistants, a request for room change is sometimes performed via e-mail.

**Table 3:** Overview on the Identified Workarounds

### 4.3 Cross-Case Analysis

After outlining and analyzing the individual cases in detail, we performed a cross-case analysis. Combining both methods solves the paradox of recognizing the uniqueness of each individual case and gaining more general insights across the cases (Miles and Huberman, 1994). In this regard, cross-case analysis allows answering the question: "Do these findings make sense beyond this specific case?" (Miles and Huberman, 1994, p. 173).

Our cross-case analysis followed the guidelines prescribed by Miles and Huberman (1994). First, we performed an inspection of the cases, partitioning the data into smaller categories. Then, we clustered the data to identify broader categories. We applied diverse tactics to identify insights rooted in our case data, including drawing comparisons, noting patterns, and noting relationships between constructs (Miles and Huberman, 1994). By cross-comparing data from the cases, we identified commonalities and differences regarding their organizational setting, workaround occurrence, and consequences, which we aggregated in a *conceptually-ordered matrix* (Miles and Huberman, 1994) (cf. Tab. 4).

		Case 1	Case 2	Case 3	Prop.
Setting(I)					
Training	Formal Training	official introduction in a kick-off meeting	handbook and introductory video	—	P1
	Informal Training	—	peer-mentoring	unofficial introduction by peers	P1
	No Training	—	—	SharePoint announcement, trial and error	P1
Core Elements	Ostensive Aspects	system as workflow for conducting HR-related processes	automated data extraction and generation of a report	schedule guides course planning and room allocation processes	P2
	Performative Aspects	double-check data, request missing information outside the system	multiple viable options for creating a auditing report	double-check course information and room schedules	P2
	Process Type	HR enters user ID to trigger standardized process	upload documents and xls to software A for matching documents via multi-upload function	inter-organizational course planning activities	P2
	Process Instance	unofficial agreements between employees, onboarding of interns and external partners outside the SCL system	several options for requesting documents, errors are marked in a list to the train platform	only business faculty uses SharePoint, other departments act autonomous, e.g. with a physical planning board	P2
	IT Artifact	role-specific view in SCL system, user ID is generated in SAP	SAP provides a structured XLS that is uploaded in software A to match documents	use document library of SharePoint, restricted access to room management in Software C after deadline has passed	P2
Coordination	Flow	sequential processes structured by business units, sub-processes depend on preceding sub-process	document flow, forward documents for final check by supervisors	—	P3
	Share	—	—	mutually exchange information, coordination loops between multiple professorial chairs	P3
	Fit	—	—	—	P3
Workaround Occurrence (II)					
Misfit	Technology Misfit	missing entry field	missing functionality of detecting foreign letters	no user-friendly design	P1
	Organizational Misfit	ill-defined type of change, definition of events incomplete	definition of allowed document types incomplete	skill-related restrictions	P1
	Strategic Misfit	—	no customization allowed	automatic plausibility checks are missing	P1
Construction	Socially Constructed	initiate the SCL process	to make system work, common practice across subsidiaries	—	P2
	Individually Constructed	improvisation, faster and easier	—	faster work flow, hedge against uncertainties	P2
Workaround Type	Artifact Centered	deviating system entry, use old IT artifact as alternative	add additional information in system, manual editing in system	create an XLS file with additional information, avoid system by working offline	P2
	Process Centered	unintended use of commentary field	remove unnecessary data	create own follow-up process	P2
Consequences (III)					
Implementation	Bottom-Up	—	remedy insufficient process	—	P6
	Process Redesign	—	specifications	—	P6
	IT Artifact Redesign	(re-)design roles in the system, introduce system standards	add missing functionalities to system	intention to implement new system	P6
	Prevent Workaround	—	—	request for corrective action	P6
Diffusion Mechanism	Ignore Workaround	sensing and evaluating	sensing and evaluating	—	P6
	Observation	traceability through IT artifact	commentaries in report raise attention	—	P3
	Communication	communicate with fellows, mutual agreement	cross-site communication, diffusion via e-mail	office grapevine, direct interaction, e-mail requests for change	P3
Affected Subject	Co-Workers' Activities	reactivation of account, send e-mail as fallback option	force others to work around, financial check by auditor, coordination effort	double /triple work, request change	P3
	IT Artifact	adaption of existing features	—	—	P4
	Organizational Structure	—	—	documenting an unofficial course hierarchy	P5

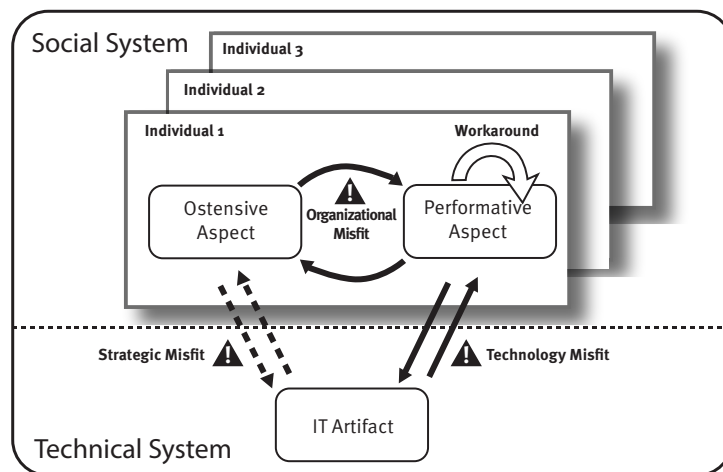
Table 4: Cross-Case Analysis

Equipped with our framework and coding scheme as a theoretical lens, we derived six propositions, each summarizing a set of inferences about the occurrence, diffusion, and consequences of workarounds. Subsequently, we report how and why workarounds resulted from misfits perceived on an individual level (proposition 1–2; visualized in Fig. 2), before we discuss emergent trajectories of workarounds' diffusion through the organizations (proposition 3–6; visualized in Fig. 3).

**Proposition 1: Three types of misfits can cause workarounds in digital processes, subject to their perception and assessment on an individual level.** We identify three basic types of misfits: technology misfits, organizational misfits, and strategic misfits. Each type of misfit can lead to employees implementing a workaround. From our cases, we found that two conditions must be fulfilled for a workaround to manifest. First, the misfit must be perceived by an employee. Second, the perceived misfit must profoundly constrain the effectiveness or efficiency of their day-to-day work. When both conditions were met in our cases, employees searched for viable solutions that helped them overcome the identified misfit. We observed that misfits were perceived on an individual level across all cases and the manifestation of workarounds was inherently unpredictable on an organizational level. Furthermore, our data exposed that employees stopped questioning their day-to-day work activities when their organizational routines became too rigid. Rigid routines biased their perception of a misfit as well as their subsequent judgment of the necessity to implement a workaround. This finding is in line with related research stating that rigid organizational routines can lower the frequency with which employees change their routines through the implementation of workarounds (Yi and Becker, 2016).

**Proposition 2: Misfits are latent and manifest as constraints of employees' performative routines.** Our results indicate that all three types of misfits remain latent if they do not substantially impede employees' performances of their day-to-day work. Employees' perceptions of a substantial misfit led them to implement a workaround as part of the performative aspect of their organizational routine. The performative aspects of a routine reflect human agency, referring to their ability to *do otherwise* (Giddens, 1984), i.e., to deviate from standard operating procedures, if necessary. Neither the ostensive aspects of a routine nor IT artifacts have this type of human agency, and thus they cannot be the locus at which employees implement (unauthorized) new work practices (e.g., workarounds). While organizational/technology misfits occurred due to ostensive routines/IT artifacts that

were misaligned with the performative aspects of routines, strategic misfits were caused by misaligned IT artifacts and ostensive aspects of a routine. Thus, strategic misfits could not influence employees' performances directly. Nevertheless, since an employee's organizational routines comprise both performative *and* ostensive aspects, she can perceive and interpret strategic misfits as well due to their direct relationship with the ostensive aspects of routines. Employees can respond to a strategic misfit merely by changing their work practices (i.e., the performative aspects of a routine), while they are unable to change the ostensive aspects of a routine or IT artifacts directly. While resolving a strategic misfit is, thus, out of the reach of individual employees, they might unfaithfully appropriate IT artifacts without permission, design their own IT artifacts, or perform actions that resolve the more immediate organizational or technology misfit. All of these strategies are contained in our data set, enabling us to explain how and why each strategy works.

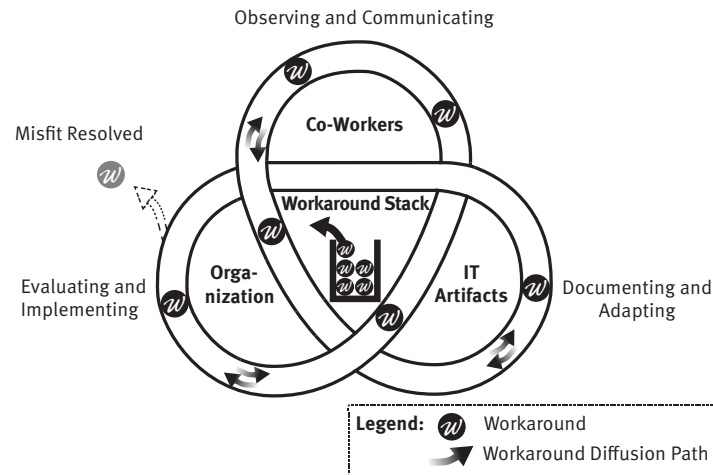


**Figure 2:** Occurrence of Workarounds in a Socio-Technical System

**Proposition 3: Workarounds can spread among co-workers through communication and observation.** We found that depending on the type of coordination and on whether the process is linear (Cases 1 and 2) or involves a network of actors working together (Case 3), workarounds spread differently across routines performed by single or multiple actors. As proposed in Adaptive Structuration Theory (AST), communication—verbal or non-verbal—and interaction are regarded as mechanisms for instantiating structures and, thus, can trigger behavioral change (DeSanctis and Poole, 1994). This claim is consistent with our cases. If an

actor noticed how a co-worker resolved a misfit by performing a process differently or by appropriating an IT artifact unfaithfully to achieve a goal more efficiently, he adopted this workaround for his routines. This behavioral pattern occurred on an individual level—i.e., one person copied another employee's workaround—or even on a group level—i.e., multiple persons copied another person's workaround. To diffuse through an organization in this way, workarounds had to spread either through communication with co-workers, or being observed by them. Communication was enacted via official channels (e.g., e-mail, memos) or unofficial channels (e.g., informal conversations at work). Observation refers to a co-worker noticing discrepancies between the expected input and output of her performance a specific routine compared to those performed by others. Often, employees realized then that the deviation was caused by co-workers implementing a workaround. As soon as the number of actors performing a workaround reaches a critical mass, others accept the workaround as a source of innovation and integrate it into their performative routines as well (Fichman, 1992).

Furthermore, we witnessed that workarounds spread in rather linear processes that followed predefined workflows supported by IT artifacts, as demonstrated in Case 1. Thereby, the action of a predecessor primed a (re-)action of a successor and/or the IT artifact. This effect is also in line with AST, as the interactions between actors and technology are subject to a *dialectic of control*, in which both are mutually shaped (Giddens, 1984). In contrast, Case 3 exhibits a situation where workarounds spread less frequently if actors exchange information casually, without using fixed workflows and regulations as means of their coordination. In Case 3, actors were neither aware of all other process stakeholders, nor did they know all the activities that contributed to the course scheduling planning process. Only actors who were in direct contact with a person who worked around a system or process were able to recognize a workaround. As every stakeholder used their own IT artifact (i.e., the chair administration used Excel files, the administrative office used SharePoint, and room management used a physical planning board), workarounds were enacted but did not diffuse due to the organizational structure inhibiting the two mechanisms which allow a workaround to diffuse: communication and observation. Instead, a person suspecting that a workaround was performed by a predecessor either rejected it or corrected the input for her own routine, since every group of actors was extracting only the data relevant to them, using their idiosyncratic IT artifacts.



**Figure 3:** The *Gordian Knot* of Workaround Diffusion in Organizations

**Proposition 4: Workarounds are a means for re-balancing organizational routines and IT artifacts after detecting a misfit.** Business processes and IT artifacts are supposed to be aligned, constituting a punctuated equilibrium (Gregory et al., 2018). However, in none of our cases was this alignment achieved fully. Our data illustrate how and why employees perform workarounds to remedy misfits that constrain their day-to-day work. On an organizational level, workarounds served to re-balance the triangular relationships between IT artifacts, organizational structures, and performances. If a workaround was performed frequently enough, new routines occurred on an ostensive level, combining elements of the old routines with innovative elements that stem from workarounds. Also, workarounds impacted on the form and function of IT artifacts, leaving traces that co-workers could observe easily and frequently as consequences of a workaround. As advocated in punctuated equilibrium theory (Eldredge and Gould, 1972), organizations are based on a deep structure comprising multiple elements and activity patterns, which keep a social system stable (Gersick, 1991). However, this deep structure can be disrupted, resulting in a state of imbalance (Gersick, 1991). For example, employees can perceive a misfit while performing tasks. Beyond that, however, some workarounds can also be adopted as official work practices, if they are seen as capable of enacting a routine, e.g., if information and communication technology (ICT) that has been implemented did not provide a function required to perform a task. To remedy this imbalance, the system needs to break up existing structures and shift back to a state of balance through traversing a reorientation cycle (Gersick, 1991). Our results provide evidence of how and why the re-balancing

of ostensive routines, performative routines, and IT artifacts takes places on a micro-level, as a consequence of a workaround having been enacted.

**Proposition 5: Workarounds can become official work practices or remain temporary fixes, subject to established governance mechanisms.** Data from our cases show clearly that workarounds are performed on an individual level to remedy misfits that hinder employees in their immediate by a superior (e.g., a line manager or process owner). In Cases 1 and 2, the workarounds were evaluated with a type of cost-benefit analysis before they were officially adopted as a new work practice on an organizational level. It is reasonable to assume, however, that workarounds can also be evaluated negatively if identified as inefficient, as negative deviance, or even as a violation of law. Either way, the organization must have appropriate governance mechanisms in place to identify and assess a workaround, and to decide upon its adoption or rejection. Comparing the results obtained from Cases 1 and 2—inter-organizational scenarios with coordination type flow—with Case 3—an intra-organizational scenario based on share as a coordination type—suggests that the process type can strongly impact on the ultimate decision of implementing a workaround. In Case 3, no governance mechanism was in place to actively manage such a process, thus, workaround 1 was never implemented on an organizational level, even after it had diffused among the participants and impacted on the IT artifact. An important prerequisite for implementing a workaround is the promotion of a culture of trust and innovation among employees. Some employees (like IV 6 in Case 1) did not dare to reveal their workaround to their superiors, suspecting that their workaround would be viewed as a negative deviance from standard operating procedures. Workarounds that remained unnoticed or were unfavorably evaluated by managers remained temporary and unofficial fixes that did not result in innovation on an organizational level.

**Proposition 6: Workarounds can accumulate, creating an urgency to trigger innovations of processes and IT artifacts that resolve their underlying misfits.** Our cases reveal that workarounds pass through a *gordian knot* until they are resolved. Some workarounds induce organizations to initiate top-down redesign projects, subject to two mechanisms. First, workaround 2 in Case 1 showcases that the number of workarounds that emerged from one single misfit exceeded a certain threshold, triggering top-down driven and innovation-oriented initiatives. We refer to this phenomenon as a *workaround stack* that can overflow, triggering

subsequent actions. The threshold governing this overflow, however, was neither predefined nor standardized, but based on the intuition that eliminating a specific misfit was more effective than waiting for several workarounds to become official work practices through the diffusion path. Second, workaround 3 in Case 2 illustrates that redesign initiatives were also started for single workarounds that were critical on an organizational level. Comparing both observations, we conclude that if a workaround by itself or in combination with others is perceived as constituting a substantial threat to an organization and the underlying misfit cannot be ignored, organizations strive to resolve the misfit by restructuring, redesigning, and innovating IT artifacts, processes, and organizational routines. In Cases 1 and 2, governance structures were employed to manage organizational change projects, while in Case 3 such structures were absent and no innovation initiatives were recorded. We conclude that effective governance structures must be in place before organizational structures can be innovated with workarounds.

## 5 Discussion

Our multiple case study provides much-needed empirical insights into the organizational settings, the occurrence, and the consequences that workarounds exert beyond their individual initiators, impacting co-workers, IT artifacts, and organizational structures. Building on critical realism, we infer from employees' observable experiences in their day-to-day work to workarounds as an underlying phenomenon (Wynn and Williams, 2012). Our empirical findings explain for the first time how and why workarounds occur and diffuse through an organization as a *socio-technical system*. Previous research has identified antecedents and types of workarounds, but has remained silent on the consequences that workarounds can have beyond their individual initiators. While *structuration theory* (Giddens, 1984) has long outlined that social structures are established and re-established only through human actions, workarounds' consequences have been studied neither with respect to their effects on social structures nor on the design of IT artifacts. From the findings of our multiple case study, we infer that workarounds can leave their mark on co-workers, on organizational structures, and on IT artifacts, based on the two basic mechanisms of *communication* and *observation*. Both mechanisms have long been acknowledged as important concepts behind the formation and



evolution of social systems (e.g., Luhmann 1995), but they have not been associated with workarounds before. Our results provide much-needed empirical insights into the nature and consequences of workarounds that can act as a starting point for organizational transformation and/or the re-design of IT artifacts. We posit that this contribution substantially enhances our understanding of workarounds, complementing work on the potential effects of workarounds on other employees' work (e.g., Beerepoot and van de Weerd 2018, Cresswell et al. 2017, and Wolf and Beverungen 2019) or on the wider organization (e.g., Ejnefjäll and Ågerfalk 2019, Parks et al. 2017, and Malaurent and Karanasios 2019).

Apart from exploring the consequences of workarounds, our research also bears substantially new insights for explaining how and why workarounds occur, identifying *three types of misfits* that might constrain the day-to-day work to be performed by employees: Technology misfits, organizational misfits, and strategic misfits. We argue that any perceived obstacle in work activities and existing conceptualizations featured in the current knowledge base can be mapped to any one of these three misfits, such as ERP implementation misfits (van Beijsterveld and van Groenendaal, 2016), anomalies in business processes (Nolle et al., 2018), missing knowledge (Alter, 2014), material constraints (Azad and King, 2012), conflicting organizational pressures (Ejnefjäll and Ågerfalk, 2019), and task complexity (Danner-Schröder and Ostermann, 2020). We systematize all three misfits conceptually, based on extending an established framework for organizational routines (Beverungen, 2014; Pentland and Feldman, 2008). Strategic misfits refer to misaligned organizational structures and IT artifacts, organizational misfits point to inconsistencies in routines' ostensive and performative aspects, and technology misfits to inconsistencies in performative routines and IT artifacts. Connecting misfits with literature on organizational routines, we provide new theoretical angles and increase the conceptual clarity of misfits as antecedent of workarounds. We explain why misfits remain latent until being perceived by individual workers as substantially constraining their work effectiveness or efficiency. In this regard, we extend previous research on categorizing misfits (Soh et al., 2000; Strong and Volkoff, 2010) that go beyond specific contexts, e.g., medical work practices (van den Hooff and Hafkamp, 2017) or ERP systems (van Beijsterveld and van Groenendaal, 2016). Furthermore, while others have conceptualized misfits as one of many possible causes of workarounds (e.g., Alter 2014; Ejnefjäll and Ågerfalk 2019), we argue that any workaround performed in an organization is caused by

one of the three types of misfits we conceptualized. Hence, our empirical results point at a much more immediate connection between misfits and workarounds that is well-rooted in the authoritative literature on organizational routines, providing plentiful opportunities for further research on workarounds and routines.

Depending on a subjective assessment of a misfit and its context, employees might then decide to perform a workaround or related actions (see Tab. 5 in the Appendix), attempting to compensate for the adverse effects that a manifesting misfit exerts on their day-to-day work. With regard to the magnitude of misfits, extant research often described misfits' impact on a scale, ranging from minor issues to critical deficiencies (Maurer et al., 2012). However, not all misfits that are perceived by an individual lead to the performance of a workaround (van Beijsterveld and van Groenendaal, 2016). We discovered that a perceived misfit's ramification is biased by an employee's subjective impression, individual characteristics (e.g., attitude towards change), and capabilities (e.g., proper training). The dependence on an employee's traits fits with the current knowledge base, distinguishing perceived misfits (caused by an individual's characteristics and capabilities) from actual misfits (universally valid) (Goodhue and Gattiker, 2005). Additionally, we posit that critical misfits can cause particularly high organizational costs—causing many workarounds or business—threatening workarounds as remedies—that consequently attract management attention and induce countermeasures. Thus, substantial misfits often lead to establishing profound organizational initiatives for resolving the underlying misfits. Since these initiatives require time, workarounds are also needed as temporary fixes until their underlying misfits have been solved.

Another key contribution refers to a meso-perspective on workarounds that outlines the *Gordian Knot of workaround diffusion* as generative mechanisms in organizations. For years, the BPM community has vividly discussed how and why processes tend to drift over time (e.g., Ciborra 2001; Maaradji et al. 2015; Pentland et al. 2020). However, *drift* (Ciborra, 2001) is still considered as a black box, obscuring its inner workings. While conceptual models like the BPM lifecycle (Dumas et al., 2018) already consider endogenous change processes, they do not explicitly refer to changes that occur through the actions performed by process participants, i.e., through employees establishing workarounds. Instead, the BPM lifecycle treats workarounds phenomenologically as parts of all data traces to be identified with process mining before a process is re-conceptualized in an attempt of purpose-

ful redesign. Our research is the first to provide conceptual clarity and scientific accessibility to the inner workings of drift in business processes. We posit that workarounds—especially in digitized processes (Pentland et al., 2020)—can lead to drift over time, if they remain hidden in the performative aspects of routines that are carried out by process participants, while managers take no corrective action. We make the complex phenomenon of drift accessible by illuminating how drift in an individual's routines impacts socio-technical systems in three distinct spheres, i.e., co-workers' activities, IT artifacts, and organizational structures. In this way, we explain how and why workarounds—as actions that can lead to drift—impact on individuals' routines, but also induce *organizational structuration processes* on a broader scope. To suppress drift and maintain processes stable, managers can take counteractive measures—i.e., they can prevent communication and observation—but this would deny workarounds' potential to improve business processes through bottom-up innovation processes on a micro-level.

We discovered that workarounds can remedy misfits quickly and efficiently, providing resilience to business processes. If they are perceived as viable solutions for misfits, workarounds may spread unofficially among co-workers through the two mechanisms of *communication and observation*. Our data suggest that workarounds can constitute an essential source for maintaining an organization's business value as they constitute generative mechanisms for bottom-up driven change processes. Hence, workarounds can help to bridge the latency period between detecting and correcting a misfit, keeping organizational operations running. We found that organizations need to create certain conditions to enable change by encouraging managers to be aware, sensitive, and willing to adjust processes while establishing an appropriate governance structure. Thereby, we consider workarounds as effortful accomplishments—as framed by D'Adderio and Pollock (2020)—since they are created and re-created by humans as they unfold through action (Sele and Grand, 2016).

We detected that workarounds may act as an innovation mechanism alongside official top-down restructuring processes. Thereby, we discovered that innovation processes are open-ended, i.e., constituting an *endogenous change* process instead of an aspired outcome. In order to leverage the full innovation potential of workarounds, dual-sided change initiatives are necessary. As posited by Ciborra and Lanzara (1994, p. 63), "designing in action" comprises not only incremental changes in organizational routines but also radically new patterns of behavior. On

the one hand, workarounds may act as a temporary fix, diffusing in an organization bottom-up and enabling incremental innovations such as improved system functionalities or more efficient business processes. On the other hand, the accumulation of workarounds can trigger a comprehensive transformation project in order to establish new organizational structures and work processes.

Our cross-case analysis revealed that top-down redesign projects are either initiated if the number of workarounds that emerged from one single misfit passes a threshold or if the impact of a workaround or the underlying misfit on the organization is substantially high, e.g., posing a legal threat. With these initiatives, misfits that cause the workaround(s) are eliminated. However, top-down driven redesign projects can also cause the emergence of new misfits (Pentland et al., 2020), starting a new iteration of workaround diffusion in a socio-technical system. Thereby, the willingness and ability of managers to understand and solve problems that cause the emergence of workarounds are an important step for enabling top-down driven innovation initiatives. The consideration of workarounds as innovation source is in line with recent research provided by Mahringer et al. (2019), Pinto et al. (2018), and Alter (2014).

Our results provide an important vantage point for integrating the two distinct perspectives of *BPM* and *organizational routines* as theoretical lenses for investigating the phenomenon of workarounds. IS research increasingly discusses the emergent dynamics of business processes (Pentland et al., 2020) and organizational routines (Feldman et al., 2019). We address calls from IS literature to provide an integrated research perspective, e.g., as identified in Breuker and Matzner (2014) and mentioned in Beverungen (2014, p. 191), considering business processes "as a particular form of organizational routines." On the one hand, the BPM literature focuses on the top-down (re-)design of processes, while missing to conceptualize and investigate deviations performed by process participants. However, process participants frequently deviate from pre-defined process blueprints, which in turn has the effect of influencing their co-workers, restructuring the organization, and leaving its mark on the form and function of the IT artifacts used to perform the process activities. Hence, our results explain how and why performances, organizational structures, and IT artifacts influence each other, establishing an inherently fragile equilibrium that is open to workarounds being instigated at any time. On the other hand, research on organizational routines acknowledges patterns of activities and dynamic change, but often treat IT artifacts passively, as technology that

exerts material agency. For instance, Pentland and Feldman (2008, p. 241) consider artifacts as mechanisms that "ensure the reproduction of particular patterns of action." We posit instead that IT artifacts are subject to purposeful activities of (re-)design, as advocated in BPM research. Based on empirical data, our results contribute to the knowledge base on dynamic organizational change, by proving an integrated perspective for investigating workarounds from both theoretical angles. Our results complement related research on using methods of BPM for detecting workarounds in organizational routines routines (Beerepoot and van de Weerd, 2018; Grisold et al., 2020; Weinzierl et al., 2020).

## 6 Conclusion

While workarounds occur regularly in organizations, they are still an under-investigated and under-theorized phenomenon (Pollock, 2005). By performing a multiple case study, we integrate theoretical angles from BPM and organizational routines to explain workarounds' occurrence, diffusion, and consequences, making workarounds accessible for further investigations of organizational change and BPM.

Our paper is one of the first to uncover how and why workarounds emerge on an individual level, caused by the perception of three distinct types of misfits in organizational routines, namely technology, organizational, and strategic misfits. Depending on individual dispositions, workarounds manifest in the performative aspects of an employee's routine. Also, this paper is the first to detect how and why workarounds diffuse in an organization, impacting co-workers through observation and communication, shaping and adapting IT artifacts, and being evaluated and implemented on an organizational level. In this way, workarounds act as generative mechanisms that restructure and redesign an organization from the bottom-up, complementing top-down initiatives of design and intervention. Our results provide unique empirical insights for research and practice on how to leverage the potential of workarounds as a mechanism for unveiling organizational drift. We provide a fresh lens to study drift with conceptual accuracy, uncovering its underlying mechanisms as an interplay of misfits, workarounds, and organizational routines.

We offer important managerial contributions, highlighting that workarounds are crucial for organizations to operate. We call on managers to dismiss the old misconception that any processes deviance is undesirable behavior that contradicts pre-designed process blueprints. Instead, workarounds can be an effective fix for resolving misfits that interfere with business operations and can be an important lever for innovating business processes from the bottom up. By fostering appropriate degrees of communication and observation, managers can boost the positive effects of workarounds while constraining their negative effects, implementing workarounds as generative mechanisms that foster innovation.

While case study research enabled us to obtain rich empirical insights on workarounds as contemporary phenomena that are inextricably linked with their real-world context, this approach does not come without its limitations. First, we acknowledge that workarounds might be performed subconsciously, with employees not even being aware of deviating from standard processes. Previous research has argued that the ostensive aspects of an organizational routine are subject to interpretations on an individual level (Pentland and Feldman, 2008), obscuring the general patterns of how a routine *ought* to be performed. If official processes are not explicated with process models or other documentation, individual interpretations might flourish, making it hard for process participants and managers to distinguish a workaround from official control flows that have been purposefully inscribed into a business process. Second, all the workarounds we identified in our cases were found to have positive effects on the organizations, alleviating significant misfits. Since workarounds are ambivalent, as being able to create both desirable and undesirable consequences (Alter, 2014), this view seems to overemphasize the more favorable side of the coin. We acknowledge that workarounds exerting negative consequences were not reported in the interviews, maybe due to participants' embarrassment or fear of sanctions to be imposed by their management. Thus, dysfunctional effects of workarounds were not discussed here, but clearly warrant further investigation. Both limitations call for employing data-driven methods that can identify workarounds in an unbiased fashion—e.g., process-mining (Weinzierl et al., 2020)—to complement qualitative case studies to explain how and why workarounds impact organizations. We envision this move to be a substantial one for further linking the research streams of BPM and organizational routines and for studying workarounds and their consequences more fully.



## Appendix

### Related Concepts

Concept	Definition	References
Decoupling/ Loose Coupling	Separating formal rules from actual working practices.	Azad and King (2012)
Deviance	Divergence in how a process is performed over the course of time	Pentland et al. (2020)
Fraud	Ill-intentioned employees use the system for prohibited aims.	Bagayogo et al. (2013)
Interpretive Flexibility	Employees assign their own meaning and interpretation to the functions of an information system	Orlikowski (1992)
Non compliance	Security best practices and policies that are avoided.	Jenkins and Durcikova (2013)
Resistance	Behaviors intended to prevent the implementation or use of a system or to prevent system designers from achieving their objectives.	Lapointe and Rivard (2005)
Sabotage	Workplace sabotage is behavior intended to “damage, disrupt, or subvert the organization’s operations for the personal purposes of the saboteur by creating unfavorable publicity, embarrassment, delays in production, damage to property, the destruction of working relationships, or the harming of employees or customers.	Crino (1994)
Shadow System/ IT/ Work	Software applications or extensions to existing software that are neither developed nor controlled by an organization’s central IT department.	Fürstenau and Rothe (2014)
Subversion	User modifies the task approach to take advantage of known weaknesses in a system	Koopman and Hoffman (2003)
System Misuse	Perform a behavior that misuse of IS resources.	D’Arcy et al. (2009)
Tweaking	Deviation from a prescribed work processes by using a system in a slightly different way.	Boudreau and Robey (2005)
Unfaithful Appropriation	Features are designed to promote the technology’s spirit, but they are functionally independent and may be appropriated in ways that are not faithful to the spirit.	DeSanctis and Poole (1994)
Workarounds	A workaround is a goal-driven adaptation, improvisation, or other change to one or more aspects of an existing work system in order to overcome, bypass, or minimize the impact of obstacles, exceptions, anomalies, mishaps, established practices, management expectations, or structural constraints that are perceived as preventing that work system or its participants from achieving a desired level of efficiency, effectiveness, or other organizational or personal goals.	Alter (2014)
Workplace Aggression	Efforts by individuals to harm others with whom they work, or have worked, or the organizations in which they are currently, or were previously, employed. This harm-doing is intentional and includes psychological as well as physical injury.	Baron and Neuman (1996)

**Table 5:** Overview on Related Concepts



## Case Comparison

	Case 1: Media, Services, and Education	Case 2: Professional Services Network	Case 3: Public Institution
<b>Organizational Core Data</b>			
Organizational Unit	Central Unit	Auditing Unit	Administrative Unit
Culture	Culture medium supportive of BPM	Culture medium supportive of BPM	Culture non-supportive of BPM
Organizational Resources	high resources	high resources	low resources
<b>Process Characteristics</b>			
Examined Process	Employee On-boarding, Change, and Off-boarding	Cut-Off Testing	Planning of Teaching Courses
Process Scope	Within the Headquarter (intra-organizational, national)	Across Subsidiaries (intra-organizational, international)	Across faculties and including External Stakeholders (inter-organizational, national)
Value Contribution	Support Process	Support Process	Core Process
Variability	medium	low	high
Interdependence	medium	low	high
Creativity	medium	low	high
Degree of Formalization	One Predefined Workflow	Three Viable Workflows	No Defined Workflow
Sequence	Linear	Linear	Iterative
Frequency of Process Enactment/ Repetitiveness	every two months	daily	twice a year
Stability of the Process	changed months before the analysis	changed while analyzing	not changed for years
Maturity of Tools	mature, integrated tool	immature, integrated tool	mature, non-integrated tool
Governance	process owner	process owner	no process owner
IT Artifact	Proprietary Software, PDF List, SAP	Excel Lists, Machine Learning based Platform, PDFs	MS SharePoint, E-Mail, Individual Excel Lists, Planning Boards, Semester Management System

**Table 6:** Comparison of the Three Cases (Based on vom Brocke et al. 2016)

Process Model Starter-Changer-Leaver (Case 1)

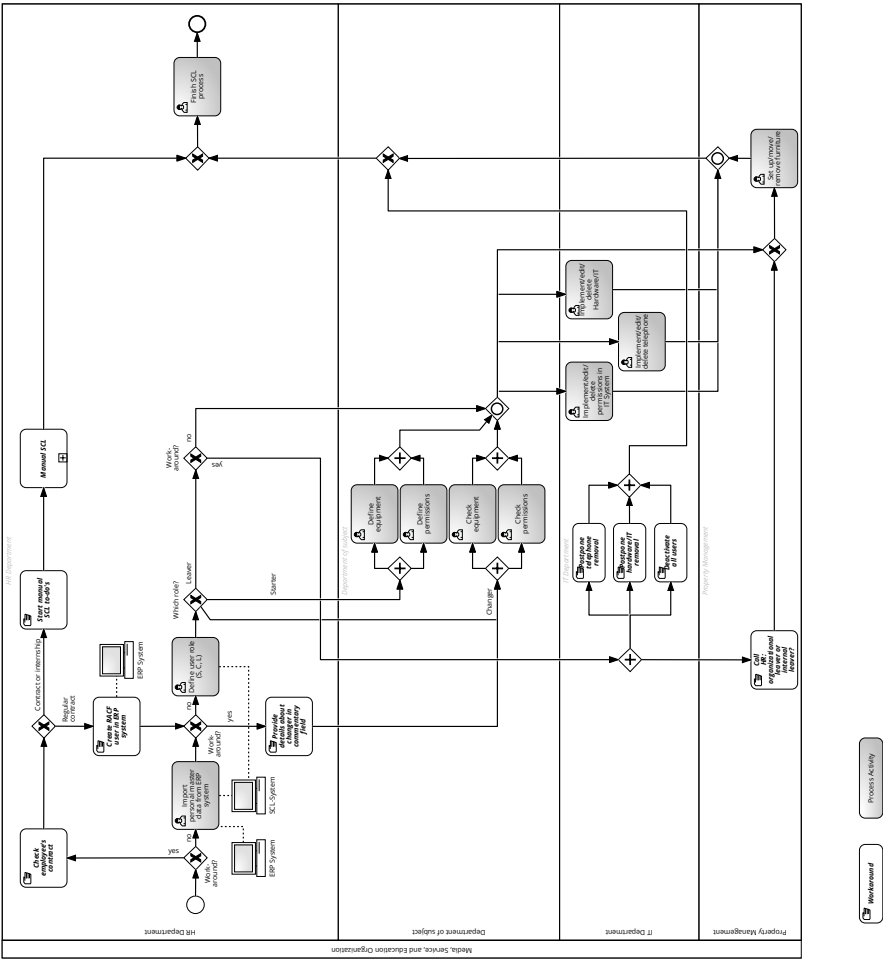


Figure 4: Process Model of Starter-Changer-Leaver (Case 1)

## Workarounds Starter-Changer-Leaver (Case 1)

Setting (I)			Workaround Occurrence (II)			Consequences (III)	
Training (1)	Core Elements (2)	Coordination (3)	Misfit (4)	Construction (5)	Workaround Type (6)	Implementation (7)	Affected Subject (9)
	Routines' Perspective	Process' Perspective				Diffusion Mechanism (8)	
Formal Training	<p>Ostensive Aspect</p> <p>"There was an official introductory presentation." (IV7)</p>	<p>Process Type</p> <p>"I have just printed out the form as a basis for the SCL process. I have heard that this form is already the same for the starter, changer, and the department, or what." (IV 5)</p> <p>Flow</p> <p>"SCL is a platform in which we can trigger different processes. We distinguish between three cases: did we hire someone, did someone change the department, or did someone leave the organization or department." (IV2)</p>	<p>Technology Misfit</p> <p>"An employee just got married, triggering a name change in the system. However, I was asked all standard question as if she would be a starter. [...] I was reading the e-mail and didn't really know what to do. [...] That was confusing [...] that was all nonsense. I mean, she already had the whole equipment." (IV 7)</p>	<p>Socially Constructed</p> <p>"I have to enter it [the type of change-request] manually in a comment field but the colleagues still cannot see immediately which change actually is requested." (IV 3)</p>	<p>Artifact-centered</p> <p>Bottom-up Process Redesign</p>	<p>Observation</p> <p>Co-Worker's Activities</p>	
Informal Training	<p>Performative Aspect</p> <p>"It became an established practice that we have to check everything in the end, even if only to a certain extent." (IV 3)</p>	<p>Process instance</p> <p>"For some cases there are unofficial agreements within the team. In these cases we already know: 'Okay, we'll just handle it like this.'" (IV 7)</p>	<p>Organizational Misfit</p> <p>Individually Constructed</p> <p>"It's not completely straightforward, but in these cases you have to improvise, which is due to the new procedure with the tool." (IV 6)</p>	<p>Process-centered</p>	<p>IT-Artifact Redesign</p> <p>Communication</p>	<p>IT Artifact</p> <p>"When I retrieve the data from SAP, you can't see what has changed. Instead, I have to enter it manually in a comment field." (IV 2)</p>	
No Training	<p>IT Artifact</p> <p>"The design of the SCL system allows you only have a look at your specific tasks and areas. You can't see the others." (IV1)</p>	<p>Fit</p>	<p>Strategic Misfit</p>	<p>Prevent Workaround</p>	<p>Organizational Structure</p>		
				<p>Ignore Workaround</p> <p>"That's not my priority because it doesn't happen every day." (IV 2)</p>			

Table 7: Workaround 1: Use Commentary Field to Indicate Change

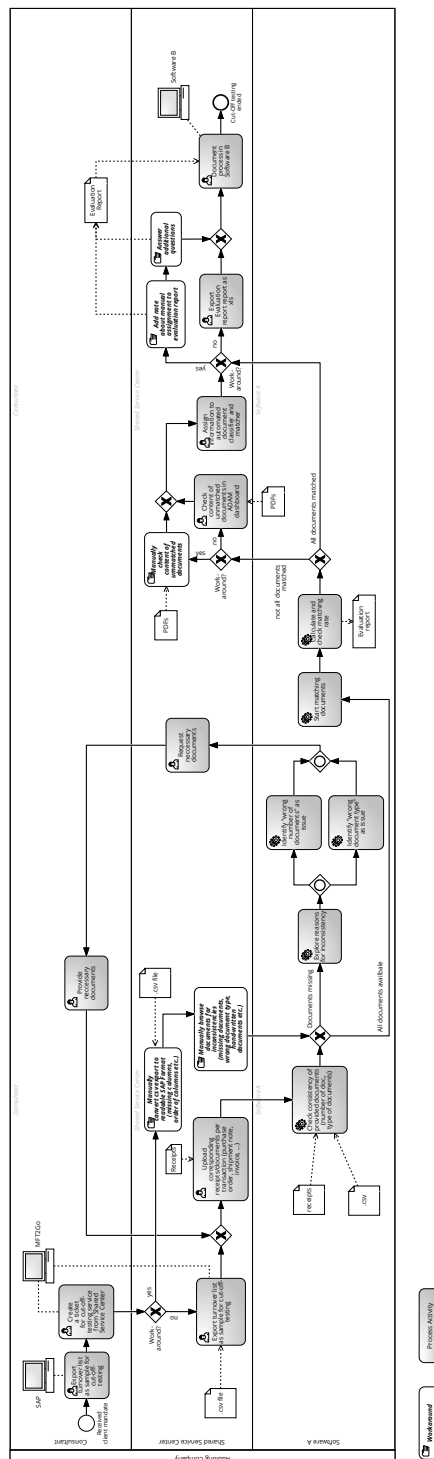
Setting [I]			Workaround Occurrence [II]			Consequences [III]		
Training (1)	Routines' Perspective	Core Elements (2) Process' Perspective	Coordination (3)	Misfit (4)	Construction (5)	Workaround Type (6)	Implementation (7)	Affected Subject (9)
Formal Training	Ostensive Aspect	Process Type	Flow	Technology Misfit	Socially Constructed	Artifact-centered	Bottom-up Redesign	Co-Worker's Activities
"The director of our Corporate IT held a short presentation to which we were invited." (IV 2)	"The SCL process is designed for informing us about changes at a relatively early stage; whether it is a new colleague, a so-called 'starter', someone who changes internally, a so-called 'changer', or a so-called 'leaver' who quits the company." (IV 5)	"We needed a system that corresponds to our standardized process and that allows to draw connections between the sub-processes and activities." (IV 3)	"The work at stake is first carried out by the HR department, and then by the secretary's office of the business department. Then we proceed with the entire IT process." (IV 3)			"A leaver could be someone who really leaves the company or someone who changes the legal entity of our organization. [...] Even though we get a leaver notification, my colleagues and I already know that "we have to be careful not to delete everything immediately", to allow for re-activating the account later." (IV 2)		"The co-workers are already sensitized to this issue and know that they have to be careful not to delete everything immediately." (IV 2)
Informal Training	Performative Aspect	Process instance	Share	Organizational Misfit	Individually Constructed	Process-centered	IT-Artifact Redesign	IT Artifact
"I will continue to call the departments to ask for more information about the changer or leaver." (IV 4)	"We use the SCL process as it is in the tool and to some extent map it to our own ticket system. But this is just for an easier follow-up process. Otherwise, the process is performed one-to-one as it is intended." (IV 3)			"In some cases the process is still a bit undefined. For example, we still have issues to distinguish between the different types of changers." (IV 3)	"Well, it depends on the department. I actually call some departments or secretaries because I get along with them very well. It just works faster and easier via telephone. However, I send an e-mail to ensure that I receive the requested information or documents." (IV 3)		"From our point of view, this should be defined more clearly. One possibility would be to design a leaver differently in the system, perhaps, to have two kinds of leavers: 'leaver- corporate exit' and 'leaver corporate change.'" (IV 3)	"That's what we decided at some point in the course of time." (IV 3)
No Training	IT Artifact	Fit	Fit	Strategic Misfit			Prevent Workaround	Organizational Structure
	"The system is currently in a stage of completion that is less than 50% because of the number and complexity of activities." (IV 1)						Ignore Workaround	

Table 8: Workaround 2: Re-Activate Changer

Setting (I)			Workaround Occurrence (II)			Consequences (III)				
Training (1)	Core Elements (2)	Coordination (3)	Misfit (4)	Construction (5)	Workaround Type (6)	Implementation (7)	Diffusion Mechanism (8)	Affected Subject (9)		
	Routines' Perspective	Processes' Perspective								
Formal Training	<p>Oversive Aspect</p> <p>"When we get a user ID from SAP, we can start the SCL system by choosing the form, deliberately what it was actually self-explanatory." (IV 6)</p>	<p>Process Type</p> <p>"We use the SCL system to on-board the hired colleagues, i.e., to inform the corresponding departments about the on-boarding process, e.g., our in-house furnishment services, our IT department, etc. [...] Further, the SCL platform also allows to document which authorizations and accesses an employee has." (IV 2)</p>	<p>Flow</p> <p>"Sometimes, sub-processes can only be started when certain information or other input materials are available. For example, an IT service can actually only start when I know which notebook or PC the new employees receives." (IV 1)</p>	Technology Misfit	<p>Socially Constructed</p> <p>"This problem is handled by using the old process. In that case, we use a PDF-based questionnaire, which is sent to each corresponding department via e-mail." (IV 3)</p>	<p>Artifact-centered</p> <p>"Sometimes, we simply use the former questionnaire again or requested the information via e-mail." (IV 3)</p>	Bottom-up Process Redesign	<p>Observation</p> <p>"We had a list [...] in which we saw that somebody's starting in our organization; then, we contacted the corresponding business units." (IV 3)</p>	Co-Worker's Activities	<p>"Anyways, we send an e-mail to the departments beforehand. This way, they can then, we considered what they need in advance." (IV 3)</p>
Informal Training	<p>Performative Aspect</p> <p>"If data are missing, we usually request them from others. This process of finally checking it again—even only to a certain extent—has established." (IV 3)</p>	<p>Process instance</p> <p>"Student interns and external partners are not on-boarded via the system." (IV 3)</p>	Share	Organizational Misfit	<p>Individually Constructed</p> <p>"Indeed, there are starters outside the SCL process, for example, legal clerks or interns. This means that they all run through the same steps, but cannot be mapped in the system because they are not managed in SAP [...]. To me, this is simply a legal question." (IV 3)</p>	<p>Process-centered</p>	IT-Artifact Redesign	<p>Communication</p> <p>"As I said, would introduce standards in the system, of which we have many in SAP. That will be the solution. Everything will run automatically." (IV 3)</p>	IT Artifact	
No Training	<p>IT Artifact</p> <p>"A user ID is generated via the SAP system and a unique employee ID. Unfortunately, this does not always work out because the system got stuck or because something else is erroneous." (IV 3)</p>	Fit		Strategic Misfit			Prevent Workaround		Organizational Structure	
								Ignore Workaround		

Table 9: Workaround 3: Use Former PDF List

## Process Model Cut-Off Testing (Case 2)



**Figure 5: Process Model of Cut-Off Testing (Case 2)**

Workarounds Cut-Off Testing (Case 2)

Setting (I)			Workaround Occurrence (II)			Consequences (III)			
Training (1)	Core Elements (2)	Coordination (3)	Misfit (4)	Construction (5)	Workaround Type (6)	Implementation (7)	Diffusion Mechanism (8)	Affected Subject (9)	
	Routines' Perspective	Process' Perspective							
Formal Training	Ostensive Aspect  "We do have guidelines on how a CSV file must be structured [...] at least SAP File and then 'Choose File' to select a document list that contains the business transactions to be processed. [...] The document must be structured in the format of an SAP document list to ensure the functionality of the tool." (Software A Description) (IV5)	Process Type  "To upload a document list (sample), the client provides the evidence, i.e., an invoice, delivery note, and maybe a payment settlement document, i.e. bank account, or whatever. Then, we check those documents and see if the clients have booked some financial numbers in the previous year, although it clearly belongs to this year." (IV4)	Flow  "The client provides the evidence, i.e., an invoice, delivery note, and maybe a payment settlement document, i.e. bank account, or whatever. Then, we check those documents and see if the clients have booked some financial numbers in the previous year, although it clearly belongs to this year." (IV4)	Technology Misfit	Socially Constructed  "So generally, to make the tool work we still have to take the results and transform them to make them fit to the client's templates." (IV1)	Artifact-centered	Bottom-up Process Redesign  "I really wonder about the variety of formats that we receive [...] it shows that obviously the organizational interface between the operations and the shared service center is not clearly defined. And therefore, this is definitely a point where we have to provide clear guidance in the future." (IV1)	Observation  "Missing or unreadable documents are sent to us via e-mail. That's a common way for managing the missing data." (IV2)	Co-Worker's Activities
Informal Training	Performative Aspect  "This is not 100% formalized. There are different options for exchanging data." (IV2)	Process instance  "You would extract the data from the ERP system to get the information. Sometimes, we also ask the customer to send us the data if we don't have access to their system. In this respect, there are several viable options." (IV2)	Share	Organizational Misfit  "Usually we get PDF files; however, we receive also e-mails and e-mail attachments. We get MS Word documents, screenshots, Excel files, and so on. [...] The problem is that the documents are mixed. The functionalities in Software A are limited to PDFs." (IV1)	Individually Constructed  "What they actually do is to check the document delivery control for Word documents, and then, transform formats that the tool cannot process. That's actually a workaround." (IV2)	Process-centered	IT-Artifact Redesign  "My colleagues from Germany and Poland have confirmed this problem once again and told me: 'Well, first we have to familiarize with the data and understand them before we can proceed with the tool.'" (IV5)	Communication	IT Artifact
No Training	IT Artifact  "So there is a service tool from the Shared Service Center, called ISC tool from SAP. And this tool is structured in such a way that you can request services in the Shared Services Center. You can either request the service from Germany or Poland." (IV2)	Fit		Strategic Misfit		Prevent Workaround		Organizational Structure	
								Ignore Workaround	

Table 10: Workaround 1: Manual Consistency Check

Setting [I]			Workaround Occurrence [II]			Consequences [III]		
Training (1)	Routines' Perspective	Core Elements (2) Process' Perspective	Coordination (3)	Misfit (4)	Construction (5)	Workaround Type (6)	Implementation (7)	Diffusion Mechanism (8) ) Affected Subject (9)
Formal Training	Ostensive Aspect	Process Type	Flow	Technology Misfit	Socially Constructed	Artifact-centered	Bottom-up Process Redesign	Observation
"As an auditing corporation, you are obliged to train your employees. I think there is a regulation that requires employees to attend two weeks of training a year." (IV4)	"Here on the left side you can see the unmatched documents. You can see that there are a few listed. Hence, I can actually see them in the tool. [...] Then you click on the unmatched document. You can actually see the document's name to clearly identify them." (IV2)	"To carry out the matching process of the Excel document list and the uploaded PDF documents, click on 'Start Matching' in the tool. [...] Then Documents' to view a complete list of all documents which have been successfully assigned to a business transaction of the Excel document list." (Software A Description)	"The tool classifies the documents, i.e., it decides automatically whether it is an invoice or a delivery note. Then, the data are extracted from the respective documents [...], e.g., invoice number, date, addresses, and invoice amount. If you have a delivery note, it extracts the data per document and document type, which we have requested." (IV3)	"So far the tool only recognizes German and English..soon Dutch and French will be added. But not Russian for example. This is also problematic because of the different character set, i.e. the Cyrillic alphabet." (IV3)	"As a project team, we are currently reconsidering whether it really makes sense that different people introduce the same tool. Obviously, it leads to different processes." (IV2)	"The engagement teams need to add some additional information. If something is not extracted by software A, we still need to go back to the original documentation, look up this information, and enter it manually." (IV1)		Co-Worker's Activities
Informal Training	Performative Aspect	Process instance	Share	Organizational Misfit	Individually Constructed	Process-centered	IT-Artifact Redesign	Communication
	"It is also true that documents can fail. That Software A is not able to process every document. Here you can see, I have uploaded a hundred files and four failed." (IV3)	"The problem is that [...] we use this document list from SAP, which is our sample. Software A cannot assign the unmatched documents to any of these samples. That's the background to the unmatched documents." (IV2)						"We had alike experience in other tools, i.e., we make a list of the automatic matches and one of the manual matches before we send it to the engagement team." (IV1)
No Training		IT Artifact	Fit	Strategic Misfit			Prevent Workaround	Organizational Structure
	"After uploading, the tool analyzes the document list based on corresponding information such as document number, posting date, etc. and uses this information in the application." (Software A Description)						"It's a massive effort in comparison to the time savings." (IV3)	
							Ignore Workaround	

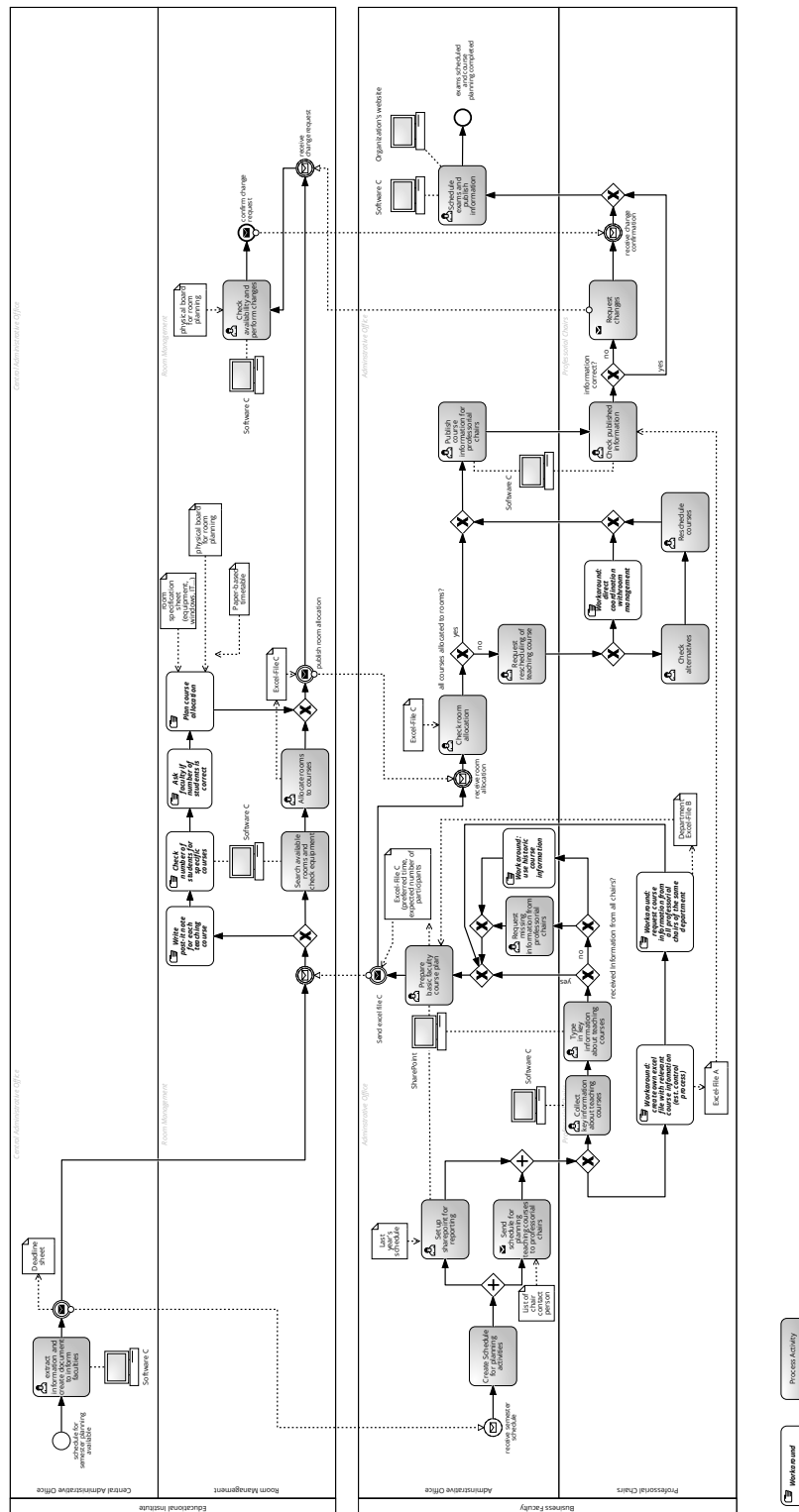
Table 11: Workaround 2: Manual Document Matching



Setting (I)				Workaround Occurrence (II)			Consequences (III)		
Training (1)	Core Elements (2)	Coordination (3)		Misfit (4)	Construction (5)	Workaround Type (6)	Implementation (7)	Diffusion Mechanism (8)	Affected Subject (9)
	Routines' Perspective	Process' Perspective							
Formal Training	Oversive Aspect	Process Type	Flow	Technology Misfit	Socially Constructed	Artifact-centered	Bottom-up Process Redesign	Observation	Co-Worker's Activities
	"This evaluation report is automatically generated by Software A after the matching process. Then, you save the evaluation report from Software A." (IV3)	"The Eval Report is a summary of all [...] automatically classified documents, which are also automatically assigned to the respective business transactions, are clearly displayed in this report in an editable form." (Software A Description)	"I can click on a button when I'm done with this task, i.e., when I am finished with cut-off testing. Then, the reviewer, who is usually the team manager who is one hierarchy level above me, gets a message that I prepared everything in our Software B." (IV4)		"This is happening all via our Shared Service Center." (IV2)	"Afterwards, you'll get a changeable Excel report. If Software A has extracted and matched 80%, which would be great, you'll have to do the remaining 20% manually by typing it in the report." (IV3)		"All those types of comments and unusual happenings that should rise the attention of the engagement team is commented by us." (IV1)	"When the Shared Service Center mandates this process, you will surely have a certain amount of time, which you need for the coordination." (IV4)
Informal Training	Performative Aspect	Process instance	Share	Organizational Misfit	Individually Constructed	Process-centered	IT-Artifact Redesign	Communication	IT Artifact
	"I worked with an experienced and good colleague, who took this evaluation report again. On the one hand, he has to check everything to me." (IV4)	"In any case, the auditor has to look at this evaluation report mark it in the document. That's the way the tool learns." (IV2)					"We have already implemented the required questions in Software A. They are automatically inserted into the evaluation report as blank fields, because the tool cannot insert data on these questions automatically." (IV3)		
No Training	IT Artifact	Fit		Strategic Misfit			Prevent Workaround		Organizational Structure
	"Of course, the report from Software A must also fit the format in Software B, our audit documentation and archiving software." (IV3)			"That's a fact, you can't add anything to Software A right now. [...] In Software A, you can't customize anything. But if you have the evaluation report in Excel afterwards, you are free to add or delete columns." (IV3)			Ignore Workaround		

Table 12: Workaround 3: Report Manipulation

**Figure 6:** Process Model of Module Planning (Case 3)



Workarounds Course Scheduling (Case 3)

Setting (I)			Workaround Occurrence (II)			Consequences (III)		
Training (1)	Core Elements (2)	Coordination (3)	Misfit (4)	Construction (5)	Workaround Type (6)	Implementation (7)	Diffusion Mechanism (8)	Affected Subject (9)
	Routines' Perspective	Process' Perspective						
Formal Training	Observative Aspect "The process is that I get this sheet. I have a sheet with the module planning, with the schedule, and this is just the general timeline. Of course, every semester we have deadlines that we need to meet." (IV2)	Process Type "The state NRW checks it on the basis of Software C listings. That means, if the hours aren't recorded in Software C, you would have to prove it in a different way how the semester hours per week were arranged." (IV2)	Flow	Technology Misfit "I neither find SharePoint very intuitive nor very user-friendly." (IV2)	Socially Constructed	Artifact-centered "For this purpose, I have created an Excel list. This list includes all semesters and I can copy information from the previous semesters for the new one. But I can also add other information like preferred dates for specific modules." (IV2)	Bottom-up Process Redesign	Observation Co-Worker's Activities "Well, basically this is kind of a parallel process and there is a lot of double work not to say double and triple work." (IV6)
Informal Training	Performative Aspect "I create an overview of the modules that were offered in the previous summer semester or in the previous winter semester. I look up how many participants were in these modules and send them to my boss and ask whether the modules are offered again or not." (IV 1)	Process instance "Well I think only our faculty uses SharePoint, I think the others haven't implemented it yet." (IV1)	Share "I collect the information and enter them in the Sharepoint system. At this point, the administrative office of the business faculty works with this Share-Point system and begin to set up the semester schedule. After that, they forward this schedule to us to check it." (IV2)	Organizational Misfit Individually Constructed "Like I said, you can make use of the tools you have. For examples of any Excel sheets or reminder, that I usually interlink so that I can access them quickly." (IV2)	Process-centered	IT Artifact Redesign	Communication IT Artifact "Well, I think the best and fastest way is through the office grapevine, when you ask others or when others talk about it." (IV2)	
No Training	IT Artifact "If you put that into a document library, you won't be able to operate the script. The module descriptions for the module manual are a separate script and also a separate document[...]. If we mix that with stuff that is changed very often, it's very prone to errors." (IV5)	Fit	Strategic Misfit	Prevent Workaround "We tell them that's great, but please record it in Share-Point." (IV5)			Organizational Structure	
						Ignore Workaround		

Table 13: Workaround 1: Create own Lists

Setting [I]				Workaround Occurrence [II]			Consequences [III]		
Training (1)	Routines' Perspective	Core Elements (2) Process' Perspective	Coordination (3)	Misfit (4)	Construction (5)	Workaround Type (6)	Implementation (7)	Diffusion Mechanism (8)	Affected Subject (9)
Formal Training	Ostensive Aspect "The first thing we get is a plan from the administrative office [...] On that basis, we plan appropriate rooms for the major events. And if that doesn't work, if somehow no large rooms are available, you have to look for alternative dates or possibilities." (IV4)	Process Type "Yes, there is a process planning tool. It was developed two or three years ago." (IV4)	Flow	Technology Misfit "At the moment we're doing this manually. It's a lot of work to do, but you get a lot of things, but I think you just have to do it practically by yourself. [...] We print out all the lists and then we explained to me in the beginning and then I simply tried it out myself. It's learning by doing." (IV4)	Socially Constructed "Well, I mean my supervisor has shown me a lot of things, but I think you just have to do it practically by yourself. [...] We print out all the lists and then we explained to me in the beginning and then I simply tried it out myself. It's learning by doing." (IV4)	Artifact-centered	Bottom-up Process Redesign	Observation	Co-Worker's Activities
Informal Training	Performative Aspect "We check if there are any overlaps, missing items, and so on." (IV4) "I myself. Through learning-by-doing, you can learn everything." (IV4)	Process Instance "We still have planning boards for allocating the large rooms." (IV4)	Share "As far as I know, the room management gets the plan from the administrative office and then they book the rooms." (IV1)	Organizational Misfit	Individually Constructed	Process-centered	IT-Artifact Redesign "We are always on the look if there exists something like a planning tool or anything that could be used to developing a room plan. But this is all still very [...] vague." (IV4)	Communication "You know your co-workers, who send the data. If anything is strange or unclear to us, we just call them directly and talk to each other" (IV4)	IT Artifact
No Training	IT Artifact „It is all based on the Software C's calendar. This calendar sets the deadlines, when the basic plan is to be drawn up, when the room planning begins, when it is to be published, etc.“ (IV4)	Fit		Strategic Misfit "No, there's nothing I can do. I can also search for rooms in Software C, whether they are free or not. I can do that. But if the room administration books any rooms, I can't see whether they are double booked or not. That shouldn't happen, but it did happen last semester." (IV1)			Prevent Workaround	Organizational Structure "We always say that the people with more participants are more likely to be the people who don't have to leave, because they would have the problem to find an adequate room. (IV5)	
							Ignore Workaround		

### Table 14: Workaround 2: Use Physical Room Management Board

Setting (I)			Workaround Occurrence (II)			Consequences (III)			
Training (1)	Core Elements (2)	Coordination (3)	Misfit (4)	Construction (5)	Workaround Type (6)	Implementation (7)	Diffusion Mechanism (8)	Affected Subject (9)	
	Routines' Perspective	Process' Perspective							
Formal Training	<p>Osensive Aspect</p> <p>"As a deputy of Software C, I get a course preview. I see the events that the students do not see yet. And then, I check if the modules are all created, if the check marks are set and so on." (IV3)</p>	<p>Process Type</p> <p>"In any case, things are now more centralized." (IV5)</p>	Flow	Technology Misfit	Socially Constructed	Artifact-centered	Bottom-up Process Redesign	Observation	Co-Worker's Activities
								"They approached me and said that they would like to have room XY and that we currently have it and if we would take another one. [...] I said, 'Ok, let's swap'." (IV2)	
Informal Training	<p>Performative Aspect</p> <p>"I check in Software C if everything is correctly entered, don't know who is since in the past [...] not everything was complete or suddenly wrong times or wrong rooms were listed. I also check the module offering." (IV1)</p>	<p>Process instance</p> <p>"I often have the impression that they don't know who is actually in charge of that." (IV1)</p>	Share	<p>Organizational Misfit</p> <p>"Often there are system inconsistencies or the need to use a general tool like email, because we have different people with different interests and also with different technical skills." (IV5)</p>	<p>Individually Constructed</p> <p>"If it is very important to me that this has been verifiable noted, then I like to do it by e-mail, because I simply have to know it for myself as well." (IV2)</p>	<p>Process-centered</p> <p>"I write an e-mail anyway because it supports me with following up the process. Further, I get a reading confirmation that let's me know that they have received the message." (IV3)</p>	IT-Artifact Redesign	Communication	IT Artifact
No Training	<p>IT Artifact</p> <p>"Then there is a deadline. And after the deadline, they can no longer change dates and rooms. That means are like "why does it appear here although I do not want it?" You go back to your list and [...] just put it somewhere else." (IV2)</p>	Fit	Strategic Misfit			Prevent Workaround		Organizational Structure	

Table 15: Workaround 3: Request Room Change via E-mail

## References

- Alexander, C. 1964. *Notes on the Synthesis of Form*, Cambridge, MA, USA: Harvard University Press.
- Alojaiiri, A. 2017. "The Dynamics of IT Workaround Practices a Theoretical Concept and an Empirical Assessment," *International Journal of Advanced Computer Science and Applications* (8:7), pp. 527–534.
- Alraddadi, A., Champion, D., and Lagna, A. 2018. "The Role of Workarounds in Benefits Realisation: Evidence from a Field Study in Saudi Arabia," in *Proceedings of the UK Academy for Information Systems Conference (UKAIS)*, (Oxford, United Kingdom).
- Alter, S. 2014. "Theory of Workarounds," *Communications of the Association for Information Systems* (34), pp. 1041–1066. URL: <http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=94902952&site=ehost-live>.
- Alter, S. 2015. "A Workaround Design System for Anticipating, Designing, and/or Preventing Workarounds," in *Enterprise, Business-Process and Information Systems Modeling*, K. Gaaloul, R. Schmidt, S. Nurcan, S. Guerreiro, and Q. Ma (eds.). Vol. 214. Lecture Notes in Business Information Processing. Cham and Switzerland: Springer International Publishing, pp. 489–498. (doi: 10.1007/978-3-319-19237-6\_31).
- Alter, S. and Recker, J. C. 2017. "Using a Work System Perspective to Expand BPM Use Cases for Research," *Journal of Information Technology Theory and Application* (18:1), pp. 47–71.
- Ariely, D. and Carmon, Z. 2000. "Gestalt Characteristics of Experiences: The Defining Features of Summarized Events," *Journal of Behavioral Decision Making* (13:2), pp. 191–201.
- Arrow, H. and McGrath, J. E. 1995. "Membership Dynamics in Groups at Work: A Theoretical Framework," *Research in Organizational Behavior* (17:1), pp. 373–411.
- Azad, B. and King, N. 2012. "Institutionalized Computer Workaround Practices in a Mediterranean Country: An Examination of Two Organizations," *European Journal of Information Systems* (21:4), pp. 358–372.
- Bagayogo, F., Beaudry, A., and Lapointe, L. 2013. "Impacts of IT Acceptance and Resistance Behaviors: A Novel Framework," in *Proceedings of the 34th International Conference on Information Systems (ICIS)*, (Milan, Italy).

- Baron, R. A. and Neuman, J. H. 1996. "Workplace Violence and Workplace Aggression: Evidence on Their Relative Frequency and Potential Causes," *Aggressive Behavior: Official Journal of the International Society for Research on Aggression* (22:3), pp. 161–173.
- Becker, J., Karow, M., Mueller-Wienbergen, F., and Seidel, S. 2009. "Toward Process Modeling in Creative Domains," in *Proceedings of the 15th Americas Conference on Information Systems 2009 (AMCIS)*, (San Francisco, California, USA).
- Becker, M. C. and Zirpoli, F. 2008. "Applying Organizational Routines in Analyzing the Behavior of Organizations," *Journal of Economic Behavior & Organization* (66:1), pp. 128–148.
- Beerepoot, I., de van Weerd, I., and Reijers, H. A. 2018. "Detecting Workarounds Using Domain Knowledge-driven Process Mining," in *Proceedings of the 39th International Conference on Information Systems (ICIS)*, (San Francisco, California, USA).
- Beerepoot, I. and van de Weerd, I. 2018. "Prevent, Redesign, Adopt or Ignore: Improving Healthcare Using Knowledge of Workarounds," in *Proceedings of the 26th European Conference on Information Systems (ECIS)*, (Portsmouth, United Kingdom).
- Beverungen, D. 2014. "Exploring the Interplay of the Design and Emergence of Business Processes as Organizational Routines," *Business & Information Systems Engineering* (6:4), pp. 191–202.
- Bostrom, R. P. and Heinen, J. S. 1977. "MIS Problems and Failures: A Socio-Technical Perspective, Part II: The Application of Socio-Technical Theory," *MIS Quarterly* (1:4), pp. 11–28.
- Boudreau, M.-C. and Robey, D. 2005. "Enacting Integrated Information Technology: A Human Agency Perspective," *Organization Science* (16:1), pp. 3–18.
- Brander, S., Hinkelmann, K., Hu, B., Martin, A., Riss, U. V., Thönssen, B., and Witschel, H. F. 2011. "Refining Process Models through the Analysis of Informal Work Practice," in *Business Process Management*, (Clermont-Ferrand, France). S. Rinderle-Ma, F. Toumani, and K. Wolf (eds.). Vol. 6896. Lecture Notes in Computer Science. Berlin: Springer, pp. 116–131. (doi: 10.1007/978-3-642-23059-2\_12).
- Breu, K., Hemingway, C. J., Strathern, M., and Bridger, D. 2002. "Workforce Agility: The New Employee Strategy for the Knowledge Economy," *Journal of Information Technology* (17:1), pp. 21–31.
- Breuker, D. and Matzner, M. 2014. "Performances of Business Processes and Organizational Routines: Similar Research Problems, Different Research Methods – A Literature Review," in *Proceedings of the 22nd European Conference on Information Systems (ECIS)*, (Tel Aviv, Israel).
- Cavaye, A. L. 1996. "Case study Research: A Multi-Faceted Research Approach for IS," *Information Systems Journal* (6:3), pp. 227–242. (doi: 10.1111/j.1365-2575.1996.tb00015.x).

- Cecez-Kecmanovic, D., Galliers, R. D., Henfridsson, O., Newell, S., and Vidgen, R. 2014. "The Sociomateriality of Information Systems: Current Status, Future Directions," *MIS Quarterly* (38:3), pp. 809–830. (doi: 10.25300/MISQ/2014/38:3.3).
- Ciborra, C. 2001. *From Control to Drift: The Dynamics of Corporate Information Infrastructures*, New York, NY, USA: Oxford Univ. Press.
- Ciborra, C. and Lanzara, G. F. 1994. "Formative Contexts and Information Technology: Understanding the Dynamics of Innovation in Organizations," *Accounting, Management and Information Technologies* (4:2), pp. 61–86. (doi: 10.1016/0959-8022(94)90005-1).
- Cresswell, K. M., Mozaffar, H., Lee, L., Williams, R., and Sheikh, A. 2017. "Workarounds to Hospital Electronic Prescribing Systems: A Qualitative Study in English Hospitals," *BMJ Quality & Safety* (26:7), pp. 542–551. (doi: 10.1136/bmjqs-2015-005149).
- Crino, M. D. 1994. "Employee Sabotage: A Random Or Preventable Phenomenon?" *Journal of Managerial Issues* (6:3), pp. 311–330.
- D'Adderio, L. and Pollock, N. 2020. "Making Routines the Same: Crafting Similarity and Singularity in Routines Transfer," *Research Policy* (49:8), Forthcoming. (doi: 10.1016/j.respol.2020.104029).
- D'Arcy, J., Hovav, A., and Galletta, D. 2009. "User Awareness of Security Countermeasures and Its Impact on Information Systems Misuse: A Deterrence Approach," *Information Systems Research* (20:1), pp. 79–98. (doi: 10.1287/isre.1070.0160).
- Danner-Schröder, A. and Ostermann, S. M. 2020. "Towards a Processual Understanding of Task Complexity: Constructing Task Complexity in Practice," *Organization Studies* (Forthcoming), pp. 1–40. (doi: 10.1177/0170840620941314).
- Davenport, T. H. and Short, J. E. 1990. "The New Industrial Engineering: Information Technology and Business Process Redesign," *MIT Sloan Management Review* (31:4). URL: <https://sloanreview.mit.edu/article/the-new-industrial-engineering-information-technology-and-business-process-redesign/>.
- Debois, S., Hildebrandt, T., Marquard, M., and Slaats, T. 2018. "Hybrid Process Technologies in the Financial Sector: The Case of BRFKredit," in *Business Process Management Cases*, J. vom Brocke and J. Mendling (eds.). Management for Professionals. Cham, Switzerland: Springer International Publishing, pp. 397–412. (doi: 10.1007/978-3-319-58307-5\_21).
- DeSanctis, G. and Poole, M. S. 1994. "Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory," *Organization Science* (5:2), pp. 121–147.
- Dittrich, K., Guérard, S., and Seidl, D. 2016. "Talking About Routines: The Role of Reflective Talk in Routine Change," *Organization Science* (27:3), pp. 678–697.
- Dubé, L. and Paré, G. 2003. "Rigor in Information Systems Positivist Case Research: Current Practices, Trends, and Recommendations," *MIS Quarterly* (27:4), pp. 597–636.



- Dumas, M., La Rosa, M., Mendling, J., and Reijers, H. A., eds. 2018. *Fundamentals of Business Process Management*, 2nd ed. 2018. Berlin, Heidelberg: Springer Berlin Heidelberg. (doi: 10.1007/978-3-662-56509-4).
- Dunford, B. B. and Perrigino, M. B. 2018. "The Social Construction of Workarounds," in *Advances in Industrial and Labor Relations, 2017: Shifts in Workplace Voice, Justice, Negotiation and Conflict Resolution in Contemporary Workplaces*, D. Lewin and P. J. Gollan (eds.). Emerald Publishing Limited, pp. 7–28.
- Ejnefjäll, T. and Ågerfalk, P. J. 2019. "Conceptualizing Workarounds: Meanings and Manifestations in Information Systems Research," *Communications of the Association for Information Systems* (45:1), pp. 341–363. (doi: 10.17705/1CAIS.04520).
- Eldredge, N. and Gould, S. J. 1972. "Punctuated Equilibria: An Alternative to Phyletic Gradualism," in *Models in Paleobiology*, T. J. Schopf (ed.). San Francisco, CA, USA: Freeman, Cooper & Co., pp. 82–115.
- Feldman, M. S., D'Aderio, L., Dittrich, K., and Jarzabkowski, P., eds. 2019. *Routine Dynamics in Action: Replication and Transformation*, Research in the Sociology of Organizations. Emerald Publishing Limited. (doi: 10.1108/S0733-558X20190000061001).
- Feldman, M. S. and Pentland, B. T. 2003. "Reconceptualizing Organizational Routines as a Source of Flexibility and Change," *Administrative Science Quarterly* (48:1), pp. 94–118.
- Fichman, R. G. 1992. "Information Technology Diffusion: A Review of Empirical Research," in *Proceedings of the 13th International Conference on Information Systems (ICIS)*, (Dallas, Texas, USA).
- Fichman, R. G., Dos Santos, B. L., and Zheng, Z. 2014. "Digital Innovation as a Fundamental and Powerful Concept in the Information Systems Curriculum," *MIS Quarterly* (38:2), pp. 329–354.
- Fischer, G. and Herrmann, T. 2011. "Socio-Technical Systems: A Meta-Design Perspective," *International Journal of Sociotechnology and Knowledge Development (IJSKD)* (3:1), pp. 1–33.
- Frei, F. X., Kalakota, R., Leone, A. J., and Marx, L. M. 1999. "Process Variation as a Determinant of Bank Performance: Evidence from the Retail Banking Study," *Management Science* (45:9), pp. 1210–1220. (doi: 10.1287/mnsc.45.9.1210).
- Fürstenau, D. and Rothe, H. 2014. "Shadow IT Systems: Discerning the Good and the Evil," in *Proceedings of the 22nd European Conference on Information Systems (ECIS)*, (Tel Aviv, Israel).
- Germonprez, M., Hovorka, D., and Gal, U. 2011. "Secondary Design: A Case of Behavioral Design Science Research," *Journal of the Association for Information Systems* (12:10), pp. 662–682.
- Gersick, C. J. G. 1991. "Revolutionary Change Theories: A Multilevel Exploration of the Punctuated Equilibrium Paradigm," *Academy of Management Review* (16:1), pp. 10–36.

- Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structuration*, 1st ed. Outline of the Theory of Structuration. Berkeley, CA, USA: Univ. of California Press. URL: <https://books.google.de/books?id=x2bf4g9Z6ZwC>.
- Gimpel, H. and Röglinger, M. 2015. *Digital Transformation: Changes and Chances: Insights Based on an Empirical Study*. Project Group Business and Information Systems Engineering (ed.). Augsburg/Bayreuth, Germany.
- Goh, J. M., Gao, G., and Agarwal, R. 2011. "Evolving Work Routines: Adaptive Routinization of Information Technology in Healthcare," *Information Systems Research* (22:3), pp. 565–585.
- Goodhue, D. L. and Gattiker, T. F. 2005. "Enterprise System Implementation and Use at Bryant Manufacturing an Analysis of ERP Fits and Misfits," *Production and Inventory Management Journal* (44), pp. 1–18.
- Goodhue, D. L. and Thompson, R. L. 1995. "Task-Technology Fit and Individual Performance," *MIS Quarterly* (19:2), pp. 213–236. (doi: 10.2307/249689).
- Gregory, R. W., Kaganer, E., Henfridsson, O., and Ruch, T. J. 2018. "IT Consumerization and the Transformation of IT Governance," *MIS Quarterly* (42:4), pp. 1225–1254.
- Grisold, T., Wurm, B., Mendling, J., and vom Brocke, J. 2020. "Using Process Mining to Support Theorizing about Change in Organizations," in *Proceedings of the 53rd Hawaii International Conference on System Sciences (HICSS)*, (Maui, Hawaii, USA).
- Hadasch, F., Maedche, A., and Gregor, S. 2016. "The Influence of Directive Explanations on Users' Business Process Compliance Performance," *Business Process Management Journal* (22:3), pp. 458–483. (doi: 10.1108/BPMJ-05-2015-0067).
- Hall, J. M. and Johnson, M. E. 2009. "When Should a Process be Art, not Science?" *Harvard Business Review* (87:3), pp. 58–65.
- Hartley, J. 2004. "Case Study Research," in *Essential Guide to Qualitative Methods in Organizational Research*, C. Cassell and G. Symon (eds.). London, UK: SAGE Publications, pp. 323–333.
- Hevner, A. R. 2007. "A Three Cycle View of Design Science Research," *Scandinavian Journal of Information Systems* (19:2), pp. 87–92.
- Hunt, R. and Jackson, M. 2010. "An Introduction to Continuous Controls Monitoring," *Computer Fraud & Security* (6), pp. 16–19.
- Ignatiadis, I. and Nandhakumar, J. 2009. "The Effect of ERP System Workarounds on Organizational Control: An Interpretivist Case Study," *Scandinavian Journal of Information Systems* (21:2), pp. 59–90.
- Jenkins, J. and Durcikova, A. 2013. "What, I Shouldn't Have Done That?: The Influence of Training and Just-in-Time Reminders on Secure Behavior," in *Proceedings of the 34th International Conference on Information Systems (ICIS)*, (Milan, Italy), pp. 1–18.

- Kaplan, B. and Maxwell, J. A. 2005. "Qualitative Research Methods for Evaluating Computer Information Systems," in *Evaluating the Organizational Impact of Healthcare Information Systems*, J. G. Anderson and C. E. Aydin (eds.). Health Informatics. New York, NY: Springer Science+Business Media Inc., pp. 30–55. (doi: 10.1007/0-387-30329-4\_2).
- Koopman, P. and Hoffman, R. R. 2003. "Work-Arounds, Make-Work, and Kludges," *IEEE Intelligent Systems* (18:6), pp. 70–75.
- Lapointe, L. and Rivard, S. 2005. "A Multilevel Model of Resistance to Information Technology Implementation," *MIS Quarterly* (29:3), pp. 461–491.
- Latour, B. 1984. "The Powers of Association," *The Sociological Review* (32:1\\_suppl), pp. 264–280.
- Laumer, S., Maier, C., and Weitzel, T. 2017. "Information Quality, User Satisfaction, and the Manifestation of Workarounds: A Qualitative and Quantitative Study of Enterprise Content Management System Users," *European Journal of Information Systems* (26:4), pp. 333–360. (doi: 10.1057/s41303-016-0029-7).
- Lee, S., Song, J., and Cao, Q. 2011. "Environmental Uncertainty and Firm Performance: an Empirical Study with Strategic Alignment in the Healthcare Industry," in *Proceedings of the 32nd International Conference on Information Systems (ICIS)*, (Shanghai, China).
- Leonardi, P. M. 2011. "When Flexible Routines Meet Flexible Technologies: Affordance, Constraint, and the Imbrication of Human and Material Agencies," *MIS Quarterly* (35:1), pp. 147–167.
- Li, Y., Haake, P., and Mueller, B. 2017. "Explaining the Influence of Workarounds on Effective Use—the Case of a Supply Chain Management System," in *Proceedings of the 25th European Conference on Information Systems (ECIS)*, (Guimarães, Portugal).
- Luhmann, N. 1995. *Social Systems*, Stanford, CA, USA: Stanford Univ. Press.
- Maaradji, A., Dumas, M., La Rosa, M., and Ostovar, A. 2015. "Fast and Accurate Business Process Drift Detection," in *International Conference on Business Process Management*, H. R. Motahari-Nezhad, J. Recker, and M. Weidlich (eds.). Lecture Notes in Computer Science. Cham, Switzerland: Springer International Publishing, pp. 406–422. (doi: 10.1007/978-3-319-23063-4\_27).
- Mahringer, C. A., Dittrich, K., and Renzl, B. E. 2019. "Interdependent Routines and Innovation Processes – An Ethnographic Study of Scrum Teams," *Academy of Management Proceedings* (2019:1), p. 11891. (doi: 10.5465/AMBPP.2019.11891abstract).
- Malaurent, J. and Karanasios, S. 2019. "Learning from Workaround Practices: the Challenge of Enterprise System Implementations in Multinational Corporations," *Information Systems Journal* (30:4), pp. 639–663.
- Malone, T. W., Crowston, K., Lee, J., Pentland, B., Dellarocas, C., Wyner, G., Quimby, J., Osborn, C. S., Bernstein, A., Herman, G., et al. 1999. "Tools for Inventing Organizations:

- Toward a Handbook of Organizational Processes,” *Management Science* (45:3), pp. 425–443.
- March, S. T. and Smith, G. F. 1995. “Design and Natural Science Research on Information Technology,” *Decision Support Systems* (15:4), pp. 251–266.
- Maurer, C., Berente, N., and Goodhue, D. 2012. “Are Enterprise System Related Misfits Always a Bad Thing?” in *Proceedings of the 45th Hawaii International Conference on System Sciences (HICSS)*, (Grand Wailea, Maui, HI, USA), pp. 4652–4661.
- Mayring, P. 2004. “Qualitative Content Analysis,” in *A Companion to Qualitative Research*, U. Flick, E. von Kardorff, and I. Steinke (eds.). London: Sage, pp. 266–269.
- Mendling, J., Pentland, B. T., and Recker, J. 2020. “Building a Complementary Agenda for Business Process Management and Digital Innovation,” *European Journal of Information Systems* (29:3), pp. 208–219. (doi: 10.1080/0960085X.2020.1755207).
- Miles, M. B. and Huberman, A. M. 1994. *Qualitative Data Analysis: An Expanded Sourcebook*, 2. ed. Thousand Oaks, Calif.: Sage.
- Nolle, T., Luettggen, S., Seeliger, A., and Mühlhäuser, M. 2018. “Analyzing Business Process Anomalies using Autoencoders,” *Machine Learning* (107:11), pp. 1875–1893. (doi: 10.1007/s10994-018-5702-8).
- Nonaka, I. and Takeuchi, H. 2011. “The Wise Leader,” *Harvard Business Review* (89:5), pp. 58–67.
- Orlikowski, W. J. 1992. “The Duality of Technology: Rethinking the Concept of Technology in Organizations,” *Organization Science* (3:3), pp. 398–427.
- Outmazgin, N. and Soffer, P. 2016. “A Process Mining-Based Analysis of Business Process Work-Arounds,” *Software & Systems Modeling* (15:2), pp. 309–323. (doi: 10.1007/s10270-014-0420-6).
- Parks, R., Xu, H., Chu, C.-H., and Lowry, P. B. 2017. “Examining the Intended and Unintended Consequences of Organisational Privacy safeguards,” *European Journal of Information Systems* (26:1), pp. 37–65. (doi: 10.1057/s41303-016-0001-6).
- Pentland, B. T. and Feldman, M. S. 2005. “Organizational Routines as a Unit of Analysis,” *Industrial and Corporate Change* (14:5), pp. 793–815.
- Pentland, B. T. and Feldman, M. S. 2008. “Designing Routines: On the Folly of Designing Artifacts, while Hoping for Patterns of Action,” *Information and Organization* (18:4), pp. 235–250.
- Pentland, B. T., Liu, P., Kremser, W., and Haerem, T. 2020. “The Dynamics of Drift in Digitized Processes,” *MIS Quarterly* (44:1), pp. 19–47. (doi: 10.25300/MISQ/2020/14458).
- Pentland, B. T., Yakura, E., and Singh, H. 2011. “Services, Processes and Routines: Literature Review and Implications,” in *Proceedings of the International Conference on Information Resources Management 2011 (CONF-IRM)*, (Seoul, Korea), pp. 12–14.

- Petrides, L. A., McClelland, S. I., and Nodine, T. R. 2004. "Costs and Benefits of the Workaround: Inventive Solution or Costly Alternative," *International Journal of Educational Management* (18:2), pp. 100–108.
- Pinto, A. d. V., Maçada, A. C. G., and Mallmann, G. L. 2018. "Impact of Workaround Behavior and Shadow IT Usage on Individual Performance," in *Proceedings of the 18th Conference of the Portuguese Association for Information Systems (CAPSI)*, (Évora, Portugal), p. 18.
- Pollock, N. 2005. "When is a Work-Around? Conflict and Negotiation in Computer Systems Development," *Science, Technology, & Human Values* (30:4), pp. 496–514.
- Rerup, C. and Feldman, M. S. 2011. "Routines as a Source of Change in Organizational Schemata: The Role of Trial-and-Error Learning," *Academy of Management Journal* (54:3), pp. 577–610.
- Rinderle, S., Reichert, M., and Dadam, P. 2004. "On Dealing with Structural Conflicts between Process Type and Instance Changes," in *Business Process Management*, (Potsdam, Germany). J. Desel, B. Pernici, and M. Weske (eds.). Vol. 3080. Lecture Notes in Computer Science. Berlin and Heidelberg: Springer, pp. 274–289. (doi: 10.1007/978-3-540-25970-1\_18).
- Röder, N., Wiesche, M., Schermann, M., and Krcmar, H. 2014. "Why Managers Tolerate Workarounds – The Role of Information Systems," in *Proceedings of the 20th Americas Conference on Information Systems (AMCIS)*, (Savannah, Georgia, USA).
- Röder, N., Wiesche, M., Schermann, M., and Krcmar, H. 2015. "Embracing a Relational View of Workarounds: An Affordance Perspective," in *Proceedings of the 20th DIGIT Workshop*, (Fort Worth, Texas, USA).
- Röder, N., Wiesche, M., Schermann, M., and Krcmar, H. 2016. "Toward an Ontology of Workarounds: A Literature Review on Existing Concepts," in *Proceedings of the 49th Hawaii International Conference on System Sciences (HICSS)*, (Koloa, HI, USA), pp. 5177–5186.
- Safadi, H. and Faraj, S. 2010. "The Role of Workarounds During an OpenSource Electronic Medical Record System Implementation," in *Proceedings of the 31st International Conference on Information Systems (ICIS)*, (Saint Louis, Missouri, USA,).
- Sarker, S., Chatterjee, S., Xiao, X., and Elbanna, A. 2019. "The Sociotechnical Axis of Cohesion for the IS Discipline: Its Historical Legacy and its Continued Relevance," *MIS Quarterly* (43:3), pp. 695–720.
- Seidel, S., Müller-Wienbergen, F., and Rosemann, M. 2010. "Pockets of Creativity in Business Processes," *Communications of the Association for Information Systems* (27), pp. 415–436. (doi: 10.17705/1CAIS.02723).

- Sele, K. and Grand, S. 2016. "Unpacking the Dynamics of Ecologies of Routines: Mediators and Their Generative Effects in Routine Interactions," *Organization Science* (27:3), pp. 722–738.
- Soh, C., Kien, S. S., and Tay-Yap, J. 2000. "Enterprise Resource Planning: Cultural Fits and Misfits: Is ERP a Universal Solution?" *Communications of the ACM* (43:4), pp. 47–51.
- Strong and Volkoff 2010. "Understanding Organization—Enterprise System Fit: A Path to Theorizing the Information Technology Artifact," *MIS Quarterly* (34:4), pp. 731–756. (doi: 10.2307/25750703).
- Thelen, E. and Smith, L. B. 1996. *A Dynamic Systems Approach to the Development of Cognition and Action*, A Bradford book. Cambridge, MA, USA and London, UK: MIT press.
- Tucker, A. L., Heisler, W. S., and Janisse, L. D. 2014. "Designed for Workarounds: a Qualitative Study of the Causes of Operational Failures in Hospitals," *The Permanente Journal* (18:3), p. 33.
- Valena, G., Alves, C., Alves, V., and Niu, N. 2013. "A Systematic Mapping Study on Business Process Variability," *International Journal of Computer Science & Information Technology* (5:1), pp. 1–21.
- van Beijsterveld, J. A. A. and van Groenendaal, W. J. H. 2016. "Solving Misfits in ERP Implementations by SMEs," *Information Systems Journal* (26:4), pp. 369–393. (doi: 10.1111/isj.12090).
- van den Hooff, B. and Hafkamp, L. 2017. "Dealing with Dissonance: Misfits between an EHR System and Medical Work Practices," in *Proceedings of the 38th International Conference on Information Systems (ICIS)*, (Seoul, South Korea).
- van der Aalst, W. M. P. 2011. *Process Mining: Discovery, Conformance and Enhancement of Business Processes*, Berlin, Heidelberg: Springer Berlin Heidelberg. (doi: 10.1007/978-3-642-19345-3).
- van der Aalst, W. M. P. 2013. "Business Process Management: A Comprehensive Survey," *ISRN Software Engineering* (2013), pp. 1–37. (doi: 10.1155/2013/507984).
- vom Brocke, J., Zelt, S., and Schmiedel, T. 2016. "A Systematic Mapping Study on Business Process Variability," *International Journal of Information Management* (36:3), pp. 486–495.
- Weinzierl, S., Wolf, V., Pauli, T., Beverungen, D., and Matzner, M. 2020. "Detecting Workarounds in Business Processes—A Deep Learning Method for Analyzing Event Logs," in *Proceedings of the 28th European Conference on Information Systems (ECIS)*, (Marrakech, Morocco).
- Wenger, E. C. and Snyder, W. M. 2000. "Communities of Practice: The Organizational Frontier," *Harvard Business Review* (78:1), pp. 139–145.

- Wolf, V. and Beverungen, D. 2019. "Conceptualizing the Impact of Workarounds—An Organizational Routines' Perspective," in *Proceedings of the 27th European Conference on Information Systems (ECIS)*, (Stockholm and Uppsala, Sweden).
- Woltjer, R. 2017. "Workarounds and Trade-Offs in Information Security – An Exploratory Study," *Information & Computer Security* (25:4), pp. 402–420.
- Wynn and Williams 2012. "Principles for Conducting Critical Realist Case Study Research in Information Systems," *MIS Quarterly* (36:3), pp. 787–810. (doi: 10.2307/41703481).
- Yi, S. and Becker, T. 2016. "Inertia in Routines: A Hidden Source of Organizational Variation," *Organizational Science* (27:3), pp. 782–800.
- Yin, R. K. 2011. *Applications of Case Study Research*, 3rd Edition. Los Angeles, CA, USA: SAGE Publications.
- Yin, R. K. 2017. *Case Study Research and Applications: Design and Methods*, 6th ed. London, UK: SAGE Publications.