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“Who Am I When Everything has Changed?” The Impact of Scaled-agile Organizations' Implementation on Professional Role Identity

Completed Research Paper

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Abstract

As digital technology continues to advance, organizations require more flexibility to meet the needs of their customers and remain competitive. To do so, many incumbent organizations fundamentally change their established structures and processes to implement scaled-agile organizations (SAO), emulating digital organizations and leveraging development speed and customer focus. However, when everything changes, there are significant effects on the employees' identities. Thus, we explore how implementing an SAO affects employees' professional role identities (PRI). The paper follows a case study approach analyzing two cases with 21 interviews, observational, and secondary data collected over a period of 18 months. We contribute to the literature by identifying three effects of an SAO implementation on PRI (threat, empowerment, and extension) and describing how individuals react based on the effect on their PRI. We inform practitioners on the overall SAO implementation process and consequences for professionals, offering a new perspective on organizational transformation challenges.

Keywords: Agile Transformation, Professional Role Identity, Scaled-agile Organizations

Introduction

"In the past, I knew that this was my department and my 'home', and that was the only place I worked. Today, people are deployed quite flexibly. [...] With all the flexibility we have today, [every single employee] is losing a bit of his or her identity. In this respect, the question is: 'Where do I belong?'" (I2 – Business Value Owner)

As digital technology continues to advance at an unprecedented pace, incumbent firms “born in the pre-digital age” (Gregory et al. 2018; Oberländer et al. 2021) require more flexibility to meet the needs of their customers and remain competitive in the increasingly digital world (Matalamäki and Joensuu-Salo 2022).

Yet, as the statement above illustrates, the increasing flexibility within organizations requires organizational changes that impact employees' identification with their professional roles. In general, identities significantly shape who we are as individuals and contribute to our sense of purpose and belonging (Cherni 2010; Stets and Burke 2000). Professional role identity (PRI) relates to the questions "Who am I within my profession?" and "What do I do as a professional?" (Strich et al. 2021; Stryker and Serpe 1982). By answering these questions, individuals identify themselves within a professional organizational setting (Chreim et al. 2007). While an individual's professional role primarily looks outwardly at the position within the organizational structure, identity encompasses the internally perceived self-definition with the role performed and is found to be relatively stable (Barley 1989; Chreim et al. 2007). PRI establishes the interaction between work and identity through employees' self-concept and sense of expertise that employees derive from their work roles (Alvesson et al. 2008; Barbour and Lammers 2015). Hence, PRI is a critical determinant of employees' attitudes and behaviors (Welbourne and Paterson 2017).

Due to its impact on behavioral intentions (Stryker and Serpe 1982; Welbourne and Paterson 2017), the concept of identity in the workplace is gaining interest in Information Systems (IS) research. Professional roles, together with the according tasks and responsibilities, shift because of the increasing importance of IT in the workplace (Salmela et al. 2022). Accordingly, shifting roles and responsibilities, together with the increasing prevalence of IT in the workplace to achieve more flexibility, influence the PRI of employees in several ways (Mueller et al. 2021; Nelson and Irwin 2014; Strich et al. 2021). For instance, as a reaction to implementing an artificial intelligence system in a bank that superseded employee decision-making, the affected bank consultants perceived a threat to their erstwhile PRIs (Strich et al. 2021). Further, after the introduction of agile work settings in established financial services companies, individual-level role identity tensions emerged concerning the control and responsibilities of project managers (Mueller et al. 2021).

However, existing literature neglects the constantly evolving organizational structures and work models during digital transformation (Drechsler et al. 2020), particularly, the shift from hierarchical structures toward more agile and distributed settings and the respective influence on employees' PRIs. The importance of looking at identity more closely is further emphasized by one distinct characteristic of digital transformation, which is the change in organizational identity (Wessel et al. 2021). Particularly important becomes the notion of identity in the context of Scaled-agile Organizations (SAOs). While agile methods were initially designed for small software teams to increase speed and transparency (Boehm and Turner 2005; Dikert et al. 2016), the focus has recently shifted to combining and expanding agile teams into so-called SAOs (Frey et al. 2021; Fuchs and Hess 2018; Kalenda et al. 2018) – the large-scale implementation of agile concepts within an organizational setting, encompassing multiple teams (Fuchs and Hess 2018; Limaj and Bernroider 2022). In such organizational designs, software projects with high technical risk and requirements volatility can lead to role conflict and ambiguity among team members (Windeler et al. 2017), challenging the professional role identity of employees. At the same time, introducing more freedom and autonomy can increase motivation and reduce the work exhaustion of employees (Venkatesh et al. 2020), fostering the PRI of employees. SAOs thus reflect the notion prevalent in digital transformation structures that processes, e.g. to develop and implement new software, and the outcomes, such as a new work model, are less bounded and continuously re-arranged. This involves taking into account multiple, and dynamic sets of stakeholders and constant adaptation to achieve the flexibility needed (Henfridsson et al. 2018; Lyytinen et al. 2016; Yoo et al. 2012). Further, in contrast to previous literature on organizational changes that impact functional-oriented processes, SAOs follow a cross-functional approach leading to novel challenges for the organization. It is thereby contributing toward providing a novel solution for the existing organizational problem of flexible reactions to external changes (Frey et al. 2021).

Overall, with the implementation of an SAO, the associated professional roles are becoming increasingly fluid to account for the limited boundedness of processes and outcomes, leading to changes and novel challenges for employees identifying with their new professional roles (Dingsøyr et al. 2019; Ibarra 1999). Traditionally and due to long educational processes, professionals identify strongly with their roles and associated norms and values (Reay et al. 2017). Thus far, it is unclear how the implementation of an SAO impacts the employees' perceptions about their work and novel roles (Tripp et al. 2016). Therefore, conducting research on this subject is important for organizations seeking to proactively anticipate and effectively tackle potential forthcoming challenges. To elaborate the impact of the implementation of SAOs on employee's PRI in incumbent firms, this paper aims to answer the following question:

RQ: How is employees' PRI affected by the implementation of an SAO?

We follow a case study approach to answer this question, analyzing two cases with 21 interviews and secondary data over 18 months. We identify SAO changes and how they impact the employee's PRI, and how the affected individuals react. Our research contributes to the body of IS theory by eliciting how establishing SAOs in incumbent firms affects the employees and providing propositions on how these structural changes affect identity. Further, our research provides managerial implications by pointing out the impact of the implementation of SAOs on the individual's PRI. We continue with the theoretical background, the methodology, findings, our proposition development, a discussion, and end with a conclusion.

Theoretical Background

Scaled-agile Organizations

Agile methods were developed to improve reaction times to customer needs and maximize business value (Baham 2019; Venkatesh et al. 2003). Starting with methods such as Extreme Programming (Beck 2000) or Scrum (Schwaber and Beedle 2002), agile methods have influenced the software development industry profoundly (Venkatesh et al. 2020). Today, established, industrial-aged organizations are implementing agile at a larger scale within software development units to leverage the success of agile methods. However, as products have become increasingly software-heavy, agile methods are also being implemented across larger parts of the organization, such as product development and marketing, to capitalize on their effectiveness (Dingsøyr et al. 2019). This phenomenon brings together a larger variety of roles that have been previously less connected. Business and IT departments merge, and teams are structured cross-functionally, following an organization's value streams (Eckstein 2014), leading to a new form of organizing (Puranam et al. 2014). Puranam et al. (2014) define "a new form of organizing [as] a novel and unique set of solutions to the universal problems of division of labor and integration of effort" (Puranam et al. 2014, p. 177). In their conceptualization, they identify organizations by their goals and boundaries and argue that multiple organizations can be formed by the same set of individuals (Puranam et al. 2014). While in the past, organizations have fostered standardization and division of labor in hierarchy-based forms of organizing (Mintzberg 1979), the fast-changing digital products led toward a new way of organizing work cross-functionally along the product's development process (Dingsøyr et al. 2019). This cross-functionality manifests in BizDevOps teams (Gruhn and Schäfer 2015). In these teams, a wide range of educational backgrounds and work cultures is united, from software developers to marketing and salespeople, to create fully-resourced teams responsible for the complete product delivery (Gruhn and Schäfer 2015).

In SAOs, allocating tasks to individual members and providing motivation and information is restructured, which creates fundamental changes in the *division of labor* and *integration of effort* (Dingsøyr et al. 2014; Puranam et al. 2014). Puranam et al. (2014) determine the novelty of an organizational form "by assessing the novelty of its solutions to the universal problems of organizing - compared to existing organizational forms with comparable goals" (Puranam et al. 2014, p. 167). SAOs seek to provide a novel solution to existing organizational problems (responding flexibly and accurately to external changes, e.g., competition and new technologies) by merging IT and business units into small, agile, self-organized, product-oriented teams (Dingsøyr et al. 2019). This agility relies on effective and fast collaboration between business and IT, enabled by the cross-functional nature of the agile teams in SAOs. Insofar as it is a new form of organization, changes should therefore have taken place in division of labor and integration of effort, which are to be taken into account accordingly in our analysis. While the novel structure has its advantages, it can also be challenging for the individual team members concerning their perception of their PRI. For instance, Gandomani and Nafchi (2016) analyze people- and role-induced challenges in this context, citing coordination and communication issues. Gregory et al. (2016) address ways to eliminate reservations about SAOs. Insights from this nascent stream of research suggest that identities may underlie these challenges (Mueller et al. 2021). Subsequently, insights into individuals' identity construction in the setting of SAOs are necessary to understand the implementations' effects better.

Professional Role Identity

Whereas an individual's *role* primarily looks outwardly at the position within the organizational structure, *identity* encompasses the internally perceived self-definition with the role performed and is found to be relatively stable (Barley 1989; Burke and Stets 2009; Chreim et al. 2007; Stets and Burke 2000). A central part of how individuals act or make decisions in specific work situations is how they identify with their professional role (Chreim et al. 2007; Pratt et al. 2006). Particularly within professionalized work settings,

where individuals traverse long educational processes, a strong identification with the performed work and associated values, goals, norms, and social groups can be found (Pratt et al. 2006; Reay et al. 2017; Stein et al. 2013). Furthermore, every professional role within an organization requires specific skills, behaviors, attitudes, and patterns of interactions (Ibarra 1999). Such attributes help individuals situate themselves and others within an organizational context to identify with a particular professional role (Ashforth and Johnson 2001). Thereby, PRI is related to other work-related identities, like organizational identity (i.e., associated with the organization (Pratt et al. 2006)) or occupational identity (i.e., associated with the broader ideals of the occupational category (Vaast and Pinsonneault 2021)), but differs, as it “refers to a sense of self that is associated with the enactment of a professional role” (Goodrick and Reay 2010, p. 58)

Hence, when an individual’s professional role changes, the associated identity has to be reconstructed to perform the new role on both the individual and the collective level (Ashforth 2000; Chreim et al. 2007; Pratt et al. 2006; Reay et al. 2017). This means that not only the individual has to reidentify with the role but also the perception of the social reference groups changes, which again influences the individual. Overall, individuals engage in role identity work when they encounter new roles, conflicts between their own expectations and the expectations of others, or when they occupy multiple roles simultaneously (Caza et al. 2018). This process involves modifying the self to align with the expectations of the role, changing role expectations, or altering perceptions of the self or others regarding the role (DeRue and Ashford 2010; Järventie-Thesleff and Tienari 2016). The primary motivation for engaging in role identity work is the desire for self-verification, which involves seeking confirmation of one’s self-concept through interactions with others. Various internal and external factors influence this process, and it plays a critical role in helping individuals manage their challenges and transitions. Ultimately, engaging in role identity work allows individuals to maintain a sense of coherence and meaning in their sense of self, even as they navigate complex and changing social contexts (Caza et al. 2018).

While traditionally, each role perception was highly dependent on the hierarchical structures, within SAOs, associated roles constantly adapt toward a more cross-functionality (Alqudah and Razali 2016). SAO roles and rituals cross-cut through hierarchy-based structures, and the associated roles shift toward being cross-functional in a broader scope. Therefore, implementing SAO challenges the PRI by altering established professionals’ work roles (Dingsøyr et al. 2019). For instance, conflicting role expectations rooted in different beliefs and values regarding agile methodologies can lead to role identity tensions for IT project managers (Mueller et al. 2021). Managing role identity tensions is critical to the success of agile information system development projects, and strengthening collaboration within agile development may help mitigate these tensions (Mueller et al. 2021).

Methodology

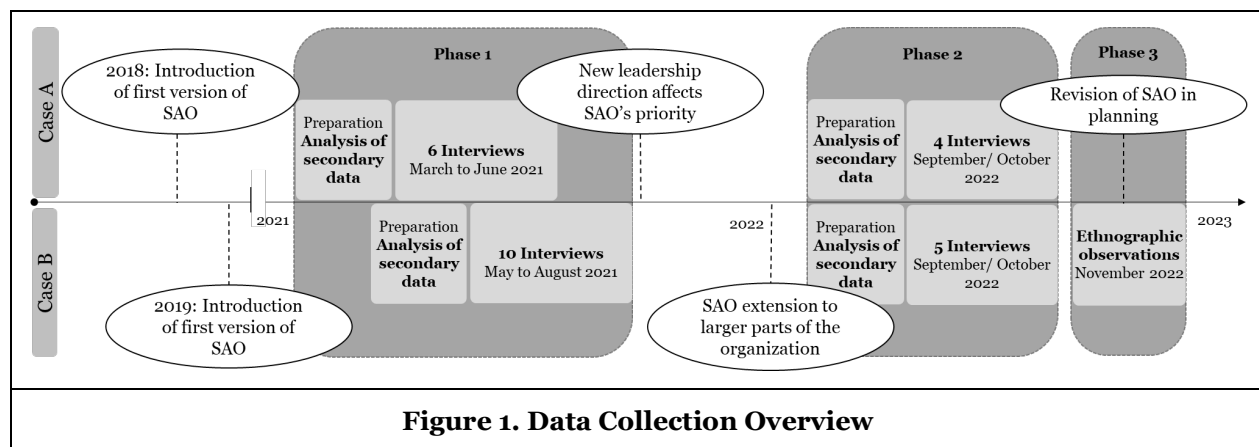
SAOs are characterized by a constant state of evolution and change, which makes investigating these structures challenging (Eisenhardt and Graebner 2007). As we seek to understand how implementing an SAO affects employees’ PRI, a qualitative research design is sensible (Yin 2013). Moreover, the research aims to be theory-building and uses two cases to strengthen the robustness of our results and allow for generalizability (Eisenhardt 1989). To improve generalizability, we follow a *common process design* as defined by Eisenhardt (2021), which is characterized by selecting cases in different settings but focusing on the same focal phenomenon. Specifically, we interviewed individuals from two companies where we can observe our focal phenomenon of interest (i.e., an ongoing SAO implementation) in two different contexts.

Case Sampling and Data Collection

Following the common process design, we selected incumbent firms where the exact SAO approaches of both firms vary in size, roles, and responsibility and the depth of the hierarchy among the SAOs. Case A is an established international telecommunication company with more than 50,000 employees. They implemented an SAO in 2018 because of the organization’s need for structural and cultural change due to intensifying competition and a relatively high number of customer complaints. The SAO implementation in Case A loosely adheres to several established SAO frameworks without requiring individual teams to follow a particular framework. Case B is an established company in the financial service sector with around 10,000 employees. They have developed their own SAO framework grounded in established SAO blueprints. What makes the implementation of the SAO in Case B special is its emphasis on various new coordinating roles and roles with responsibilities for the product, the people, and the processes.

We collected data over three phases in three ways to approach our research questions (see Figure 1): (1) two rounds of semi-structured interviews over an extended period of 18 months, (2) the analysis of secondary public and internal data (such as company reports, internal presentations, magazine articles, databases), and (3) prolonged on-site visits of Case B including the immersive participation at 15 internal meetings.

First, we utilized the semi-structured interview methodology to achieve a more profound comprehension of individual perspectives (Yin 2013). To guarantee a comprehensive understanding of the setting and make any necessary adjustments to the questions, two of the authors conducted multiple interviews per organization at two distinct points in time and with the same set of people. Details can be found in Table 1. We conducted ten interviews at Case A and eleven interviews at Case B, with six recurring interview partners (2 in Case A and 4 in Case B) and nine single interviewees (6 in Case A and 3 in Case B). To understand the changes after introducing SAOs depending on the specific roles, we interviewed persons with various roles (e.g., development team members, product owners (PO), scrum masters (SM), executive personnel, and further coordinating roles). The interviews in the first phase were thematically broad, whereas the interviews in phase 2 focused on identity. Thus, only a subset of interviews from Phase 1 were relevant for the data analysis. All interviews from Phase 2 were relevant and are included in this paper.



The interviews sought to understand better the implementation of an SAO, how such change alters teams and units structurally and substantively, and what effects it has on the employees. To understand the respondent's experience and interpretation of the situation, we started every interview with questions on the individual role and the implemented SAO. The interviews lasted between 54 and 88 minutes and were subsequently transcribed. The survey covers various aspects related to the implementation and impact of an SAO on the organization and its employees. It includes questions about role changes, skill retention, team membership, conflicts between roles, employee identification, challenges faced, and career paths. A follow-up question is included to assess changes since the last interview. After each interview, the two interviewers immediately discussed and recapitulated the insights, writing down key points for future reference.

Second, the internal data review helped us understand the cases before and between conducting the interviews, which improved the efficiency and effectiveness of our interviews. Furthermore, the secondary data analysis allowed us to triangulate the insights from the interviews with external data to validate statements from the interviews.

Third, we conducted two week-long on-site visits at Case B, including participation in 15 internal meetings – from daily team meetings to more strategic meetings covering employee survey results and strategies for the further organizational development of the SAO. These immersive endeavors helped us see the reality of the SAO, its challenges, and its effects on teams and individuals firsthand. The observational data was initially captured in field notes and subsequently transcribed.

Data Analysis

To capture the encompassing nature of SAO implementations, which lead to changes in the organizing process and not the organizational boundaries and goals, we relied on the two fundamental interlinked organizational problems: the *division of labor* and the *integration of effort* (March and Simon 1993; Mintzberg 1979; Puranam et al. 2014). This outline provides the structure for examining an individual's perception of the effects on their PRI based on the two main organizational problems. After the interviews

were transcribed, we coded them in MaxQDA. We worked through each transcribed interview and added relevant statements to one of the two categories: division of labor and integration of effort. Our coding rule for division of labor included all statements about the assignment of tasks, organizational procedures, business processes, and the assignment of roles and responsibilities that correspond to a person's qualification profiles. For the integration of effort we emphasized the provision of rewards and information, including motivational mechanisms and information for coordinating the required actions.

Case	Industry	ID	Round 1 Length	Round 2 Length	Interviewee Information
A	Telecommunications	I1	78 min	56 min	I1 executes the Value Stream Owner (IT) role responsible for B2B projects exercising joint responsibility over previous IT and business teams. Compared to his previous job role, I1 no longer has disciplinary personnel responsibility.
		I2	87 min	50 min	I2 executes the role of a Value Stream Owner (Business), being the business counterpart of I1 exercising joint responsibility over previous IT and business teams. I2's responsibility is similar to that of I1 as being responsible for B2B projects.
		I3	83 min	-	I3 executes the role of a Release Train Engineer, and I3 is responsible for team and organizational development within the agile way of working. The Release Train Engineer coordinates teams that come from both IT and business backgrounds
		I4	88 min	-	I4 is responsible for the organizational development of SAO structures and works at the interface between the customer and technological implementation. She also manages communication between the SAO and other organizational parts.
		I5	80 min	-	I5 is a middle manager and scaled PO and is responsible for aligning strategy with the epics in the backlog to establish lean portfolio management.
		I6	59 min	-	I6 executes the Vice President Data Analytics role and has personnel responsibility across six teams within a Canvas.
		I7	-	59 min	I7 executes the PO role and belongs to I2 in developing customer management products.
		I8	-	67 min	I8 executes the role of a PO on the European level and is responsible for determining the product strategy by aligning the different requirements.
B	Financial Services	I9	62 min	-	I9 holds the SM role within a cross-functional team and ensures the team works efficiently. Therefore, he supports the team's organization and incentivizes agile methods.
		I10	81 min	-	I10 executes the PO role on the strategic portfolio level. I10's workstream comprises four teams responsible for Human Resource (HR) products.
		I11	67 min	58 min	I11 executes the role of a PO and is responsible for legal, functional, and technical product requirements and prioritizing with the team.
		I12	85 min	60 min	I12 holds the role of executive HR alongside the SM and PO. Responsible for team development, staffing, collaboration & hiring.
		I13	66 min	57 min	I13 holds the role of a PO in a team. His responsibilities are similar to that of I11 for a different software product.
		I14	74 min	54 min	I14 is a scaled SM and is responsible for the process, organizational development, process design, and systemic coaching—the same tridem as I10.
		I15	-	56 min	I15 is a software developer and architect who works in the software development team of I14 and is responsible for requirement management and software development.
Table 1. Interviewee Overview					

After coding the first quarter of interviews, we mutually started to cluster the coded statements within each category into different changes impacting PRI. For division of labor, we identified four different changes and for integration of effort two changes. We categorized each coded statement into one of these changes based on distinct definitions (see the explanation column in Table 2). While the first author did the initial coding, the codes were discussed with the second author in a constant exchange. Furthermore, the second

author also coded the first quarter of the interviews, which were then compared to the codes of the first author to ensure a mutual understanding of the focal phenomenon. In the first coding round, 80% inter-coder reliability in assigning the codes to the categories was achieved. The remaining 20% of codes formed the basis for extensive discussions within the author team, enabling us to identify differing perceptions by developing a better understanding and eventually resolving all disagreements. Overall, we found a total of 383 statements: 271 statements regarding the *division of labor* and 112 in the *integration of effort* category. Additional numbers of coding instances can be found in Table 2. Following the established statement categories, different SAO changes were developed inductively from the statements within code workshops and linked to their respective influence on PRI by the first three authors. Thereby, the first and second authors shared exemplary codes and information, which were frequently discussed with the third author. The insights of our analysis are presented in the next section.

Results

Our analysis reveals insights into SAO changes that impact the employees' PRI within the categories *division of labor* and *integration of effort*, which are presented in Table 2.

Category	SAO Changes with Impact on PRI (with coding instances)		Explanation
Division of Labor	Organizational Change (90)	Structural and processual changes	Establishment of cross-functional teams, task division oriented along the value stream, creation of coordinating roles and new work routines.
		Technical and regulatory changes	Transformation in IT landscape, implementation of e.g. cloud-based products, higher regulatory demands for IT products, and employee protection.
	Role Change (181)	Specialization and splitting of project management functions	Stronger task division on former project management level into specialized roles as processual SM, technical PO, and disciplinary personnel responsibility.
		Increasing autonomy and responsibility for development functions	Reduced task division for the development team, product increment responsibility, and increased work autonomy due to cross-functional team setup.
Integration of Effort	Information Sharing (104)	Necessity to share deep information	Reduced dependency on single experts, need to share information more often and enable other team members to develop T-shaped skills.
		Necessity to request broad information	Greater need for information exchange (communication) to ensure team autonomy.

Table 2. SAO Changes that impact PRI

During our analysis, we found six main SAO changes that influence the PRI of the employees during the implementation of an SAO. In the following section, we explain how the implementation of SAOs changed the PRIs of employees of the two organizations. We differentiate the findings according to the underlying organizational problems of labor division and effort integration (Puranam et al. 2014). We present our findings by first looking at the changes induced by the *division of labor*, followed by the changes brought about by the *integration of effort*.

Division of Labor

In SAOs, the division of labor is structured differently from other established work models since teams are no longer divided by the different kinds of tasks. Instead, business and IT staff are merged to meet today's rapidly changing, cross-functional product needs. In doing so, mechanisms enable links between business and IT, including changes in organizational workflows and processes, tasks, roles, and responsibilities. In the following, we provide interview information on the impact of SAO implementation on task division and allocation and their influence on an individual's PRI.

We observed two main patterns regarding the employee's openness regarding the type of **organizational change**. First, when facing processual or structural changes through SAO implementation, they are seen

as a threat to the existing work environment. Second, however, technical or regulatory changes are rather perceived as general task challenges and empower the employees in the job they are doing:

“So legal or technological changes, they can de facto never be complex enough, [the employees] are always up for it. [...] But reviewing the own work structures, reviewing your organization, how I want to work in a team, how do I want to share my knowledge? There's a certain appreciation for the existing.” (I14)

The resistance to **processual and structural changes** can be attributed to a perceived loss of control and a lack of understanding of the potential benefits gained from the change. Employees viewed changes to processes or structures as a threat to their sense of expertise and, consequently, to their PRI. This view can lead to a reluctance to embrace change and a preference for maintaining the status quo. Additionally, while employees in hierarchy-based working structures often identify with their executed roles or workgroups, the greater flexibility in agile work settings was found to be a challenge for the employees' identity construction:

“And that is also one of the aspects where we're already noticing that every single employee, with all the flexibility we have today, is losing a bit of his or her identity. In the past, I knew that this was my department and my 'home', and that was the only place I worked. [...] with all the flexibility we have today, [every single employee] is losing a bit of his or her identity. [...] In this respect, the question is: 'Where do I belong?'" (I2)

However, in contrast to the resistance regarding structural and processual changes, the novel direct confrontation with **technical and regulatory changes** was perceived as a challenge that further empowers the employees in the job they are doing. Especially after the SAO implementation, the teams are not only executing the requirements from the business, instead, they can decide on the respective technical and regulatory changes themselves, leading to higher work effort due to higher and intrinsic motivation: *“This input, which now comes from the technology companies or the legislators, is always a challenge that everyone wants to master.” (I14)*

Another interesting phenomenon occurred when looking at the **changes on role** level. On the one hand, project management functions were split into more specialized roles (i.e., SM, PO, or personnel responsibility). In both cases, former project managers (PMs) have faced the challenge of deciding whether to take on the role of a SM, a PO, or the disciplinary personnel responsibility. This decision involves a trade-off between different responsibilities and a potential loss of authority. The SM would ensure the team follows the scrum process and removes any obstacles hindering their progress. A PO would be responsible for defining and prioritizing the product backlog and ensuring that the product meets the customer's needs. For instance, when a former PM takes on the role of an SM, teams show a lack of understanding of the new role separation on the management level: *“So my team then also asks, what do I do all day?” (I12)*. Hence, this focus on only a part of the formerly perceived responsibility leads to former PMs perceiving a loss of their role due to the shift and focus of responsibilities:

“And then the real cut came, from the personal concern, that we separated the disciplinary management from the technical management. [...] In other words, my employees were taken away from me, and we brought them into chapters, and I was only technically responsible anymore.” (I2)

Following this argument, the value stream owner of Case A mentions that it is an *“inherent role conflict”* (I1) because SMs also used to be PMs, and conflicts arise about responsibility and accountability. To protect the former PRI, many interview partners mentioned that the roles started to blur, meaning that they each started to informally take over tasks of the other of making decisions that they were not supposed to within their new role:

“Between the roles of SM and PO, the conflict or the tension has become rather bigger from my point of view than it was last time. [...] that blurs a bit also from the roles, who is responsible for what.” (I1)

We also observe that the cross-functional composition of teams creates uncertainty about who exactly is responsible for certain topics, e.g., when it comes to product vs. process responsibility. This indication of role diffusion in the daily collaboration of teams as well as across team boundaries brings uncertainty to employees (especially product owners and scrum masters) regarding their role. Another way of reacting to the PRI threat and protecting the formerly established PRI is not fully adapting to the SAO. Thereby, it was found that some teams only adjusted the official roles within the team but continued to work as agile silos:

“And in some areas, it’s really just a change on the outside. You can see that right away [...]. New names, new roles, but everything continues to work as usual.” (I3)

When asking the interview partners how the development teams’ roles and responsibilities have shifted, team members were likely to experience **increasing autonomy and responsibility for development functions** as part of the agile process. Software developers used to get exact requirement specifications can now make their own decisions on the implementation following the customer requirements. Hence, we found developers to feel empowered and committed to aiming for the best possible outcome:

“The biggest change is more responsibility because I am no longer ‘just’ developing but am responsible for the design and architecture. [...] In the past, I didn’t have the responsibility as a developer. I pointed out the aspects, but the decision was made by others.” (I15)

This empowerment has led to increased job satisfaction and higher levels of engagement among team members, ultimately contributing to the empowerment of the PRI of the development team:

“[team members] are very happy that they can suddenly put all their energy into [the product]. They get told what to build by the overarching strategy, but they get to decide for themselves as developers how to build it.” (I3)

Within agile methods, the employees are empowered to make strategic decisions on the product. Hence, the PRI is extended by adding a product-based identity. Some even mentioned that team members started to call it their own, which increased the overall commitment to the product: *“Once you’re empowered to design the product, you’re committed to this product” (I3)*. With roles and responsibilities, there also comes a change in tasks and activities. With the implementation of SAOs, the tasks move from a clear definition to learning to work on unfamiliar tasks. Team members are expected to continuously develop and adjust their PRI toward being more cross-functional:

“That has been our motivation to say, ‘can’t we also form a cross-functional team that starts with a certain amount of knowledge?’ So, there are employees from the data center side, employees from the frontend side, who also successfully acquire this knowledge to implement an entire customer request autonomously.” (I12)

However, those relatively autonomous groups through which individuals develop a stronger sense of identity tied to their profession or area of expertise sometimes even lead to the formation of new silos once the PRI is fully established within the new team: *“There have formed now again so a few silos, which had not synchronized. And then the left part of the solution did not fit the right part of the solution.” (I1)*

This shows once more how inter-team coordination is a crucial challenge in SAOs. A major coordination factor is the ambiguity of self-determination and top-down decisions. On the one hand, teams are empowered to make product decisions autonomously, strengthening their PRI and product identification. On the other hand, the upper management still makes top-down strategic decisions. Hence, conflicts occur on where the autonomy of a team ends, and the hierarchical top-down organization starts:

“That’s clearly an ambivalence. All ‘agilists’ say it’s easy, we do it bottom-up. But there are certain points where upper management says, ‘We have a veto’. We don’t do it that way, and in the end, we have the upper hand.” (I10)

Such conflicts affect the individual's PRI. If the individuals feel that their autonomy is threatened, they build 'agile silos' and change their roles only on the outside to sustain their former roles. Our observations in case B also show this. The organization is updating its SAO, and the challenge of new mental and procedural silos is obvious. Here, the SAO's organizational developers are once again asking themselves the question of how to cut along complete value streams while at the same time taking team sizes and dependencies into account. Moreover, it turns out that this is not easy to do. This is also expressed by the fact that new roles of customer journey experts have been created for a holistic view across all products from a customer perspective – the individual units do not seem to be able to do this alone. So, implementing an agile organization risks developing new silos along other dividing lines but not successfully implementing complete end-to-end responsibility for an entire product.

Category	SAO Changes	Impact on PRI	Outcomes
Division of Labor	Structural and processual changes	PRI Threat	Threat to former team identity and identification with work processes, leading to resistance due to perceived loss of control and a lack of understanding.
	Technical and regulatory changes	PRI Empowerment	PRI empowerment by internalizing requestor and executing identity that leads to higher work effort due to higher and intrinsic motivation.
	Specialization and splitting of project management functions	PRI Threat	Threat to project management role identity that leads to a change of roles only on the outside and blurring of roles and responsibilities.
	Increasing autonomy and responsibility for development functions	PRI Extension	PRI extension through additional product identity that leads to considering the product as part of the own, leading to greater engagement at work.

Table 3. Impact on PRI due to Changes in Division of Labor

Integration of Effort

By transforming toward SAOs, also the reward distribution and information flows change. Not only flexibility and cross-functionality are changing the PRI. Thereby, we found two opposing motions. Agile methodologies focus on continuous improvement and adaptation and the necessity for individuals to extend toward T-shaped skills. Our interviews found that experienced experts perceive their PRI to be challenged by the need to **share their deep knowledge with other team members**. Experts have developed a sense of expertise and mastery within their current roles and a strong PRI tied to their previous roles or area of expertise. Therefore, they feel a greater sense of loss or threat when asked to share their expertise with others, adopt new processes, or take on new responsibilities. Additionally, the need to adapt to new roles or processes challenges an individual's perceived value and status within the organization, leading to a further threat to their identification with deep expertise and professional roots:

“So the respective expert has a hard time, generally, about the [agile] setup. But I've also noticed that in teams with really exposed experts, they become a bottleneck at some point. So if I have the one expert, then the one team can, and if we're talking about scaled, then actually, at some point, the whole value stream is dependent on one person making the right decision at the right moment.” (I4)

New group memberships lead to new collaboration in SAOs. Individuals need to develop different soft skills to cope with the new groups. Empathy, willingness to learn, openness to change, and commitment are essential to adapt to new PRI characteristics. I1 especially mentions the *“enormous change for [the developers] because they suddenly have to have completely different social skills”* when collaborating with the business and have to **request broad information** to extend their knowledge T-shaped skills. This constitutes an essentially important collaboration between business and IT to meet each other at eye level:

“The IT colleagues now have a much better understanding of what the sales department out there with the customer has to endure daily. That leads to the strengthening of customer-centricity for the IT colleagues. And it has strengthened those who understand IT, digitalization, and the complexity that comes with it on the business side. Hence, it is broadening the perspective for both parties – A very positive aspect, I think.” (I1)

That way, all roles are enriched by the other perspective of IT and business. As stated above, individuals identify with the product due to increased responsibility and autonomy. Therefore, the rewards are not solely on extrinsic, monetary factors but shift toward the strengthening of the PRI, which leads to greater intrinsic motivation: *“That is also a challenge on an individual level, how to manage people who are so motivated that they go beyond their goal with this intrinsic motivation.” (I12)*

Many requirements have been elaborately and time-intensively specified in traditional organizational settings through documentation processes. However, SAOs aim for fast implementation. Hence, employees must adapt their PRI from team-based to cross-functional-based collaboration moving business and IT closer together, leading to more dependencies. An essential aspect of handling these dependencies is

implementing new communication processes, which are being implemented in SAOs through events such as product increment planning and sprint planning. Thereby, it is crucial that cross-functional thinking and collaboration are intensified among employees which leads to professional role enlargement toward a T-shaped (i.e., broad and deep) skill profile:

“But I notice that so much learning and knowledge-building is happening that communication also plays an incredibly important role. That, of course, also helps that everyone in the team knows what’s going on.” (I11)

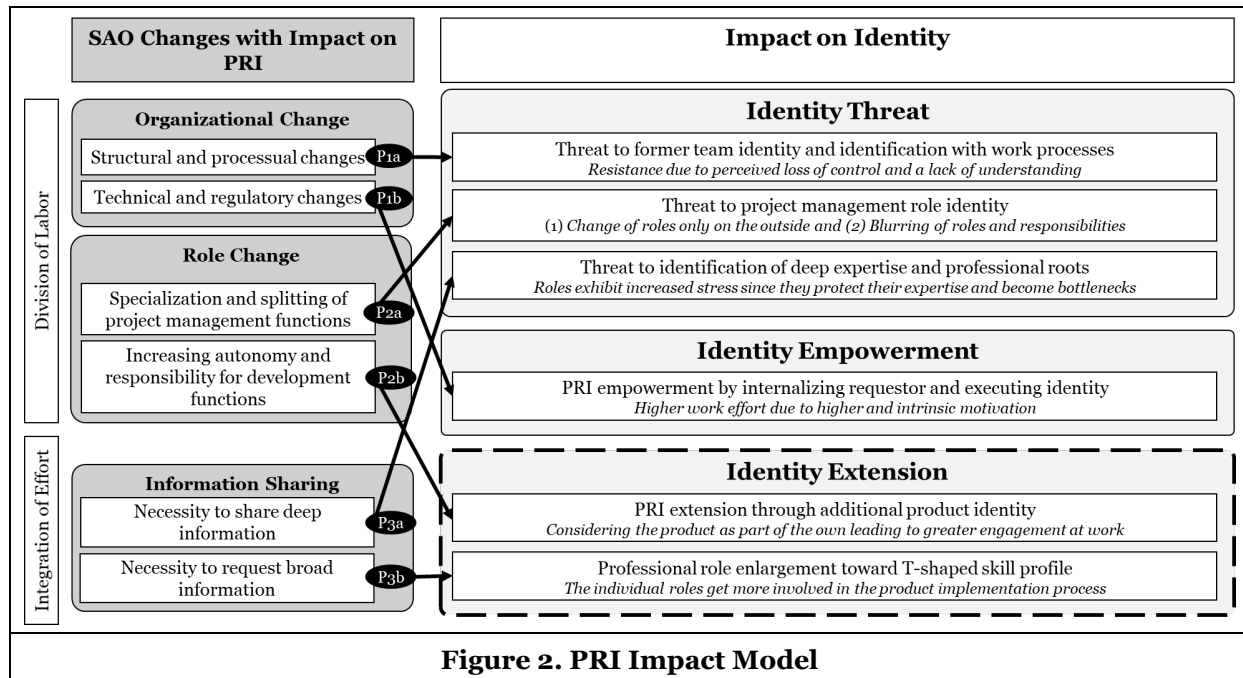
We summarized the results of the impact of the changes within the integration of effort in Table 4.

Category	SAO Changes	Impact on PRI	Outcomes
Integration of Effort	Necessity to share deep information	PRI Threat	Threat to the identification of deep expertise and professional roots leads to stress since experts protect their expertise and become bottlenecks.
	Necessity to request broad information	PRI Extension	Professional role enlargement toward T-shaped skill profile which leads to individual roles getting more involved in the product implementation process.

Table 4. Impact on PRI due to Changes in Integration of Effort

Proposition Development

Through our analysis, we have gained valuable insights into how implementing SAOs impacts the employees’ PRIs. Our findings suggest that changes in the division of labor and integration of effort significantly impact the employees’ PRI. Responding to our research question, we found that SAO changes have three main impacts on the employees’ PRI: identity threat, through reduction of responsibility, perceived loss of control or expertise, identity empowerment, through increased autonomy in existing tasks, and identity extension, through additional identification with product and professional role enlargement. A PRI is empowered, when the individual feels a positive change in existing tasks, while a PRI is extended, when the role is positively extended through new skills, tasks, or responsibilities. Overall, we show how SAO changes impact employees’ PRI leading to different outcomes. For instance, splitting the project management function into PO, SM, and personnel responsibility triggered a threat to the PRI, leading to the change of roles only on the outside and the blurring of roles and responsibilities. Figure 2 shows the SAO changes, their respective impact on identity, and the outcomes of the impact on the employee’s PRI.



Organizational Change

In SAOs, the division of labor is structured differently, with teams no longer being divided by different tasks. Instead, teams are cross-functional and self-organizing, with each team member responsible for contributing to the product's overall success. This represents a shift in organizational structures and processes compared to traditional work models. Our findings from the interviews extend current knowledge by showing (1) how *structural and processual changes* in SAOs threaten employees' identification with their professional role but also that (2) *technical and regulatory changes* can even empower the employee's identity.

Based on our insights, we suggest that organizational changes can have positive and negative effects, depending on how employees perceive them and how they affect their sense of self in relation to their work. The potential loss of identity associated with *structural and processual organizational changes* can have significant implications for individuals' sense of self (e.g., "Where do I belong?" (I2)). Particularly their ability to perform their roles effectively is affected since employees' work environment or job responsibilities can create a sense of instability or insecurity that can threaten their sense of identity. Additionally, the difficulty of questioning the own work processes can lead to identity threats (Strich et al. 2021) and resistance due to a perceived loss of control and a lack of understanding of the new role. Hence, the identification with the work structure and processes an employee is working in is also present. These findings align with Wiesenfeld and Hewlin (2003), who associate organizational change with threatening the identity of employees that seek to maintain a sense of continuity and stability in the workplace. Thus we propose:

P1a. Structural and processual changes in an employee's job, such as creating cross-functional teams, lead to identity threats.

Interestingly, our analysis shows that *technical and regulatory changes* differ from previous findings in the literature because employees take them more as a challenge they want to master and because there is less identification with the exact technical or regulatory circumstances (e.g., "always a challenge that everyone wants to master" (I14)). Our interview analysis shows that new technical tools or regulations can lead to a sense of empowerment as employees feel more competent and confident in their ability to perform their job, enhancing their sense of identity as skilled and valuable members of the organization leading to higher work effort due to greater intrinsic motivation. Therefore, technical and regulatory changes empower identity by applying their skills and personal development. Thus, capturing the opposing effects of the two types of organizational change, our insights enable us to propose:

P1b. Technical and regulatory changes in employee's job, such as the direct confrontation with new software requirements, lead to identity empowerment.

Role Change

Our analysis shows that implementing an SAO leads to two main role changes. First, former PMs must decide whether to take over the procedural (SO), technical (PO), or disciplinary personnel responsibility. By *splitting the project management* functions into these three roles, the team can operate more efficiently, with each person focused on their specific area of expertise (Dingsøyr et al. 2019; Olsson and Bosch 2016). This also allows for greater collaboration and communication among team members, leading to better overall outcomes (Fuchs and Hess 2018). However, preceding literature found five role tensions, including collaboration with the development team and the distribution of duties and responsibilities that challenge role identities (Mueller et al. 2021). Our work adds to this research by showing that splitting the responsibilities of the former PM function leads to a threat to the former PM role identity (e.g., "my employees were taken away from me" (I2)), which can further lead to resistance to change the roles or blurring the established roles and responsibilities:

P2a. Specialization and splitting of project management functions, such as a former PM taking over the role of a SM, leads to an identity threat.

Second, the *development team is given more autonomy and responsibility* because they are the ones who possess the technical expertise required to develop the software and can make decisions regarding its development. This autonomy and responsibility enables the development team to make decisions based on customer feedback and adapt to changing requirements, resulting in a product better suited to the customer's needs (Salmela et al. 2022). We found that the employees in the development teams started to

identify with the product itself, calling the product their own (e.g., “*this is my baby, I’ll take care of it*” (I11)), thereby extending their identity with an additional *product identity*. Hence, our analysis adds a new type of identity impact by adding identity extension to the current focus on identity threat or empowerment, leading to greater work engagement. Our analysis of the role changes leads us to propose:

P2b. Increasing autonomy and responsibility for development staff, such as software developers now deciding on the technical requirements themselves, lead to an identity extension.

Information Sharing

Sharing relevant information frequently with all stakeholders is critical for the success of SAO work processes. Therefore, two main information flows are necessary. On the one hand, former experts must *share deep knowledge* to enable other teams and team members to make product-relevant decisions. The higher autonomy of development teams is only possible if they have all information they need to decide what and how product increments should be developed. Specifically, when experts are asked to share their deep knowledge with others, they feel their unique expertise is being devalued or undermined. We found this to be especially true in cases where experts have developed a strong sense of PRI based on their knowledge and expertise (e.g., “*the respective expert has a hard time*” (I4)). Similarly, the study by Lifshitz-Assaf (2013) researched implementing an open innovation platform in contrast to the traditional Research&Development model. For organizational members of the Research&Development department, the open and undefined information boundaries, which invited external individuals to solve problems, triggered a strong professional identity threat (Lifshitz-Assaf 2013). Therefore, we propose:

P3a. The necessity to share deep information for experts leads to an identity threat.

On the other hand, we add to the prevailing literature by showing how motivating the employees to *request broad information* to develop T-shaped skills extended the former identity. In our cases, *identity extension* happened when individuals were provided with broader information about the work process, enabling them to grasp the overall product development process. Thus, allowing individuals to gather information from various sources and synthesize them coherently, they may feel a sense of ownership over the resulting product (e.g., “*it is broadening the perspective for both parties – A very positive aspect, I think*” (I1)). Their initial PRI is extended as they start to identify with the product they have created. Hence, we propose:

P3b. The necessity to request broad information to develop broad skills leads to identity extension.

Discussion

To meet the demands of today's customers, more companies have transformed toward SAOs. However, this comes with many changes for incumbent firms and their employees. In the following, we highlight the contributions to theory and practice and inform about our limitations and future research suggestions.

By developing the propositions, we explore how implementing an SAO influences an employee's PRI (**P1-P3**), thereby making three key contributions to theory. First, by exploring the potential effects of SAOs implementation on PRI, this research informs on how to manage organizational change proactively in a way that minimizes identity threat and maximizes identity empowerment and extension, ultimately contributing to the development of a more resilient, engaged, and adaptive workforce in today's digital product development. Specifically, this study offers insights into the potential threats (**P1a, P2a, P3a**) to PRI that employees may experience as a result of an SAO implementation, as well as the opportunities for empowerment (**P1b**) and extension (**P2b, P3b**) of PRI that may arise. While existing literature found identity threat (Jussupow et al. 2022; Petriglieri 2011) and empowerment (Strich et al. 2021), we add to existing research by identifying an additional factor – identity extension. By highlighting the complex interplay between SAO changes and PRI, this study advances our understanding of the relationship between organizational change and employee identity.

Second, we provide information about the different coping behavior with identity change in the context of an SAO implementation, specifically, how employees react to a threat, empowerment, or extension of their PRI. The study suggests that identity threat can lead to resistance, blurring roles and responsibilities, and decreased information sharing to protect the former PRI. While resistance to change was previously found by, e.g., Nelson and Irwin (2014), blurring roles and responsibilities, as well as decreased information sharing to protect the former PRI represents a novel discovery. Further, identity empowerment can lead to increased work effort and motivation. Lastly, identity extension can lead to a greater sense of ownership and

pride in their work, leading to increased engagement, involvement, and productivity. These findings help us better understand and target the human capital development dimension of SAOs (Limaj and Bernroider 2022). A considerable body of research has been dedicated to understanding resistance behavior in organizational contexts (e.g., Nelson and Irwin (2014); Petriglieri (2011)). We contribute to this literature by demonstrating how individuals can transcend the confines of their current identity, thus, expanding their sense of self by adopting a product identity manifested through heightened engagement and productivity. These findings provide valuable insights into the different consequences of SAO changes extending previous research that calls to “deepen the understanding of the change processes” (Fuchs and Hess 2018, p. 15). We show how these changes impact the PRI of employees by highlighting the importance of managing identity threats and promoting identity empowerment and extension to enhance organizational outcomes.

Third, our research makes a novel contribution to the theory of PRI in IS literature by highlighting the importance of identity extension in the context of SAOs. While previous research has emphasized the impact of identity threat and identity empowerment on employees (Craig et al. 2019; Strich et al. 2021), our study sheds light on the potential benefits of identity extension, which in the case of SAO implementation involves the enrichment of the PRI with an additional product identity. Previous literature indicates the occurrence of identity extension in the related concept of social identity theory (Buchan et al. 2017). However, we contribute to theory by emphasizing this additional impact on PRI in SAOs. Our findings suggest that this type of identity extension can increase engagement, motivation, and productivity, as employees feel a greater sense of ownership and pride in the product they are developing. By encouraging identity extension and creating a culture of collaboration and teamwork, organizations can facilitate employee engagement and productivity, ultimately leading to better outcomes for the organization.

Three main aspects limit our study. First, using the organization theory lens by Puranam et al. (2014) constrains the results because we take on a distinct angle from which to view the phenomenon. While this enabled a focused, in-depth analysis, it might also narrow our view. We aimed to reduce this limitation by staying open to other theoretical approaches during our data analysis process, other theoretical lenses might be suitable for further investigation of the phenomenon. Second, we look at one distinct structural transformation (i.e., SAOs) and how this affects the employees' PRI. However, organizations undertake various structural digital transformation initiatives. For improving generalizability, these should also be studied. Third, the observation of the PRI process is limited by the scope of our data collection. More immersive studies, such as ethnographic research, might help grasp the identified processes more nuancedly. We encourage researchers to take on these possibilities, to further shed light on the transformational identity changes in digital transformation initiatives and include a temporal aspect of the scaling process. Specifically, we recommend investigating the impact of SAOs on the organizational identity and the interplay with PRI. Whenever an individual acts in an organizational context, various identities might apply, depending on the context. Which PRI is most salient to an individual depends on how concrete, proximal, and exclusive it is in a given situation (Ashforth and Johnson 2001). Research in this area is essential since agile methods and the implementation of SAO go beyond team structures, influencing individuals on different levels by strengthening cross-functional collaboration (Neve et al. 2017).

Besides these limitations, we want to highlight the practical contributions of our study. In line with the findings of Tripsas (2009), who emphasizes on the importance of understanding whether a technology is identity challenging, we provide information on how the employees' identity is challenged during SAO implementation processes to advance the adoption and diffusion of SAOs and offers a new perspective on organizational transformation challenges to improve emerging phenomena. Besides informing about the different impacts on identity as a result of SAO implementations, the study suggests mechanisms to shift the impact of SAO implementation processes from a perceived PRI threat toward PRI empowerment and extension. These mechanisms could include training and development programs that empower team members to take on the new responsibilities and ensure they have the necessary skills to perform their roles effectively. Thereby, to prevent employees from perceiving an identity threat, the role changes should be conducted with respect to the personal preferences of the employees. For instance, a former project manager should be given the chance to decide for the self on whether to take on the SM, PO, personnel responsibility, or another role. As such, organizations can encourage identity extension by giving employees more autonomy and responsibility in the product development process by implementing SAOs and creating a culture of collaboration and teamwork that encourages individuals to work together to create something greater than themselves. Clear communication channels and regular check-ins can help clarify expectations and ensure team members to feel supported during the SAO implementation process.

Conclusion

Many incumbent firms adopt SAOs to accelerate software product development and enhance IT-business alignment. As SAOs involve significant changes in the division of labor and integration of effort, we deepen our understanding of their impact on employees by examining PRI. Thereby, we provide insights into how the PRI is affected by SAO implementation and uncover how individuals react to those changes. Further, we derive a PRI impact model based on the SAO changes that can be applied more generally to other structural changes in the wake of digital transformation initiatives and provide theoretical propositions. In addition to contextualizing previous research on IT identity threat and empowerment and the resulting protection and strengthening behavior, we contribute to the field by identifying the identity extension of an employee's PRI. Specifically, we propose strategies that enable organizations to shift the impact of SAO implementation processes from a perceived threat to PRI toward empowerment and extension. In doing so, organizations can foster identity extension by providing employees with greater autonomy and responsibility in the product development process by implementing SAOs.

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