

## Conflicting Roles of CIOs and their Negative Effects on the Workplace of the Future

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### Abstract

*Demographic change is forcing companies to find new ways to attract skilled knowledge-workers to safeguard strong economic performance. In particular, in the case of younger generations, companies have the opportunity to increase their attractiveness apart from usual incentives like a high salary by addressing these generations' altered expectations towards their professional life and their work-life balance. Recent studies show, however, that companies often struggle to implement the necessary information technology. Drawing on role theory and existing literature, we developed a role framework to identify intra-role conflicts perceived by the chief information officers and inter-role conflicts between the IT and other departments. Through qualitative interviews with representatives from five companies, we identify numerous role conflicts, particularly common in smaller companies and companies managed by their owners. Implications for theory and practice are discussed.*

### 1. Introduction

As the shortage of skilled labor continues to proceed, companies are increasingly facing problems in talent acquisition and thus maintaining strong economic performance. The lack of qualified information technology (IT) professionals is particularly critical in Western economies [1, 2]. In the competition for skilled knowledge workers, small and medium enterprises (SMEs) compete with large international corporations, service companies compete with manufacturing companies, and start-ups compete with established companies. In the past, the companies often attracted new employees by offering a high salary or other monetary incentives like a company car. Due to more limited financial resources, smaller companies, for example, often had problems being attractive to employees [3]. However, times are changing, and “we are at the beginning of

*an exciting transformation of work, work practices, and workplaces”* [4, p. 9].

Especially young (Generation Y and Generation Z), well-qualified knowledge workers no longer prioritize solely salary and perks but instead focus on other factors like the workplace culture (flexibility, autonomy, work-life balance, and job crafting) as well as the technology provided [5]. As a result, previously less attractive companies also have the opportunity to win the competition for skilled knowledge workers.

The corresponding steps and approaches to realize such a work setting are discussed in scientific literature under the term *Workplace of the future* [4, 6]. The workplace of the future is, without any doubt, a predominantly digital workplace as IS-mediated tasks have considerably increased in many functions, also outside the IT-department [7, 8]. According to Kissmer et al. [5, p. 3] “*the future workforce demands technology in the working environment and requires it to be integrated into everyday enterprise-working life*”. Digital innovations aim to make work for knowledge workers more flexible and autonomous, always available, and more connected [8]. State-of-the-art IT requires modern software tools or applications and advanced technology, such as mobile devices and cloud infrastructure [9].

All these digital innovations set the frame to enable new ways of performing work tasks. To account for the term workplace of the future furthermore a change of cultural norms and values of the working environment is required on the part of managers and employees alike [10]. Working more flexible accounts for a spatial and temporal autonomy of employees, enabling an appropriate work organization according to personal preferences and requirements. This work flexibility will improve employees' perceived work-life balance and their desire of job crafting. To realize this flexibility, all needed tools must be available to employees at all times and hours, which also makes employees available to companies outside regular office hours. Being more connected supports collaboration in

interdisciplinary teams outside department silos and hierarchies, enabling comprehensive and more creative solutions [5].

To create such an environment, the chief information officer (CIO) plays an essential role since (s)he is the person responsible for the implementation of new IT components and has the authority to shape technical and cultural change management [8]. As these innovations are adopted by more and more companies, it becomes clear that *“IT is not only changing the way the work is conducted but also the nature and the essence of work”* [6, p. 2].

However, although most companies are well aware of the shifts in values and expectations of skilled workers, according to a survey of their employees [11], relatively few companies are up-to-date in the realization of a truly digital workplace. This is an important issue since companies not only have to compete for new talents but also have to remain attractive for their current employees.

In this paper, we assume that role conflicts are the underlying cause of the inadequate realization of a workplace of the future. The negative effect of role conflicts on the implementation of IT has already been proven in various studies [8, 12]. For example, Schulz and Böhm [13] show that, on an organizational level, role conflicts lead public transport organizations to not implement mobile ticketing or the infrastructure required to generate real-time timetable data. Although there is extensive literature on the concept of a future workplace, there are no comparable studies. The purpose of this paper is to address this research gap by answering the following research question:

*Which role conflicts of CIOs arise by the implementation of a Workplace of the Future?*

To approach this research question, we conducted fifteen semi-structured interviews with relevant representatives (e.g., CIOs, IT staff, human resource manager) from five companies in Germany. The companies are active in different industries, such as mechanical engineering and metal processing, which results in a high degree of generalizability of the results. Our results show that larger companies are more advanced in terms of implementing IT components and cultural changes. In contrast, smaller companies struggle more with role conflicts that hinder such implementations. These are often rooted in the fact that the CIOs perceive a lack of support by the managing directors or company owner. Our study can help practitioners make their company more attractive to skilled knowledge workers and thus to enhance a promising development for its economic performance.

The remainder of this paper is structured as follows. Subsequently, we provide a review of the concept of role conflict theory and discuss the various roles of a CIO. After describing our research methodology, we present our results and discuss their theoretical and practical implications as well as the limitations of the study and recommendations for further research.

## 2. Role (Conflict) Theory

### 2.1 Theoretical Background

*“Role theory [...] is the study of behaviors that are characteristic of persons within contexts and with various processes that presumably produce, explain, or are affected by those behaviors”* [14], p.4. Role theory provides the theoretical background for many social situations and can be applied to private, professional or organizational settings. It has been applied to a wide range of topics in IS research [13, 15, 16]. It is important to note that according to role theory, one person can have more than just one role [17].

For example, at an organizational level, we may consider the various roles of one person in a company, whereas focusing on the person’s working life only: A CIO who is a member of a project team for digital transformation has two different roles, each of which has a specific set of “patterned expectations of others”, which other people associate with this person in a social structure. A set of different social roles of one person is called a role-set and is also referred to as a person’s social status [17].

Another key concept of role theory is the negative aspects that can arise when a person has more than just one role, which is known under the term *“role conflict theory”* [17]. In role conflict theory there is the principle, *“that there is always a potential for differing and sometimes conflicting expectations of the conduct appropriate”* for a person within its role-set [17, p. 112]. According to Perrone et al. [18], these “expectations” also contain a person’s goals and values.

In role conflict theory there are two distinctively differently types of potential conflicts: On the one hand, there are ‘inter-role conflicts’, on the other hand, there are ‘intra- role conflicts’. [14] As every person most likely has more than just one role, a person can also face inter- and intra-role conflicts at the same time. Continuing the example from above, the CIO may face an inter-role conflict with one of his employees as they have different opinions about the usefulness of a lately implemented digital collaboration tool. To identify inter-role conflicts

affecting CIOs we consider further employees from the IT and also from Non-IT departments who collaborate with the CIO. At the same time, a CIO can face an intra-role conflict as he has different preferences for a budget allocation; Acting according to his CIO role, he may choose to provide new smartphones for his employees but acting according to his project team member role he prefers to arrange new co-working locations.

Our review of relevant literature finds several studies addressing the question which set of different roles CIOs may inherit in their position.

In their paper “*Clarifying the Ambiguous Role of the CIO*” Peppard et al. [12] examine the role set of a CIO and the ongoing changes it is subject to. Their analysis put forth five distinct roles: Utility IT Director, Evangelist CIO, Innovator CIO, Facilitator CIO and Agility IT Director/CIO [12, p. 11]. Rather than examining the critical correlations between these roles, they argue that one CIO adopts primarily one of the defined roles depending on the setting of a company, whereas both can change over time [12].

Haffke et al. [8] mainly focus on the roles of CIO's arising in the context of the forthcoming digitalization in companies and their IT departments. They argue that the position of a CIO as it is known today embodies two areas of competence, which are “*strategic as well as operational elements*”. As the digitization becomes a key issue in almost every department and process in companies, some have decided to implement the position of a Chief Digital Officer (CDO) to split the increasing number of potential roles and potential resulting role conflicts of the CIO. For the CDO, they identify four distinct roles: Digital Evangelist, Digitization Coordinator, Digital Innovator, and Digital Advocate [8, pp. 9-10].

## 2.2 Roles of CIOs

Adapting these frameworks from the relevant literature to find a suitable role set for CIOs for a transformation into a workplace of the future, we focus on the following five roles:

### *Person responsible: IT-strategy*

The emergence of the position of a CIO can be ascribed to the change of the IT departments from an operational service provider to a strategically important business line and the modified requirements resulting for the management of the IT department [12, 19]. This original role of a CIO significantly gains importance as IT becomes more and more one of the critical success factors in the primary business strategy [20]. Moreover, the IT-strategy is increasingly considered as one of the

strategic differentiators in competitive market environments and therefore also one potential criterion for skilled knowledge workers when choosing their employer [8]. Determining an IT-strategy for a workplace of the future a CIO has to decide how employees should optimize their working routine and how to enable them technically. This means, choices about well-suited technical devices, (software) applications, and infrastructure components have to be made on the one hand, whereas a reasonable overall allocation of the available IT-budget has to be ensured. On the other hand, company guidelines have to be examined and, if necessary, revised to guarantee an unproblematic use of innovative IT.

### *Person responsible: IT-security*

As not only the possibilities of IT but also the risks of it and for entire companies arise, the role of the person responsible for IT-security of a CIO has major importance [12]. This applies to in-house data, such as company secrets and employee information but also and in particular to sensitive client data as a mishap can cause severe legal and reputational consequences. For this reason, IT-security must necessarily be considered whenever new IT-components or guidelines are implemented, for example when a new cloud is used for sensitive data or employees are allowed to work remotely in other network environments or with their own devices.

### *Innovator*

To remain competitive as a company, innovations are indispensable, especially in the current rapidly changing IT environment. As innovation is a significant success factor, expectations towards a CIO involve contributing new ideas, recommendations for innovative tools, devices, and the related cultural changes for the IT department and beyond [12]. In their paper “*The Digital Workplace is Key to Digital Innovation*” Dery et al. [21] even argue, that the transformation into a digital workplace is one of the main success factors in the digital area since it is one of the main drivers for innovation. Possible innovations enhancing a future workplace are manifold, but can include, for instance, the launch of new software applications for efficient digital communication and information exchange between employees at different subsidiaries or an adjustment in guidelines to enable remote working for employees suggested by the CIO.

### *Advocate*

In addition to contributing new ideas and recommendations for technical innovations (innovator role), the CIO also has the responsibility

for the actual implementation of these innovations. Moreover, the CIO has to challenge fundamental norms and values of how work is structured and performed when implementing new IT-components to initiate a cultural change according to the future of work. This task has not only to be carried out before the first implementations but also has to be continued whilst the change process towards different entities and persons like the managing directors but also IT and non-IT employees [8]. Acting as an *advocate* is particularly essential for a CIO when proposed innovations are questioned or repelled, especially concerning the allocation of IT-budget or personal resources. Hence, the advocate role of a CIO includes the role of a change manager.

*Coordinator*

Changing a company into a workplace of the future also means choosing the right options from a broad variety of technical devices, software applications, and organizational structures. At the beginning of this process, several alternatives are likely to be considered, and eventually, some of them will be tested. As more and more young and digitally skilled knowledge workers enter the market, it is also more likely that apart from top-down initiated changes other solutions are considered by employees, especially with regard to software applications [4]. As a *coordinator*, the CIO has to overlook all different kind of initiatives and coordinate which

solutions should be rolled-out for which employees and what possible independencies could occur [8]. Orchestrating all the mentioned above, the CIO has to incorporate aspects like IT-security, costs, legal frameworks, and usefulness to ensure a well-suited and sustainable set of innovations that are supposed to be integrated into a company. Furthermore, the CIO has to take into account the emerging effects for his employees and coordinate their adaption and usage to prevent adverse outcomes regarding their workplace satisfaction.

**2.3 Initial Assumptions**

Based on these predefined CIO roles which we deducted from the relevant literature, we make initial assumptions about possible inter- and intra-role conflicts. Our initial assumptions are presented in figure 1. Possible inter- role conflicts could occur between the IT department and the CIO and/or non-IT departments and the CIO. In these assumed inter-role conflicts, the CIO can have one of the predefined roles. The other person facing an inter-role conflict with the CIO can be an employee part of the IT department or of a different department. Possible intra-role conflicts for the CIO may occur when a situation requires the CIO to think or act according to one role but contradicting to another role, which is also outlined in figure 1.



**Figure 1:** Initial Assumptions about inter and intra-role conflicts

**3 Data Collection and Analysis**

In order to gain insights into the different roles and possible role conflicts during the implementation of a future workplace, we have conducted a qualitative study. We limited our *data collection* to Germany. There are several reasons for this decision: Germany is, with a gross domestic product of 4,000 billion US-dollars and a current account surplus of 299 billion US-dollars in 2018 the fourth largest

economy in the world after the USA, China, and Japan [22] and defended its title of the 'Export World Champion' [23]. Moreover, the market structure of the German economy is characterized by a broad range of different industries and company sizes [24, 25] which is also reflected in our sample. Third, Germany is facing a pronounced demographic change [2] as are most other industrial countries [1].

As skilled workers are becoming increasingly scarce in many countries, companies need to find

new ways to attract suitable talents who, for example, live far away or work for competing, bigger or more prestigious, companies. To these companies, the concept of a future workplace opens up the opportunity to maintain their economic performance by increasing their attractiveness for skilled workers through an attractive working environment, for example by implementing remote working or by allowing more flexible working hours.

In order to identify and attract suitable participants for our study, we presented and discussed our research project at a local workshop in November 2018. The workshop takes place every six months and focuses on changing IT topics, such as the blockchain technology and the DevOps-approach. The participants of the workshop are mainly the CIOs of companies whose headquarter is located in a somewhat rural area between the two largest cities in southern Germany. Partly because of this geographical location, these companies and their CIOs are faced with the challenge of implementing a future workplace in order to attract skilled knowledge workers. After the workshop, we contacted the CIO's via email to arrange an interview appointment. Besides the existing personal contact, we selected

this approach due to the fact that the CIOs are in charge of strategic decisions for the IT department as well as for the allocation of the IT-budget of the whole company. In order to be able to identify conflicts between the roles of the different members of the IT department with the CIOs as well as between the roles of members of other departments with the CIOs, the CIOs were encouraged – in accordance with the snowball sampling method [e.g. 26] – to name at least two additional employees of the company as further interview partners.

In total, we were able to arrange 15 interview appointments with three employees of five different companies (C). Table 1 provides an overview of the demographic data of the interviewees, as well as of the revenue and the number of employees of their company. The companies are active in different industries, such as mechanical engineering and metal processing. Except for two interviews (C.5.1, other location, and C5.2, by telephone), the interviews were conducted on-site to get an impression of the workplaces and the current status of the implementation of a workplace of the future. The interviews were conducted from April to May 2019 and lasted a total of nearly 8 hours.

**Table 1:** Overview of interviewees and their company

ID	Function	Department	Years in position	Age	Revenue in Mio. EUR (2018)	Number of employees (2018)
C1.1	CIO	IT	7	55	1,200	6,600
C1.2	Responsible for global telephone system	IT	4	n.a.		
C1.3	Intern communications and subproject manager intranet	Marketing	7	29		
C2.1	CIO	IT	3	45	400	2,200
C2.2	Team manager: Global application services	IT	3	37		
C2.3	Team manager: Operational services	IT	1	30		
C3.1	CIO	IT	3	39	200	1,900
C3.2	Head of business intelligence and data integration	IT	1	30		
C3.3	Responsible: Digitalization and improvement of process management	Business development	2	30		
C4.1	CIO	IT	2	60	900	3,700
C4.2	Responsible: IT-infrastructure	IT	4	35		
C4.3	Head of HR development	HR	11	42		
C5.1	Responsible: Digital transformation (focus on HR and finance)	IT	1	36	3,400	7,000
C5.2	Responsible: Improvement of process management/lean management	Engineering and logistics	13	41		
C5.3	Responsible: Group accounts	Finance	1	27		

We used a semi-structured interview guideline containing questions about the interviewees' role, the IT currently used in the company/department (for example Microsoft Teams or Cisco Jabber), and potential inter- and intra-role conflicts with regard to the topic of the future of work. For instance, we asked the interviewees about their opinion about and access to digital collaboration tools or their mobile hardware equipment. Semi-structured interviews are very flexible and offer us the advantage to respond to interesting issues that arise during the interviews [27]. Depending on the function of the interviewees (CIO, IT, or non-IT staff), we use slightly adjusted guidelines to match the different job circumstances. All interviews were recorded with the permission of the interviewees and transcribed afterward.

For *data analysis*, we used the software program NVivo 10. In a first step, one of the authors coded each interview. The coding categories are based on our theoretical foundation and included the different roles (e.g., innovator, advocate, and coordinator), as well as inter- and intra-role conflicts. In a second step, the codes are analyzed across the boundaries of the individual interviews. This data analysis approach followed the recommendations as proposed by Miles et al. [28] and Corbin and Strauss [29]. To address potential bias [30], and thus to strengthen the internal validity of our findings, the team of authors held regular meetings to discuss the coding results. Divergent interpretations were discussed until consensus was reached. In this process, the authors also drew on the transcriptions of the interviews.

## 4. Analysis Results

Following the predefined roles of a CIO and the framework from our initial assumptions from chapter 2, we used the interview data to analyze which different roles each CIO has in the respective company and which inter- and intra-role conflicts exist in the surveyed companies.

### 4.1. Inter-role conflicts

In two companies (C3, C4) inter-role conflicts between the *CIO and managing directors* could be detected. In either company, the CIO intends to act as an innovator and/or advocate, which is combined with the expectation towards the managing directors to support innovative plans monetarily and ideally. In the case of C3, the CIO assigns the main problem to the fact "*that the average age in the managing board is too high to actually use [digital communication tools]*". In C4 the CIO states that "*the required*

*technology [for remote working] is available*" but criticizes the current legal frames: "*The extensive set of company agreements is not designed in a way to encourage remote working of employees*". Moreover, he describes his problems as he drives the topics digitalization and artificial intelligence: "*The managing board should get engaged a lot more*". In both companies, the company owner is one of the managing directors and according to C3.1 and C4.1 still shapes the corporate culture of the respective companies. In C5 we detected a similar inter-role conflict between C5.1 and the managing board, which is reflected in the contrast of the implemented digital communication and collaboration tools in the IT department and the assessment that "*very traditional structures [...] do not encourage interdisciplinary work*".

In four companies (C1, C2, C4, C5) we found inter-role conflicts between the *CIO* and the interviewee of the *IT department*, whereby most conflicts (C1, C2, C4) are based on different attitudes and mindsets towards a future workplace. In C1 the CIO states that he ran into problems due to the implementation of a new communication tool he initiated as it was largely declined by its employees: "*The people in our company are not yet ready to accept more communication tools*" and adds that "*[he] has learned, that you need a certain culture to implement such tools successfully*". C4.1 describes a first attempt of organizational restructuring of the IT department to react better to new requirements due to a higher degree of digitalization adding that "*he wants to extend the restructuring process, but people are not yet ready for it*". C2.1 states that "*change management is the most important topic*" e.g. when it comes to taking away concerns in his IT department about the security of new cloud infrastructures. In the situations outlined above, C1.1 and C4.1 both act as innovators, C2.1 as an advocate. In C5 the role conflict between the CIO and the interviewee of the IT department is based on different expectations regarding state-of-the-art hardware as the provided technical devices ("*big and bulky*") are not considered suitable to optimize remote working, but tablets are "*probably due to cost reasons*" not provided for all IT employees (C5.1). C3 is the only company, we did not detect an inter-role conflict between the CIO and the IT-department. That could result of the small size of the company and the related close collaboration between the CIO and its employees.

Inter-role conflicts between the *CIO* and interviewees of the *non-IT department* occurred in three companies (C1, C2, C5); On the one hand, the

CIO in C1 was, according to the roles of an innovator and advocate, in charge of implementing remote working for several departments. During the implementation period, he faced major problems “*not with the works council, not with IT-security but with managers, who did not trust their employees enough to let them work remotely*”. Moreover, C1.1 perceives his role as coordinator (“*we are the ones to orchestrate this new environment*”) of IT governance topics both, highly relevant and highly challenging: “*The problem is the interface between systems on premise and systems in a cloud. [...] Someone has to keep track of all licenses, digital-rights management, intellectual property, data-protection and IT-security [...] but this role is not yet fully perceived by other departments*”. On the other hand, non-IT employees criticize the lack of efficient digitalization of

workflows, especially when it comes to internal administration and coordination processes (“*it is an incredible effort*”, C1.3).

In C2, the challenge of change management is also highly relevant outside of the IT department for the CIO as there also persist uncertainty about IT-security aspects. In C5, the interviewed non-IT employee explains the effects of an inter-role conflict with the CIO, who is acting as coordinator and the person responsible for IT-security. C5.2. states that it is not allowed to install certain communication services on notebooks or to use company data for these services on a smartphone, resulting in the use of it for “*personal communication with colleagues only*”. A summary of all detected inter-role conflicts and their extent is displayed in figure 2.

Inter-Role Conflicts	Company 1	Company 2	Company 3	Company 4	Company 5
CIO	IT Non-IT	IT Non-IT	MD	IT MD	
IT Department (IT)					CIO
Non-IT Departments employees (Non-IT)					CIO
Managing Directors (MD)					

- Clear conflict
- Partial conflict
- No conflict

**Figure 2:** Summary of all detected inter-role conflicts

#### 4.2. Intra-role conflicts

In one company (C1) we found intra-role conflicts associated with the responsibility for the **IT-strategy**, which inherits the efficient allocation of the IT-budget. In C1, the CIO is in charge of the technical devices that are assigned to the employees due to his role as an **advocate** for new technologies. In our interview, he states that he is facing a conflict because “[*he*] would like to provide every employee with a company smartphone but due to financial reasons that is not possible at the moment”. Furthermore, he also faces budget constraints regarding the noise protection for the newly designed office of the IT department, which was designed to ensure not only an increased information flow but also an optimized environment for his employees to work focused.

In two companies (C2, C3) we could exhibit intra-role conflicts, whereas the responsibility of **IT-security** is always one of the conflicting roles. In C2 the CIO additionally acting according to the role of a **coordinator** states that they did not introduce a bring-your-own-device policy which is explained in detail

by C2.2, saying that “*there is a lot to analyze and clarify to eliminate the related risks and we are not willing to put that much effort into it*”. As an **advocate** C3.1 aims at the implementation of a new digital communication tool and a cloud application. He explains that the tools he considered arise problems: “*Everyone knows how it works and there would be no need for training [...], but there are certain security and data issues*”.

In C1 the CIO implemented a new digital communication tool for his IT department: “*since [we] test new tools from time to time*”. During the trial period, it became clear that the tool was not accepted by the employees the way it was expected which lead to a rather unsatisfactory situation: “[*He*] and a colleague posted more than 80 percent of the content, which must not be the aim of [the tool]”. Facing an intra-role conflict between an **innovator**, an **advocate** and a **coordinator**, the tool is not actively used by C1.1. anymore since it does not add sufficient value for him or his employees.

More intra-role conflicts including the **innovator and advocate** role, exist in C1, C3, and C4. In our interview, C3.1 told us that they “*can use their*

company phones from anywhere, since [they] prepared all the phone systems for [remote working] already a while ago” (innovator) when he was asked about remote working. He also stated his handling for remote working: “[My employees] are allowed to work from anywhere as soon as the technology was implemented” (advocate). When asked the same questions about remote working, C1.1 stated that “everyone should organize themselves due to their own schedule and that he cannot set out rules [for remote working]” and C4.1 answers, that he wants to employ remote working for himself and would allow

it to his employees as well as soon as the company’s guidelines are adjusted to the topic.

The conflict arises in all three cases because the CIOs also act according to the **coordinator** role, explaining that “[he] wants to know about it in advance and that there always have to be at least two people in the office” (C3.1), C4.1. states that “[he] would favor it in certain limits” whereas C1.1 told us that “if people have problems with [remote working], I try to reduce the amount to reduce remote working since some colleagues tend to work more when they have this opportunity”. A summary of all detected intra-role conflicts is displayed in figure 3.

Intra-Role Conflicts	Company 1	Company 2	Company 3	Company 4
PR: IT-strategy	Advocate			
PR: IT-security		Coordinator	Advocate	
Innovator	Coordinator		Coordinator	
Advocate	IT-strategy Coordinator		IT-security	Coordinator
Coordinator	Innovator Advocate	IT security	Innovator	Advocate

Clear conflict  
 Partial conflict  
 No conflict

**Figure 3:** Summary of all detected intra-role conflicts

## 5. Discussion and Conclusion

Due to demographic change [31], companies increasingly face the challenge to attract a sufficient number of skilled workers [2, 32] in order to maintain their economic performance. As a consequence, for example, smaller companies have to compete with financially strong international corporations, and companies located in rural areas have to compete with companies located in attractive cities. The recent study of Kissmer et al. [5] highlights that companies can compensate for the disadvantage of a lower level of salary through the implementation of an appropriate, modern workplace environment. In particular, young and skilled knowledge workers also focus on other factors, such as flexibility, autonomy, work-life balance, and job crafting rather than salary when choosing their employer. Concepts and approaches that aim to realize a corresponding workplace setting are discussed under the term ‘workplace of the future’ [6]. The associated ideas and approaches also involve the implementation and use of (advanced) IT, as it becomes obvious, for instance, in the case of remote working and or collaboration in virtual teams [33]. Even though most companies are well aware of the

shifts in values and expectations of (potential) employees, only a few of them have already made significant progress in the transformation of their workplaces [11]. This study analyzed which inter- and intra-role conflicts of CIOs arise by the implementation of a Workplace of the Future.

By answering this research question, we can contribute to research and practice in several ways. First, we conducted an extensive literature review to identify roles – in particular, the intra-roles of the CIO [8, 12] – relevant in the context of the implementation of a future workplace. We consolidated the currently fragmented knowledge leading to five clearly defined roles: Person responsible: IT-strategy, person responsible: IT-security, innovator, advocate, and coordinator. All interviewees confirmed the derived roles and the underlying tasks when thinking about the transformation of the workplace. Accordingly, the five roles constitute a well-founded framework, which can be used by future research.

Second, our results show that role conflict theory can be a useful theoretical lens to understand better the current difficulties faced by companies in the implementation of a future workplace [11]. Until today, role conflict theory has been used by a high number of researchers from different fields, such as



IS [13, 15, 16], business administration [8, 12] and sociology [17], but not in the context of a future workplace. Based on our interviews, we could reveal a high number of inter- and intra-role conflicts that negatively affect the implementation of a future workplace. Interestingly, we did not find that any of our collected personal control variables (age, years in position) has a measurable impact on the detected role conflicts. This first empirical evidence can serve as a starting point for fruitful future research (e.g., by conducting quantitative studies).

Third, based on the identified role conflicts, we can provide practitioners with recommendations on how they can better implement a future workplace and thus attract skilled knowledge workers. Due to demographic change [31], companies are increasingly challenged to find skilled workers. As a result, the economic performance of the companies is in danger. Based on the study of Kissmer et al. [5] that in the case of younger generations, in addition, or instead of a high salary, other criteria such as flexibility, autonomy and a suitable work-life balance influence the employer's choice, our results can help to increase attractiveness of a company and counteract possible negative effects associated with a shortage of skilled knowledge workers.

In particular, we can make suggestions to address the two most problematic role conflicts – the perceived inter-role conflict between the CIO and the managing directors, as well as the intra-role conflict between the advocate and coordinator role of the CIO. The first role conflict shows that the CIOs are often interested in implementing a future workplace, but lack the support of the management. This result is somewhat surprising, as it can be assumed that the managing directors – for instance, due to recently published studies [5, 11] – are aware of the relationship between the concept of a future workplace and the possibility to increase the attractiveness of the company for skilled knowledge workers. Therefore, it seems to be more likely that the inter-role conflict perceived by the CIOs is rather due to a lack of common understanding with the managing director. This would also explain why this role conflict occurs predominantly in the case of smaller companies (C3, C4) who may own a very traditional mindset or companies managed by a strong owner. Weeger and Ott-Schwenk [34] showed how a lack of common understanding on different aspects, such as motives, rules, and the division of labor, negatively influence the implementation of health IT.

One possible solution could be to systematically record the resulting changes ahead of the implementation in order to counteract the possible

concerns of the managing directors. In addition, a further employee could be invited to the meetings to mediate between the two parties. Another solution could be if the current employees request implementations for a transformation into a workplace of the future.

With regard to the identified intra-role conflicts between the advocate and the coordinator role of the CIO, we can also suggest several possible solutions. So it is conceivable that the advocate role will be taken over by another employee, for example by appointing a chief digital officer (CDO) as some large or IT-centered companies have already done [8]. In this case, however, it must be examined whether the implementation of a workplace of the future is really promoted, or if only an intra-role conflict is transformed into an inter-role conflict. Another possibility would be to set up rules and guidelines, for instance, for the use of remote working or a road-map for testing and implementing new tools and applications to ease the coordination tasks of the CIOs.

Our study has several limitations, which should be addressed by future research. First of all, our data collection is limited to German in particular manufacturing companies. A robust economic performance [22, 23] and demographic change [31] make German companies particularly interesting for our study. However, in order to make statements about the generalizability of our results, companies from other countries should also be investigated. In addition, future studies can compare role conflicts in the case of different types of companies (e.g., service companies, start-ups, international corporations). Further studies could also provide a comparison between companies struggling with role conflicts and those that have already made significant progress with changes into a future workplace. We propose the use of activity theory as a theoretical perspective. By drawing on its concept of contradictions, activity theory can provide new insight into the possibilities of solving existing role conflicts. Furthermore, it highlights that new conflicts can be induced by solving an existing conflict. Corresponding literature can be found, for example, for a healthcare context [35, 36].

## 8. References

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