SCALING AGILITY

Understanding and Managing Digital Transformation in Incumbent Firms

Julian Frey
University of Bamberg

Bamberg 2026

Diese Arbeit hat der Fakultät Wirtschaftsinformatik und Angewandte Informatik der Otto-Friedrich-Universität Bamberg als Dissertation zur Erlangung des akademischen Grades doctor rerum politicarum (Dr. rer. pol.) vorgelegen.

Erstgutachter: Prof. Dr. Daniel Beimborn
Zweitgutachter: Prof. Dr. Sven Overhage
Mitglied der Promotionskommission: Prof. Dr. Martin Friesl

Tag der mündlichen Prüfung: 25.11.2025

URN: urn:nbn:de:bvb:473-irb-112537x
DOI: https://doi.org/10.20378/irb-112537

Table of Contents (Inhaltsverzeichnis)

Dedicated to my parents

ACKNOWLEDGEMENT

Dissertations are marketed as feats of solitary intellect. In fact, they are feats of collective endurance.

The participants who gave their time to interviews and endured the scrutiny of observation will not find glamour here — but without them, there would be no material at all. Colleagues and co-authors provided what academia rarely offers: bluntness without bitterness, generosity without fanfare. Along the way, they became friends, which is the rarest and most durable outcome of collaboration. If anything here seems perceptive, it is only because I stood, as Bernard of Chartres once said and Newton echoed centuries later, on the shoulders of giants — and how much further we can now see than they imagined.

My supervisor Prof. Dr. Daniel Beimborn did more than supervise. He paired rigorous intellect with the rarer gift of knowing when to step back — to guide without suffocating. He challenged my arguments when they were weak and sharpened them when they were strong. His advice was generous, his patience unshowy, and his confidence in me constant. To have been mentored in this way is a privilege I will recognise for a long time to come. The additional committee members, Prof. Dr. Sven Overhage and Prof. Dr. Martin Friesl, in turn, contributed their expertise with professional clarity and analytical sharpness that gave this work both contour and weight. Kokoschka is said to have remarked that life is like drawing without an eraser. Whether or not he actually did, the image is too fitting to resist: the smudges on these pages are mine alone.

Family and friends provided the ultimate service: they endured both my absence — which at least was peaceful — and my presence — consisting largely of half-conversations hijacked by a project only I had in mind. They were the steady support that carried me through, alongside the curiosity that keeps me going. To them I owe more than words of gratitude, but words are all I have to give.

This book is theirs as much as mine. If it reads like a solo effort, you have misunderstood the genre. With what we know, and with the knowledge still to come, we should see further still — and more clearly.

Julian Frey

GERMAN SUMMARY (DEUTSCHE ZUSAMMENFASSUNG)

Diese Dissertation untersucht *Scaling Agility* im Kontext der digitalen Transformation von etablierten Unternehmen. Vorhandene Forschung liefert bislang vor allem präskriptive Frameworks, Best Practices und normative Implementierungsmodelle. Sie greift jedoch zu kurz, wenn es um die komplexen, dynamischen Spannungen geht, die in der Praxis beim Skalieren agiler Konzepte auftreten. Insbesondere die sozio-organisationalen Dimensionen von Skalierungsinitiativen – das kontinuierliche Austarieren von Autonomie und Alignment, die Transformation von Rollenidentitäten sowie der Einfluss auf Ziele der digitalen Transformation über die Zeit – bleiben weitgehend unberücksichtigt. Zudem konzentriert sich die bestehende Forschung stark auf die IT-Abteilung und vernachlässigt die Integration in andere Unternehmensbereiche sowie deren Bedeutung für den Strukturbausstein der digitalen Transformation.

Vor diesem Hintergrund verfolgt die Dissertation das Ziel, *Scaling Agility* als dynamisches, spannungsreiches und herausforderndes Phänomen theoretisch zu erfassen. Sie entwickelt eine prozessorientierte, soziomaterielle Perspektive, die statische Designvorlagen hinter sich lässt und beantwortet die zentrale, dreiteilige Forschungsfrage: **Was ist *Scaling Agility*, wie lässt es sich managen, und welche Implikationen hat es für die digitale Transformation von etablierten Organisationen?**

Zur Beantwortung dieser Frage umfasst die Dissertation neun Studien: zwei strukturierte Literaturreviews, eine Taxonomieentwicklung und sechs fallstudienbasierte Untersuchungen. Zusammengenommen entsteht ein kumulatives Verständnis von *Scaling Agility* als einem fortlaufenden, spannungsgetriebenen Prozess, der eng mit organisationalen Strukturen, Prozessen, Identitäten und Wertschöpfungsmechanismen verknüpft ist.

Das erste Literaturreview (Papier I) zeigt, dass die potenziellen Vorteile von *Scaling Agility* zwar weithin anerkannt sind, das Phänomen selbst jedoch untertheoretisiert bleibt. Die Forschung ist fragmentiert, überwiegend technikorientiert und berücksichtigt die organisationalen Komplexitäten in großen, etablierten Unternehmen nur unzureichend. Insgesamt zeigen die Ergebnisse, dass *Scaling Agility* zwar vielversprechend für die Verbesserung der organisatorischen Flexibilität und Reaktionsfähigkeit ist, aber noch erhebliche Hindernisse bestehen, die weitere Untersuchungen zu ihrer Umsetzung, Messung und kontextuellen Abhängigkeiten erforderlich machen. Diese Erkenntnisse tragen zu einer präziseren Definition von *Scaling Agility* bei, indem sie die verschiedenen Formen unterscheiden und die kritischen strukturellen und prozeduralen Elemente hervorheben, die ihre Wirksamkeit in etablierten Unternehmen bestimmen.

Die Ergebnisse von Papier II zeigen, dass digitale Innovationen innerhalb von Organisationen in mehreren Dimensionen Wert schaffen. Die Untersuchung identifiziert fünf Schlüsselbereiche für den Wert digitaler Innovationen: organisatorisches Wissen, Produkte/Dienstleistungen, Humankapital, Zusammenarbeit und Wettbewerb, die jeweils unterschiedliche Perspektiven und Auswirkungen für Unternehmen haben. Diese Studie unterstreicht die Notwendigkeit für Unternehmen, ihre Strukturen, Prozesse und Kompetenzen zu überdenken, um die digitale Transformation besser zu erleichtern und die innovationsgetriebene Wertschöpfung zu maximieren. Die Ergebnisse stützen darüber hinaus die These, dass strukturelle Veränderungen unerlässlich sind, um digitale Innovationen effektiv zu realisieren und in Unternehmensstrategien zu integrieren, damit Unternehmen ihren Wettbewerbsvorteil in sich schnell entwickelnden Märkten behaupten können – ein Argument, das für mehr Agilität im Allgemeinen spricht.

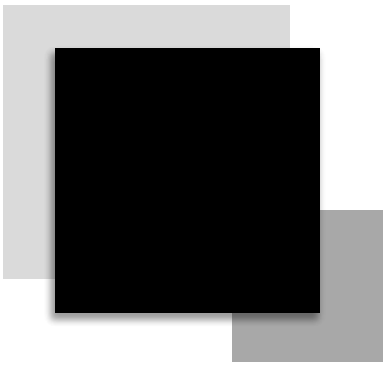
Die Taxonomie-Studie (Papier III) liefert darauf aufbauend ein Klassifikationsschema von Gestaltungsdimensionen für skaliert-agile Organisationen. Der Artikel zeigt acht Designkriterien für skaliert-agile Organisationen, die in zwei unterschiedliche Kategorien unterteilt sind: Dimensionen auf Organisationsebene und auf Teamebene. Jedes Kriterium umfasst zwei oder drei unterschiedliche Designoptionen, die die Flexibilität und Variabilität widerspiegeln, die den Konfigurationen skaliert-agiler Organisationen innewohnt. Dies unterstreicht die Flexibilität und Kontextabhängigkeit skaliert-agiler Organisationsdesigns. Die Ergebnisse verdeutlichen auch die Kompromisse, die mit verschiedenen Designentscheidungen verbunden sind.

Die empirischen Studien vertiefen dieses Bild. Die Tensions-Studie (Papier IV) identifiziert drei grundlegende Organisationstensionen – strukturelle Autonomie versus strategisches Alignment, operative Autonomie versus Prozessalignment sowie Entscheidungsautonomie versus Führungsalignment – und zeigt, dass diese Spannungen dauerhafte Merkmale von *Scaling Agility* ist. Die Teamautonomie-Studie (Papier V) belegt, dass lokale Autonomie von Teams zwar Innovation und Reaktionsfähigkeit steigert, zugleich aber Risiken von Engpässen und Koordinationsproblemen erzeugt. Darüber hinaus ergänzt es die Ergebnisse von Papier IV, da es sich eingehender mit der Frage befasst, wie explizit die Teamautonomie als Teil einer allgemeinen Spannungsbetrachtung im Rahmen von *Scaling Agility* gehandhabt wird, und somit eine Verbindung zwischen Papieren IV und V herstellt. Die Identitätsstudie (Papier VI) veranschaulicht, wie *Scaling Agility* berufliche Rollenidentitäten verändern und Konflikte hervorrufen, die Motivation fördern, aber auch Widerstände erzeugen können. Um diese Identitätsverschiebungen effektiv zu bewältigen, werden vier Propositionen entwickelt. Dazu gehören: (1) Identitätsbedrohung, die zum Schutz der beruflichen Rollenidentität führt, wenn Führungsaufgaben aufgeteilt werden; (2) Vertrauen und Verständnis für neue Verantwortlichkeiten, die die Wahrscheinlichkeit einer Identitätsstärkung erhöhen; (3) Bedrohung der Expertenidentität, die zum Zurückhalten von Wissen führt; und (4) Autonomie, Verantwortung und Erweiterung der Fähigkeiten, die eine Identitätserweiterung fördern. Papier VII untersucht, wie berufliche Identitäten die Trägheit von Organisationen während der digitalen Transformation beeinflussen. Organisationale Trägheit, definiert als die Unfähigkeit von Organisationen, als Reaktion auf Veränderungen im Umfeld ausreichende interne Veränderungen durchzuführen, stellt ein erhebliches Hindernis für die digitale Transformation dar. Die Ergebnisse der Studie münden in einem konzeptionellen Modell, das bestimmte berufsbezogene Identitäten mit Trägheitsdimensionen verknüpft. Die organisatorische Identität fördert die soziokognitive Trägheit, indem sie die Mitarbeiter an traditionellen Werten festhält, während die berufliche Identität durch Konflikte mit sich wandelnden Rollenerwartungen sowohl zur soziokognitiven als auch zur soziotechnischen Trägheit beiträgt.

Die Ergebnisse von Papier VIII zeigen, dass *Scaling Agility* die Wertschöpfungsprozesse durch die Förderung von Kreativität, Autonomie und Vernetzung neu gestalten kann, ihr volles Potenzial jedoch durch strukturelle Komplexität und Ressourcenknappheit eingeschränkt wird. Die Studie betont, dass Skalierbarkeit ein zweischneidiges Phänomen ist: Sie ermöglicht eine dynamische und innovative Wertschöpfung, bringt aber gleichzeitig neue organisatorische Herausforderungen mit sich, die sorgfältig bewältigt werden müssen. Die Untersuchung zu Business-IT Alignment (Papier IX) zeigt schließlich, dass *Scaling Agility* IT- und Geschäftsdivisionen über Phasen der Kommunikation, Mediation und Motivation enger verzahnen kann – sofern die Umsetzung bewusst gestaltet wird.

Insgesamt entwickelt die Dissertation ein dynamisches, spannungsbewusstes Theorieverständnis von *Scaling Agility*. Sie zeigt, dass erfolgreiche Skalierung weniger in der Anwendung vordefinierter Modelle liegt, sondern im kontinuierlichen Reagieren auf Spannungen, in der Entwicklung neuer Identitäten und in der Integration von Strukturen und Praktiken über Abteilungsgrenzen hinweg. Damit etabliert sie *Scaling Agility* als zentrales organisationales Strukturphänomen, um digitale Transformation in komplexen, etablierten Organisationen zu gestalten, und leistet Beiträge zur Wirtschaftsinformatik sowie an der Schnittstelle zur Managementforschung.

Für die Praxis bietet die Dissertation konkrete Orientierung, wie etablierte Organisationen Skalierungsinitiativen erfolgreich umsetzen können – indem sie unter anderem Spannungen produktiv nutzen, Identitätsveränderungen aktiv begleiten und Strukturen so gestalten, dass Agilität nicht nur eingeführt, sondern nachhaltig verankert wird.



Introductory Paper

Introductory Paper

SCALING AGILITY

Understanding and Managing Digital Transformation in Incumbent Firms

Julian Frey
University of Bamberg

INTRODUCTORY PAPER: TABLE OF CONTENTS

1 INTRODUCTION

The growing role of information technology (IT) in value creation and the delivery of new products presents a significant challenge to incumbent firms that were established in the pre-digital age (Oberländer et al., 2021, p. 1). The convergence of markets and customers (Lyytinen et al., 2016), the accelerated pace of product development, and customer expectations for rapid responses (Tallon et al., 2019) present significant challenges to incumbent firms. The repercussions of neglecting these challenges are exemplified by numerous prominent cases, including Kodak (Lucas Jr. & Goh, 2009), General Electric, Nike, and Lego (Davenport & Westerman, 2018). In general, seven of the eight digital transformations are considered unsuccessful (Wade & Shan, 2020). In order to circumvent this outcome, incumbents proactively implement scaling agility, a process entailing the expansion of agile concepts' adoption (encompassing principles, methods, and practices) to encompass larger organizational segments (Limaj & Bernroider, 2022; Fuchs & Hess, 2018). This is evidenced by the actions of organizations such as ING (Calnan & Rozen, 2019), which have demonstrated scaling agility. Scaling agility encompasses structural and procedural alterations that organizations implement during the digital transformation process (Vial, 2019). Although scaling agility and its associated organizational concepts are not a novel phenomenon in software organizations or digital-born organizations (such as Google or Spotify), incumbent firms are often relatively inexperienced in this regard (Gerster et al., 2020; Limaj & Bernroider, 2022). The potential benefits of scaling agility across digital-born organizations (Tumbas et al., 2018) or traditional software organizations (Dikert et al., 2016) have been the subject of considerable debate in the information systems (IS) literature.

Scaling agility can be described as the *"process of extending the initial adoption of agile concepts (e.g., principles, methods, and practices) to larger parts of an organization"* (Limaj & Bernroider, 2022, p. 1; Fuchs & Hess, 2018). Incumbent firms pursue scaling agility by following the model of digital-born organizations. This approach is a popular one among incumbent firms, as evidenced by the work of Gerster et al. (2020). However, it is problematic for incumbent firms to copy the strategies of digital-born companies, as the two types of firms are distinct. One approach to digital technologies is to view them as rather infrastructural (Tumbas et al., 2018). The organizational structure is not designed to accommodate digital product architectures (Drechsler et al., 2020). Therefore, it is not surprising that failure rates remain high. Only 4% of companies achieve the objectives associated with scaling agility (De Smet, 2018). Moreover, the dialectic view on digital transformation hints toward challenges to manage digital transformation and in particular a systematic investigation of tensions and coping and synthesis of such tensions (Haskamp et al., 2023).

This is why the overarching objective of this thesis is to gain insight into the concept of scaling agility in wake of digital transformation, with a view to enhancing the likelihood of success of digital transformation within established firms. Thus, the guiding questions underlying this dissertation are:

What is scaling agility, how can it best be managed, and what are its effects on incumbent organizations' digital transformation?

These central questions are answered by pursuing three research objectives that form the three chapters of this dissertation (see Table 1).

Table 1. Dissertation structure

Dissertation structure
Introductory Paper
Chapter I Understanding scaling agility *(Papers I and II)*
Chapter II Managing scaling agility *(Papers III to VII)*
Chapter III Effects of scaling agility *(Papers VII and IX)*

The first research objective focuses on a better understanding scaling agility as a novel phenomenon in the context of incumbent organizations. The objective here is to conceptualize the term based on the fragmented literature it draws from. Moreover, the research objective aims for a better understanding of the triggers for scaling agility: a profound shift in incumbent organizations structures based on the change in how innovations are created and sustained in times of pervasive digitalization. The papers included to address this objective form the basis for a delimitation of the concept, to derive areas for qualitative inquiry and set the basis for theory development. In sum, I thus formulate the following research objective:

Research objective 1: Understanding scaling agility.

The second objective is to better understand how scaling agility can be managed in incumbent organizations with a focus on their design, tensions, and identity changes. This objective is achieved with two-tier strategy. First, the analysis of concrete design choices helps to understand the possible formations of scaling agility and provides a fundamental basis to understand the various characteristics and configurations scaling agility can take on in incumbent firms. Moreover, it sets the basis for an in-depth analysis of cases that are vital for tier two. The second tier provides a deep-dive into the changes that underlie the management of scaling agility: an analysis of the underlying tensions, how team autonomy is managed and how identity change and inertia are central phenomena dominating the management of scaling agility in an incumbent organization. The second objective can thus be summarizes as follows:

Research objective 2: Understanding how scaling agility can be managed.

The third research objective is concerned with understanding how scaling agility exerts influence on distinct goals associated with it, and also connecting well with the papers from chapters I and II. These effects scaling agility has are exemplarily analyzed vis-à-vis the digital transformation process step of value creation path change (based on scaling agility as part of the building block *structural changes* in the process) and business-IT alignment as a broader goals incumbent firms seek to achieve with scaling agility. While the promises of scaling agility are widely debated, these distinct effects associated with scaling agility are not yet analyzed to this extent. Consequently, this part probes the effect scaling agility has on incumbent firms during their digital transformation and contributes to:

Research objective 3: Understanding how scaling agility affects digital transformation.

Overall, this dissertation comprises an introductory paper and nine subsequent research papers, collectively fulfilling the research objectives and answering underlying research questions. The introductory paper presents an overview of the theories and concepts employed in the subsequent papers, outlines research questions pertinent to the research objectives, and provides a synopsis of the methodologies, findings, contributions, limitations, and potential avenues for future research. In alignment with the three research objectives, the papers of this dissertation are grouped into three chapters. Chapter I (Papers I-II) focuses on two systematic literature reviews: one on scaling agility and another on broadening the view on how digital innovations can be valued. To gain a deeper understanding of the requirements for digital transformation, Chapter II (Papers III-VII) examines the management of scaling agility, its capacity to enhance the structural integrity of incumbent organizations while analyzing the challenges associated with managing scaling agility. Lastly Chapter III (Papers VII-IX) aims to better understand the impact on the achievement towards digital transformation. Table 1 provides a concise overview of the chapters and the included papers. To situate the dissertation's contributions within the broader academic conversation, its research logic can be mapped along the AMJ Management Research Canvas (Dorobantu et al., 2024). The AMJ Management Research Canvas is a systematic tool designed to help researchers develop, conduct, and report empirical management studies. It includes nine interrelated elements: audience, puzzle, theoretical constructs, research setting, boundary conditions and limitations, empirical findings, contributions, and research design and analysis. Table. 2 sheds light on each of these nine elements and provides a basic map of this dissertation on scaling agility.

The audience for this dissertation includes scholars in information systems, management, and organizational theory, as well as practitioners in incumbent firms struggling with digital transformation. Prior research has examined agile methods (e.g., Dikert et al., 2016; Kalenda et al., 2018), IT–business alignment (Luftman et al., 2017), and digital transformation more broadly (Vial, 2019), but much of it remains fragmented, IT-centric, and inattentive to the socio-organizational complexities of scaling agility. Papers I and II provide a systematic assessment of this prior work through structured literature reviews.

At its core, the puzzle addressed here is why scaling agility so often proves difficult in incumbent firms despite the proliferation of prescriptive frameworks. Specifically, the dissertation asks: What is scaling agility in incumbent firms, how can it be effectively managed, and how does it shape digital transformation outcomes such as IT–business alignment and value creation paths? These questions are pursued through a focus on organizational design choices (Paper III), the dynamics of organizing tensions (Paper IV), team autonomy (Paper V), role identity (Papers VI and VII), inertia (Paper VII), and transformation outcomes (Papers VIII and IX).

The theoretical framing emphasizes central concepts and relationships, including scaling agility, organizing tensions, team autonomy, professional role identity, organizational inertia, value creation paths and IT–business alignment (see Table A1 in Appendix for the definitions used in this dissertation). These are not treated as isolated concepts but as interdependent forces: scaling agility and respective design choices (Paper III) generate persistent tensions (Paper IV) that, for instance, influence identity adaptation and inertia (Papers VI–VII), while at the same time showing signs of interrelation with business-IT alignment and value creation paths in the course of digital transformation (Papers VIII and IX).

Table 2. AMJ Management Research Canvas for this dissertation

Audience and Prior Research	**Research Question(s)**	**Theoretical Constructs and Relationships**
• Audience: IS, management, organization scholars; practitioners in incumbent firms. • Prior research: agile software development (Dikert et al., 2016; Gerster et al., 2020; Kalenda et al., 2018), DT (Vial, 2019), organizing tensions (Soh et al., 2023), IT-business alignment (Luftman et al., 2017). • Gap: fragmented, IT-centric, neglects socio-organizational dynamics.	• What is scaling agility in incumbent firms? • How can scaling agility be managed? • How does scaling agility affect digital transformation (e.g., IT-business alignment and value creation paths)?	• Concepts: scaling agility, organizing tensions, team autonomy, role identity, inertia, IT-business alignment, value creation paths. • Potential relationships: scaling agility is prone to organizing tensions → shapes identity and inertia → has effect on value creation paths and IT-business alignment. • View: scaling agility as dynamic, paradoxical process.
Boundary Conditions and Limitations	**The Puzzle**	**Research Setting**
• Applicable to large, incumbent firms, in Europe. • Industries with legacy structures, regulation, and pressure from digital challengers. • Limits: qualitative focus, context specificity, no quantitative validation. • Future research: test propositions in diverse contexts.	• How can incumbent firms scale agility effectively to support digital transformation? • Why do scaling initiatives often fail despite prescriptive frameworks? • How do organizational dynamics (e.g., tensions, identities, inertia) shape scaling agility effects?	• Multi-industry incumbent firms (telecom, banking, insurance, IT, manufacturing) • Appropriate due to legacy constraints and urgency of digital transformation. • Paper VII: single-case bank study; others: multiple firms.
Contributions	**Empirical Findings**	**Research Design and Analysis**
• Conceptualizes scaling agility as dynamic, paradoxical, not template-base process. • Extends DT research with identity and socio-material perspectives. • Advances IT-business alignment literature. • Provides process models and propositions. • Practical insights for scaled-agile organization design and management.	• SAOs require conscious design, not templates. • Persistent tensions (autonomy vs. alignment). • Role identities reshape engagement and resistance. • Inertia persists, shaped by multiple identities. • Scaling agility influences alignment and value creation in non-linear ways.	• Mixed, qualitative-heavy approach: literature reviews, taxonomy, qualitative case studies. • Data: multi-case, multi-year interviews, observations, documents (except Paper VII: single case). • Methods: different qualitative approaches (i.e., deductive qualitative analysis (IV to VI), Gioia rooted in grounded theory (VIII, IX)), taxonomy building.

The research setting consists of large, incumbent firms across industries such as telecommunications, banking, insurance, IT services, and manufacturing. These organizations face the paradoxes of digital transformation acutely: they must innovate rapidly while constrained by legacy systems and entrenched hierarchies. One study (Paper VII) investigates a single banking case, while the majority employs multiple-case designs (Papers IV, VI, VIII, IX). The dissertation is moreover grounded in two literature reviews (Papers I and II) and a taxonomy paper (Paper III).

Naturally, there are boundary conditions and limitations. The findings are primarily applicable to European incumbents with established legacy infrastructures, and the qualitative methodology limits causal

generalization (Papers IV–IX). Future studies should expand the empirical base across industries, geographies, and methods, including quantitative testing of the derived propositions (see Paper I for an overview of open research avenues, or the empirical papers for propositions). The empirical findings show that scaling agility cannot be reduced to the application of predefined templates. Instead, it requires deliberate, context-sensitive design choices (Paper III). Persistent tensions—such as balancing autonomy with alignment—must be continuously navigated (Paper IV). Professional role identities are reshaped, sometimes leading to resistance (Paper VI), and inertia persists in subtle ways, often rooted in identity dynamics (Paper VII). Furthermore, scaling agility affects IT–business alignment and value creation paths, though in contingent and non-linear ways (Papers VIII and IX).

From this, several contributions emerge. Conceptually, the dissertation theorizes scaling agility as a dynamic and paradoxical process, moving beyond static blueprints (Papers IV–VI). It enriches digital transformation research by incorporating socio-material and identity lenses (Papers VI and VII), and it advances the IT–business alignment debate by linking alignment directly to the structural and cultural shifts driven by scaling agility (Papers VIII and IX). Practically, it provides organizations with process models and design insights that support large-scale agile transformations (all empirical papers).

These insights are underpinned by a carefully chosen research design and analysis. The dissertation combines structured literature reviews (Papers I and II), taxonomy development (Paper III), and qualitative case studies (Papers IV–IX). Data collection spans interviews, observations, and document analysis, while analytical approaches include deductive qualitative analysis (Papers IV to VI),cross-case comparison (Papers VI and IX), the Gioia methodology (Papers VIII and IX), and deductive qualitative analysis (Paper IV). Overall, the dissertation positions scaling agility as a complex, tension-laden phenomenon at the intersection of agile concepts, organizational design, and digital transformation.

To further sharpen this positioning and highlight the scholarly motivations behind each individual chapter, the following section applies the 5Cs framework (Lange, 2017). To provide clarity on how the individual chapters in this dissertation connect to the overarching research objectives, it is helpful to position them within a unifying conceptual lens. The 5Cs framework (Lange, 2017) serves this purpose by structuring how each chapter (and the included papers) establishes common ground, identifies complications, highlights why these issues are of concern, outlines a course of action, and specifies its contribution. Table 3 therefore functions as an orientation device for the reader: it summarizes how the three chapters of this dissertation are situated within the 5Cs framework, showing step by step how they build on shared assumptions, address critical gaps, and advance theory on scaling agility. The table provides a roadmap for understanding how the dissertation progresses from established foundations toward new insights into the dynamics of scaling agility.

Table 3. The 5Cs of scaling agility research (based on Lange, 2017)

5Cs	How the C is addressed (clustered by Chapters I–III)	Connection to research
Common Ground	I Understanding Scaling Agility: The literature broadly agrees on the importance of agility for navigating digital transformation. Scaled-agile organizations are recognized as promising vehicles for scaling agility by integrating IT and business functions, yet much prior work has focused narrowly on agile software development or digital-native firms. II – Managing Scaling Agility: Scholars widely acknowledge that scaling agility is prone to tensions, challenges in calibrating team autonomy, and the need to reconsider professional role identities. Research in paradox theory, organizational behavior, and digital transformation management provides a baseline consensus that such tensions and identity shifts are central to transformation processes. III – Effects of Scaling Agility: IT–business alignment and value creation are long-standing themes in IS research. A broad consensus exists that alignment is critical to performance and is more dynamic, activity-focused than before. Also, concensus exists that digital transformation requires organizations to restructure, connect structural changes with outcomes and alters value creation paths. These shared assumptions provide a solid foundation for investigating how scaling agility contributes to digital transformation goals.	I: Drechsler et al. (2020); Gerster et al. (2020); Kalenda et al. (2018); Limaj and Bernroider (2022); Tumbas et al. (2018). II: Alvesson and Sandberg (2011); Smith and Lewis (2011); Soh et al. (2023); Stets and Burke (2000); Strich et al. (2021). III: Chan and Reich (2007); Luftman et al. (2017); Sabherwal and Chan (2001); Teece (2007); Vial (2019).
Complication	I – Understanding Scaling Agility: Despite a shared recognition of scaling agility's importance, the literature remains fragmented. Studies rely heavily on digital-native templates, neglecting the structural realities of incumbents. The theoretical contributions are piecemeal, lacking integration and conceptual depth. II – Managing Scaling Agility: Much existing research fails to capture the longitudinal, processual nature of tensions, autonomy, and identity changes. Instead, studies often present static or snapshot perspectives, leaving unanswered questions about how tensions ricochet across time, how autonomy is recalibrated in practice, and how identity dynamics evolve under scaling agility. III – Effects of Scaling Agility: IT–business alignment models are often overly static, offering little guidance on dynamic interactions under scaling agility. Likewise, theories of dynamic capabilities acknowledge the importance of microfoundations but provide few empirical insights into how these unfold in real-world transformations.	I: Carroll et al. (2023), de Smet (2018), Kalenda et al. (2018); Limaj and Bernroider (2022). II: Besson and Rowe (2012); Drechsler et al. (2020); Gerster et al. (2020); Kaganer et al. (2023); Müller et al. (2024); Rigby et al. (2018). III: Carroll et al. (2023); Coltman et al. (2015); Felin et al. (2012); Karpovsky and Galliers (2015); Queiroz et al. (2017); Sebastian et al. (2020); Warner and Wäger (2019).

5Cs	How the C is addressed (clustered by Chapters I–III)	Connection to research
Concern	I – Understanding Scaling Agility: Without a more consolidated understanding of scaling agility, both theory and practice risk stagnation. Fragmentation and overreliance on digital-native patterns hinder the development of frameworks applicable to incumbents. This limits scholarly theorizing and leaves practitioners without guidance for sustainable transformations. II – Managing Scaling Agility: Mismanagement of tensions, autonomy, and identity dynamics threatens to reinforce inertia rather than overcome it. If organizations fail to develop adaptive mechanisms, scaling agility may lead to resistance, role ambiguity, and stalled transformations. For scholars, this concern points to the need for theories that account for paradox and identity as integral elements of scaling agility. III – Effects of Scaling Agility: Poorly theorized alignment mechanisms and an underdeveloped understanding of value creation path changes limit both academic and managerial insights. Without more dynamic perspectives, firms risk misalignment, inefficiencies, and lost opportunities in digital transformation efforts.	I: Limaj and Bernroider (2022); Carrol et al. (2023). II: Soh et al. (2023); Besson and Rowe (2012); Kaganer et al. (2023); Haskamp et al. (2023); Müller et al. (2024) Wessel et al. (2021). III: Bick et al. (2018); Luftman and Brier (1999); Schilke et al. (2018).
Course of Action	I – Understanding Scaling Agility: Paper I applies a structured literature review to consolidate fragmented knowledge; it develops theory by synthesizing prior studies into a coherent research agenda. Paper II maps value loci in digital innovation via a systematic review; it refines theory by integrating disparate perspectives into a framework. II – Managing Scaling Agility: Paper III builds a taxonomy of SAO design dimensions from case studies; it refines theory by classifying design choices into a generalizable structure. Paper IV employs deductive qualitative analysis across six cases to analyze tensions; it develops theory by introducing the concept of "ricochet effects" in managing organizing tensions. Paper V conducts a cross-case study of team autonomy; it refines theory by identifying mechanisms to balance autonomy. Paper VI applies a longitudinal multi-case design to identity dynamics; it develops theory by outlining trajectories of role identity adaptation. Paper VII uses a single longitudinal case of a bank; it develops theory by linking identity processes to psychological and socio-cognitive inertia. III – Effects of Scaling Agility: Paper VIII applies Gioia methodology longitudinally; it develops theory by theorizing microfoundations of value creation paths and barriers to it under scaling agility. Paper IX uses Gioia methodology to analyze alignment activities; it refines theory by modeling stages of IT–business alignment under scaling agility.	I: vom Brocke et al. (2009); Webster and Watson (2002). II: Eisenhardt (1989, 2021); Fife and Gossner (2024); Gilgun (2019); Nickerson et al. (2013); Yin (2018). III: Gioia et al. (2013); Yin (2018).

5Cs	How the C is addressed (clustered by Chapters I–III)	Connection to research
Contribution	I – Understanding Scaling Agility: By consolidating fragmented literature, this part provides much-needed conceptual clarity. It shifts the conversation from isolated agile practices to theorizing scaling agility as a structural and organizational phenomenon. II – Managing Scaling Agility: Clarification of scaling agility as multidimensional, evolving design choice. This part contributes novel insights into the paradoxical nature of scaling agility. It highlights ricochet effects in tension management, specifies mechanisms for calibrating autonomy, and theorizes trajectories of role identity adaptation and inertia. Collectively, it advances theory by positioning scaling agility as a dynamic, tension-laden process rather than a static design. III – Effects of Scaling Agility: By linking scaling agility to IT–business alignment and value creation, this part connects scaling agility to broader digital transformation outcomes. It reframes alignment in scaling agility as a staged, evolving process and theorizes the changes to value creation paths under scaling agility. Thus, it expands the trajectory of digital transformation scholarship and offers practical insights.	I: Drechsler et al. (2020); Gerster et al. (2020); Kalenda et al. (2018); Limaj and Bernroider (2022); Tumbas et al. (2018). II: Carroll et al. (2023); Gerster et al. (2020); Smith and Lewis (2011); Soh et al. (2023) Viljoen et al. (2022). III: Fuchs and Hess (2018); Luftman et al. (2017); Salmela et al. (2022); Tallon et al. (2022).

These foundations set the stage for the empirical investigations that follow, enabling the dissertation to address its central research question of what scaling agility entails, how it can be managed, and what its implications are for incumbent firms navigating digital transformation. Building on this foundation, the next chapter develops the theoretical background that anchors the subsequent analyses.

2 THEORETICAL FOUNDATION AND RELATED RESEARCH

At the outset of this research endeavor stands a more or less vague definition of the phenomenon, which was subsequently refined through the specification provided by Limaj and Bernroider. This definition is both directive and question-opening. It is directive in that it delineates the phenomenon conceptually and distinguishes it from related phenomena. At the same time, it is question-opening, as it stimulates the researcher to reflect upon various open and intellectually challenging issues. The directive aspect will be employed in this umbrella paper, particularly in the background chapter, to systematically present the theoretical foundations. The question-opening aspect, together with its subsequent answers, will instead be addressed in the motivation chapter and the findings chapter.

Building on this directive aspect this dissertation's foundations can be structured. The literal definition — "*a process of extending the initial adoption of agile concepts (e.g., principles, methods, and practices) to larger parts of an organization*" (Limaj & Bernroider, 2022, p. 1)—already reveals several facets that merit closer examination in order to delineate the theoretical frame.

The first relevant term of the definition is *"process"*, which highlights the ontological nature of scaling agility as a temporal and evolving phenomenon. This temporal orientation makes a longitudinal perspective

indispensable and thereby justifies the use of an explorative, qualitative case study approach (see methodology chapter).

From the remainder of the definition, three further terms can be distilled that guide the development of the theoretical framework: *"agile concepts," "to larger parts of an organization,"* and *"extending the initial adoption."*

- *Agile concepts* invite an epistemic reflection on the intellectual trajectory of agility, originating in computer science and subsequently extending into the field of information systems. A closer examination of this trajectory is essential to situate scaling agility within its disciplinary and conceptual context.

- *To larger parts of an organization* indicates that scaling agility represents a broad organizational transformation, one that reconfigures structural arrangements and governance mechanisms. This underscores the relevance of organizational design and the IS-related phenomenon of digital transformation as key theoretical entry points.

- *Extending the initial adoption* points to the managerial and organizational challenges that arise when agile practices are rolled out beyond isolated teams to encompass a larger number of departments, roles, and individuals. This expansion introduces significant complexities: maintaining autonomy while scaling becomes increasingly difficult; coordination demands intensify as interdependencies multiply; organizational complexity itself is amplified; and new roles and responsibilities must be created and legitimized. From a heuristic perspective, this directs attention to the inherent tensions between autonomy and alignment, simplicity and complexity, and continuity and change that managers must navigate when scaling agility across the enterprise.

In the following, the theoretical frame will therefore be structured and analyzed along these lines of thought: first, by considering digital transformation and organizational design, which provide the structural and contextual backdrop for understanding the emergence of scaling agility, structurally embodied through scaled-agile organizations. Second, by situating scaling agility in relation to agile concepts, which helps to trace the information systems roots of scaling agility and to show how its adoption and adaptation shape practices and roles in incumbent firms. Finally, under the heading of complementary lenses, this chapter draws together five theoretical lenses that run throughout individual papers of this dissertation:

2.1 Digital Transformation and Organizational Design

Having outlined how the definition of scaling agility reveals multiple facets for framing the phenomenon, the next step is to establish the broader theoretical foundations that underpin this dissertation. Rather than redefining the phenomenon itself, the aim here is to anchor it within adjacent scholarly domains that provide conceptual depth and analytical leverage. A first theoretical foundation for understanding scaling agility lies in the field of digital transformation. Digital transformation has become a central concern for incumbent firms, as it involves the reconfiguration of business models, processes, and organizational structures through the pervasive use of digital technologies. For scaling agility, digital transformation provides the broader structural and technological context in which agile practices are embedded and through which their organizational

consequences unfold. Examining how digital transformation has been defined and studied allows this dissertation to situate scaling agility within a larger stream of research that addresses not only organizational change but also the persistent challenges of inertia, legacy structures, and systemic adaptation.

2.1.1 Digital Transformation

The study of digital transformation (DT) provides a crucial conceptual and empirical backdrop for this dissertation. Scaling agility, as examined here, cannot be understood in isolation from the broader processes of digital transformation in incumbent firms. Scaling agility can be seen as the reconfiguring of organizational structures, processes, and identities, which are key elements of digital transformation (Vial, 2019). Situating scaling agility within the DT discourse allows this dissertation to anchor its investigation in a body of research that addresses how organizations navigate technological change, balance innovation with continuity, and confront the enduring challenge of organizational inertia.

The current state of research on DT reflects both its importance and its complexity. Scholars have conceptualized DT as a multidimensional phenomenon, encompassing contextual conditions, mechanisms of change, and organizational outcomes (Hanelt et al., 2021). This includes its capacity to drive operational efficiency, enhance customer experiences, and enable the development of innovative business models (Vial, 2019). Yet the field remains characterized by persistent ambiguities, owing to the broad application of the term and its frequent conflation with related constructs such as digitization and IT-enabled transformation (Wessel et al., 2021). These ambiguities underscore the need for rigorous theoretical and empirical work that delineates DT's distinctiveness and clarifies its transformative potential.

A further challenge lies in the dominance of certain narratives within DT research. Much of the literature has emphasized organizational-level transformations, often neglecting the micro-level (individual) and macro-level (societal or ecosystem) dynamics that are critical to a holistic understanding of DT. While DT has typically been approached as a matter of strategic organizational change, emerging studies highlight its broader consequences for individual roles, community structures, and societal norms (Mirbabaie & Marx, 2024; Oberländer et al., 2025). This points to the need for a more pluralistic approach to theorizing DT—one that integrates insights across levels of analysis and bridges technological innovations with their social, cultural, and economic contexts. Moreover, DT research has often been driven by a technology-centric perspective, emphasizing digital tools and platforms as primary agents of transformation. While this focus has advanced knowledge of digital affordances, it risks overshadowing the socio-technical systems in which such transformations are embedded. A more holistic perspective—one that incorporates organizational culture, leadership, and human factors alongside technological considerations—is needed to capture the full complexity of DT (Kane, 2019; Wessel et al., 2021) (see Paper VIII).

Despite significant advancements, the field continues to face challenges. Theoretical fragmentation and a tendency to treat DT as a linear process with a fixed endpoint have constrained the scope of inquiry. Scholars increasingly call for more nuanced perspectives that capture DT as iterative and emergent, emphasizing transitional moments and the interplay between change and stability (Mozaffar & Candi, 2025). Such perspectives enrich theoretical understanding and offer practical insights for organizations navigating these transformations in real time. Within this context, the exploration of organizational design becomes particularly salient. Research into how structures, processes, and strategies evolve in response to digital disruptions

illuminates potential pathways toward agility and innovation. This dissertation contributes to this discourse by critically examining the organizational structures component of the DT process, addressing its conceptual and methodological gaps, and identifying opportunities for theoretical and empirical advancement.

A comprehensive review of extant literature reveals a multifaceted understanding of DT, with strong emphasis on its variability across contexts, domains, and organizations. At its core, DT is conceptualized as a process of significant organizational improvement, enabled by information and communication technologies (Vial, 2019; Gong & Ribiere, 2021). Such transformations go beyond IT-enabled organizational change to redefine value propositions, organizational structures, and, ultimately, organizational identity and strategic goals (Wessel et al., 2021; Markus & Rowe, 2023).

A critical insight in this regard is the context-sensitive nature of DT. Mühlburger and Krumay (2024) propose a meta-structure comprising representation, technology, and effect, offering a framework to account for the diverse manifestations of DT across organizational, societal, and individual domains. Their approach emphasizes the importance of balancing conceptual breadth with contextual specificity to avoid theoretical ambiguity while ensuring relevance.

Recent work further underscores that DT must be understood as a multi-level phenomenon, requiring the interaction of micro, meso, and macro levels within socio-technical systems (Iden & Bygstad, 2025). The concept of socio-technical micro-foundations highlights the synergistic interplay between individuals and digital resources as the basis for macro-level transformation capabilities. This micro-level perspective complements broader theoretical frameworks such as dynamic capabilities, which emphasize the sensing, seizing, and transforming of opportunities afforded by digital technologies (Warner & Wäger, 2019).

The role of social capital and network relationships also emerges as a recurring theme. Malik et al. (2024) demonstrate how external network complementarities, embedded in relational ecosystems, significantly influence the development of dynamic capabilities such as absorptive capacity, integration effort, and big data analytics. These capabilities mediate the link between social capital and DT outcomes, suggesting that inter-organizational networks are central to navigating digital disruption. Relatedly, DT has increasingly been reconceptualized as a form of collective social action, in which actors inside and outside organizations co-create transformative change (Tana et al., 2023). This perspective shifts attention from organizationally centered frameworks toward societal and decentralized actors, such as peer-to-peer platforms and open-source ecosystems (Breidbach & Tana, 2021; Gomber et al., 2018). The emergent and participatory nature of DT thus becomes evident in both industry and societal transformation.

Nevertheless, significant challenges remain. Conceptual ambiguity persists, with DT still often conflated with related constructs (Markus & Rowe, 2023; Mühlburger & Krumay, 2024), while practical barriers—such as insufficient resources, lack of cross-functional collaboration, and cultural resistance—continue to hinder effective implementation (Vial, 2019; Malik et al., 2024). Moreover, the long-term nature of DT initiatives complicates the observation of their comprehensive impacts within the scope of a single study (Iden & Bygstad, 2024).

In a synthesis, Ashrafi et al. (2024) identify five trajectories of DT research: digital technology architectures; digital business models and value creation; digital technology affordances; new organizational forms

enabled by digital technology; and the role of organizational identity, culture, and leadership in DT. The last two of these trajectories are of particular relevance for this dissertation. The first, new organizational forms enabled by digital technology, investigates the transformative effects of digital technologies on organizational structures and the organization of economic activity. Traditionally, firms have relied on hierarchical systems to integrate resources and capabilities. With the rise of digital platform ecosystems, however, firms increasingly provide core components that enable seamless integration of third-party solutions (Constantinides et al., 2018; Jacobides et al., 2018). Platform ecosystems transcend industry boundaries, foster entrepreneurial networks, and enable collaborative value creation (Autio et al., 2018; Adner, 2021). Within these ecosystems, hub firms orchestrate value creation while third parties contribute complementary innovations (see Paper II). A key insight from this stream is the co-specialization of resources and capabilities across firms, where the value of one offering depends on complementary resources from others (Brueller & Capron, 2021; Adner & Lieberman, 2021). For example, the synergy between providers of smart energy meters and smart home applications illustrates how complementary innovations can amplify value.

The second trajectory, the role of organizational identity, culture, and leadership in DT, emphasizes how deep-seated values, power structures, and control mechanisms shape the success of transformation initiatives. Here, organizational identity—defined by internal leadership as well as external stakeholders—plays a central role in guiding DT efforts (Wessel et al., 2021). Identity reflects not only a company's mission and values but also its relationships with employees, customers, and broader stakeholders (e.g., sustainability commitments or open-source orientations). When DT initiatives align with organizational identity, they foster innovation and motivation; when they conflict, they encounter resistance (Kane, 2019; Lucas Jr & Goh, 2009). Successful adoption also requires legitimacy, both internally—where technologies must align with capabilities, routines, and cultural values (Lucas Jr & Goh, 2009)—and externally—where trust must be established within digital ecosystems (Dahabiyeh & Constantinides, 2022; Thomas & Ritala, 2022). These internal factors greatly influence an organization's ability to adapt to digital changes (Tripsas, 2009; Wessel et al., 2021). Finally, this trajectory acknowledges the persistence of organizational inertia**,** driven by legacy systems, entrenched practices, and long-held mindsets, which often obstruct transformation (Besson & Rowe, 2012). Overcoming such inertia typically requires significant, long-term efforts of structural and cultural change (see Paper VII).

In addition to these perspectives, Orlikowski and Scott (2023) highlight that digital transformation should not be understood solely through its visible "waves" of change—such as deliberate reorganizations or technology rollouts—but also through what they call the *digital undertow*. This undertow refers to the indirect, corollary effects of digitalization that gradually displace long-standing institutional arrangements. Their analysis shows how established standards and accreditation schemes, once central to organizing industries, lose authority when digital materializations no longer align with them—for instance, ISBN systems undermined by digital publishing or hospitality accreditation eroded by review platforms. By foregrounding these subtle yet powerful institutional displacements, the undertow perspective complements more intentional accounts of digital transformation (e.g., Vial, 2019), underscoring that organizations must navigate not only planned trajectories of change but also the less visible, unintended consequences of digitalization that reshape their institutional environments over time.

These insights demonstrate why DT is an indispensable foundation for theorizing scaling agility. Both phenomena grapple with the reconfiguration of structures, roles, and identities under conditions of technological and organizational disruption. By engaging with DT research, this dissertation not only situates scaling agility within a broader scholarly conversation but also highlights the conceptual and empirical gaps that its own contributions seek to address. The following section turns to organizational design, a second foundational domain, to further elaborate on how scaled-agile organizations emerge as structural responses to these transformations.

2.1.2 Organizational Design

While digital transformation foregrounds the technological and systemic dimensions of change, it simultaneously reveals the limits of technology-centric perspectives. Transformative effects cannot be sustained without deliberate reconfigurations of organizational structures, roles, and governance. It is at this intersection that organizational design becomes indispensable. If digital transformation explains *why* organizations must adapt, organizational design addresses *how* they structure themselves to do so—balancing agility with coherence, autonomy with alignment, and responsiveness with stability. “Digital transformation is impacting organization design in many dimensions” (Kretschmer & Khashabi, 2020, p. 100). In particular, digital transformation creates new and presumably more efficient task groupings as it impacts information interdependencies and reduces experimentation costs (Kretschmer & Khashabi, 2020). Similar to the value spaces framework in Digital Innovation (Henfridsson et al., 2018), Kretschmer and Khashabi attest that digital transformation has a facilitating impact on bundling interconnected activities and resources. In this sense, scaling agility is not merely the diffusion of agile practices across wider organizational domains but a design challenge at its core, which can be seen as a structural recombination (Albert, 2018) because different formerly disparate modules of the organization (i.e., IT and Business divisions) are merged with the goal to increase the innovation performance of the firm.

The importance of this design perspective becomes evident when considering the long-standing insight that organizations must align their structures with the complexity of their environments. Galbraith’s (1973) classic argument regarding the “fit” between information-processing needs and coordination capacity illustrates this point well. In the context of scaling agility, the challenge lies in designing organizations that can cope with the heightened complexity that arises once agile practices spread across departments, roles, and functions. This resonates with Hanelt et al. (2021), who stress that digital transformation and organizational redesign are deeply intertwined, as transformation unfolds not only through the adoption of technologies but through the restructuring of processes, roles, and governance.

What makes this particularly relevant is the recognition that transformation processes are iterative and emergent, rather than linear or fixed. Wessel et al. (2021) and Mozaffar and Candi (2025) highlight how organizations must learn to navigate transitional moments, oscillating between periods of change and stability. From an organizational design perspective, this implies structures that are flexible enough to adapt continuously, yet stable enough to provide coherence. Matrix structures exemplify such logics: while dual reporting lines may introduce ambiguity and conflict, they also enhance adaptive capacity by forcing organizations to attend to competing demands (Levinthal & Workiewicz, 2018; Sytch et al., 2018). In a similar way, scaling

agility thrives in such tensions—between local autonomy expressed through experimentation and self-sufficiency and corporate coherence expressed through standards and shared resources, between bottom-up adaptation and top-down coordination.

This tension extends beyond the boundaries of the firm. Gulati et al. (2012) push organizational design thinking into the realm of *meta-organizations* such as alliances, ecosystems, and consortia. In these settings, the task is to balance authority with autonomy and identity with diversity across organizational boundaries. Scaling agility, particularly in large incumbents, often transcends the unit or firm level and involves business divisions as well as occasionally external partners. Here, insights from meta-organization design highlight the need for orchestration mechanisms that ensure alignment without suppressing variety (Gulati et al., 2012). This insight is reinforced by Oberländer et al. (2025), who show how orchestration becomes critical in digital ecosystems where interdependencies demand design logics that go beyond firm-internal structures.

At the same time, scaling agility requires organizations to cultivate disciplined autonomy. Shi et al. (2022) point out that effective organizational design grants teams the freedom to self-organize while embedding integrative mechanisms that preserve coherence. Autonomy without discipline risks fragmentation; discipline without autonomy breeds rigidity. The art of design lies in holding these poles in productive tension – a central pillar elaborated on in this dissertation (see Paper IV). Wessel et al. (2025) similarly argue that disciplined flexibility is essential in digital transformation contexts, where organizations must sense, adapt, and respond rapidly to ecosystem changes without losing their strategic direction.

Another dimension concerns the emergence of novel organizational forms – a topic that is further elaborated on in Paper VI. Kane (2019) argues that digital transformation compels firms to adopt flatter hierarchies, enhance cross-functional coordination, and cultivate cultures of learning that extend beyond technology to include human and cultural dimensions. Building on this, Volberda et al. (2021) and Baygi et al. (2021) describe a “flow-based” design logic in which organizational structures are continuously reconfigured to keep pace with turbulent environments. For scaling agility, the implication is that design (see Paper III) cannot be treated as a one-time choice; instead, it must be conceived as an ongoing process of realignment between roles, practices, and governance. Illustrative examples of such forms include agility and agile management, self-managed teams, and holacracy.

Organizational design also plays out in the micro-level dynamics of role identities and everyday practices. Mirbabaie and Marx (2024) emphasize that transformations often shift boundaries for knowledge workers, requiring structures and cultures that empower individuals to adapt. This observation directly connects to the themes of this dissertation: the analysis of organizing tensions (Paper IV), the transformation of role identities (Paper VI), and the shifting alignment between business and IT (Paper IX), all underscore how design choices materialize in lived organizational experiences.

In sum, these insights reaffirm that scaling agility is not simply about extending agile methods, but about a fundamental organizational reconfiguration. It involves navigating dualities of change and stability, autonomy and discipline, and innovation and continuity, while extending design principles across both intra- and inter-organizational boundaries. By embedding agility into the very fabric of organizational design, firms can ensure coherence across multiple levels of analysis—individual, team, organizational, and ecosystem. In this

way, organizational design emerges as a conceptual foundation for understanding scaling agility as a profound design challenge, one that must evolve iteratively and reflexively in parallel with the transformations it seeks to enable.

2.2 Agile Concepts and Scaling Agility

A further cornerstone for theorizing scaling agility lies in the conceptual lineage of agile concepts themselves. Originating in computer science and software engineering, agility gradually expanded into the information systems field and, more recently, into broader organizational and management domains. With this expansion, agility has carried not only methods and practices but also broader ramifications for incumbent firms. To theorize scaling agility, it is therefore crucial to trace how these concepts have been defined, adapted, and reinterpreted across disciplinary boundaries. Such an examination makes it possible to appreciate both the continuities and the transformations of agility as it migrates from localized team practices to organization-wide frameworks. In doing so, scaling agility can be situated within a solid epistemic foundation that links contemporary organizational transformations back to the debates that have shaped the notion of agility from the outset.

From an IS perspective, pure agile software development can be defined as "a software development team's ability to anticipate, create, learn from and respond to changes in user requirements through a process of continual readiness" (Baham & Hirschheim, 2021, p.112) fostering agility as the ability to create and proactively respond to change (Agile Alliance, 2020; Conboy, 2009). Agile software development is enacted through four core concepts: incremental design and iterative development, inspect and adapt, work collaboratively, and continuous customer involvement (Baham & Hirschheim, 2021). As outlined earlier, scaling agility itself refers to the process of extending the adoption of such agile concepts—including principles, methods, and practices—beyond their initial implementation to additional organizational units (Limaj & Bernroider, 2022, p. 1). The literature reflects different emphases in this regard. Dikert et al. (2016, p. 88) define large-scale agile as the application of agile methodologies in software development involving "at least six teams," emphasizing a scale within technical domains. Rigby et al. (2018, p. 4) extend this view with the term agile at scale, focusing on "launching dozens or hundreds of agile teams," and thereby highlighting the size dimension. Moving beyond size, Fuchs and Hess (2018) introduce the notion of large-scale agile transformation, describing it as the organizational-level adoption of agile methods in multi-team settings, signaling the diffusion of agility beyond software development to entire enterprises. Gerster et al. (2020) go further by incorporating structural considerations, defining agile forms of organizational design as those in which the entire organization operates under fully agile principles—a phenomenon increasingly visible in incumbent firms (see Papers I and III).

The definition provided by Limaj and Bernroider (2022, p. 1) integrates these perspectives, encompassing the principles (Dingsøyr et al., 2014), methods (Fuchs & Hess, 2018), size (Dikert et al., 2016; Rigby et al., 2018), and organizational breadth (Fuchs & Hess, 2018; Gerster et al., 2020). This integrative view highlights the transformative potential of agility when extended beyond software development to broader organizational contexts, enabling firms to adapt dynamically to increasingly complex and evolving environments. Similar to digital transformation initiatives that require alignment across strategic, cultural, and technological layers (Drechsler et al., 2020), research on scaling agility identifies the same triad (Limaj & Bernroider, 2022).

Within this triad, scholars have examined the organizational design dimension (Mikalsen et al., 2021; Gerster et al., 2020), the technological dimension (Limaj & Bernroider, 2022; Uludag et al., 2019), and the cultural dimension (Mordi & Schoop, 2021). Particularly the latter has attracted attention, seeking to understand "how employees think" and how their values and mindsets shape the implementation of scaling agility (Limaj & Bernroider, 2022, p. 3). At the same time, team-level studies demonstrate how agile methods—by fostering transparency, participative decision-making, and shared responsibility—can reduce work exhaustion and enhance motivation (Moe et al., 2012). Preserving these positive human effects becomes critical when scaling, as increased coordination and complexity risk undermine the very motivational drivers that make agility effective at smaller scales. More recent contributions highlight both the opportunities and the risks inherent in scaling agility. On the one hand, scaling agility is viewed as a vital mechanism for building organizational resilience, allowing firms to withstand turbulence without losing coherence (Pries-Heje & Baskerville, 2021). On the other hand, unchecked scaling can lead to coordination overload, loss of autonomy, and strategic drift, as Rigby et al. (2020) caution in their study of firms that have taken agile "too far" (p. 8).

A further layer of reflection on scaling agility arises from the "Digital-x" debate (Baiyere et al., 2019), which explicitly asks whether we are truly dealing with something new, or whether digital transformation and the emerging novel phenomena within it are just familiar stories retold in a new language. This question is crucial for scaling agility, because if agility at scale is merely the extension of earlier organizational patterns, its theoretical contribution would be modest. If, however, it embodies novel logics of organizing (for details see Paper VI), then it represents a phenomenon worthy of distinct theorization. In this debate, different scholars put forward complementary positions. Yoo, for instance, argues that digital technologies bring with them the principle of deferred and temporary binding. Digital artifacts, by virtue of being non-material and constantly recomputed, only create value when they are provisionally "bound" together with other artifacts—digital or physical—at the moment of use. Once the task is finished, this assemblage dissolves, only to be reconfigured in the next moment. Platforms thrive precisely because they are able to orchestrate such ephemeral couplings on a massive scale. Scaling agility, in this sense, is not just about extending agile practices across an organization; it is about cultivating the organizational capacity to continuously coordinate these bindings and un-bindings in real time – on the level of the organizational structure.

Berente takes the argument in a different, more metaphorical direction. He suggests that "digital" has become the new root metaphor of organizing, in much the same way that industrial production once provided the shared logic of efficiency, control, and integration. Today, the underlying metaphor is software development: iterative, user-centered, and responsive. What this implies is that scaling agility is not just a method or framework; it is an embodiment of the new organizing logic that increasingly pervades diverse fields and industries. Henfridsson adds yet another dimension by drawing attention to the distinctive logic of digital scaling. While industrial scaling relied on the physical expansion of resources and standardized replication, digital scaling thrives on recombination, modularity, and generativity. Scaling agility, viewed through this lens, is not about growing ever larger structures but about embedding practices that make recombination possible—scaling by flexibility and creative recombination rather than by linear accumulation of teams or departments, an issue that is also debated in the paper from Barrett and Orlikowski (2021) concerning the challenges *with* scale not *at* scale in studying digital phenomena.

In sum, these perspectives underline why scaling agility cannot be reduced to old wine in new bottles.

They rather suggest that scaling agility is both a transformative opportunity and a management challenge. It represents a qualitatively new mode of scaling, a structural approach technologically rooted in provisional couplings, software-inspired organizing principles, and generative dynamics. In this way, scaling agility crystallizes how incumbent firms in a digital era attempt to balance structure and fluidity, providing both the means and the mechanism through which scaling itself becomes possible.

Another important perspective comes from Guillemette and Paré (2012), who theorize the contribution of the IT function through five ideal-type management profiles: partner, systems provider, architecture builder, technological leader, and project coordinator. Each profile highlights a distinct way in which IT can support organizational performance, ranging from efficiency gains and cost reductions to innovation and strategic transformation. A central insight is that IT must consistently align with one clear profile to generate tangible value, and that this configuration depends on contextual contingencies such as CIO influence or the IT literacy of top management. While this typology advances understanding of IT's potential contributions, it remains bound to a client–provider logic, portraying the business as the "customer" of IT. This framing assumes a structural divide between IT and business, bridged episodically through projects or initiatives. Scaling agility, by contrast, dissolves this divide permanently: IT and business functions are structurally integrated into cross-functional teams, jointly responsible for strategy, delivery, and continuous adaptation (Limaj & Bernroider, 2022). In such settings, IT is no longer a separate service provider but an intrinsic part of the value-creating structures themselves. This marks a fundamental departure from earlier conceptions of organizational design and highlights why scaling agility requires new theorization—beyond profiles of IT contribution—toward frameworks that explain how deeply integrated, socio-technical structures enable scaling agility.

For this dissertation, scaling agility thus represents not only a structural manifestation of organizational change but also a fertile ground for theorizing the interplay of agile concepts with digital transformation and the role of IT in the broader view of organizational design.

2.3 Complementary Lenses to Study Scaling Agility

While digital transformation, organizational design, and agile concepts provide the structural, contextual, and conceptual foundations for understanding and managing scaling agility, they do not fully capture the lived dynamics that unfold once scaling agility is enacted in practice. To address this, the following section offers a concise introduction to complementary scholarly lenses—those that are particularly significant for this dissertation and directly applied in its individual papers.

2.3.1 Organizing Tensions

Tensions constitute a well-established field of research and provide an important lens for this dissertation. The analysis of tensions, contradictions, and paradoxes plays a central role in understanding the dynamics of organizational systems and practices. Within Information Systems (IS) and management research, tensions typically emerge from competing demands, conflicting goals, and inherent contradictions embedded in organizational life. Rather than anomalies, these contradictions are increasingly recognized as persistent features of organizations, requiring continuous management rather than resolution (Smith & Lewis, 2011). The lens of organizational tensions has gained substantial traction in information systems (IS) research (Schad et

al., 2016), offering a productive way to understand contradictions that are not anomalies but constitutive features of organizational life. Within IS, tensions have been observed in multiple contexts: the dual role of IT as both a promoter and an impediment to change (Robey & Boudreau, 1999), the trade-off between privacy and personalization in online profiling (Avison et al., 1999), or the paradox of IT management carrying strategic value while retaining a low organizational status (Awad & Krishnan, 2006). In the broader domain of digital transformation, tensions have been studied in digital innovation practices (Ciriello et al., 2019), IT transformation programs (Gregory et al., 2015), platform and infrastructure renewal (Wimelius et al., 2021), and bimodal IT settings (Toutaoui et al., 2022). Agile methods, too, are fertile ground for tensions: ambidexterity tensions of exploration vs. exploitation (Lindskog & Magnusson, 2021) or conflicts of priority, structure, and execution (Iivari, 2021).

Scholars have identified several underlying drivers of such tensions. Smith and Lewis (2011) point to plurality, scarcity, and change as fundamental sources, while Viljoen et al. (2022) add interpretative flexibility, intangibility, and questions of data ownership and privacy. These drivers make tensions unavoidable in transformation contexts, shaping how organizations navigate change. Importantly, responses to tensions vary: defensive strategies such as ignoring, suppressing, or pretending often stall digital transformation and reinforce obstacles, whereas receptive responses enable progress (Soh et al., 2019; Wimelius et al., 2021; Viljoen et al., 2022; Soh et al., 2023). Receptive responses can be localized in different ways: *both–and* strategies embrace the dual poles simultaneously, while *either–or* strategies emphasize one side—by suppressing or subsuming the other (Soh et al., 2023).

In this sense, tensions are not problems to be "solved" but forces to be continuously managed. Within digital transformation, receptive approaches such as integration, splitting, or adaptive balancing create pathways for ongoing change, whereas defensive approaches risk leading organizations into stagnation. The insights on tensions research emphasize that digital transformation is not a linear progression but a process characterized by persistent and dynamic tensions. How organizations respond to paradoxes—whether by integrating opposing elements, differentiating them, or failing to manage them altogether—shapes their long-term transformation trajectories. This perspective is particularly valuable for scaling agility where autonomy and alignment must be pursued in parallel. In this dissertation, these dynamics are analyzed most explicitly in Paper IV, which examines how receptive responses shape transformation trajectories in scaled-agile organizations.

2.3.2 Organizational and Role Identity

A further critical lens for theorizing scaling agility lies in the study of organizational and professional role identity, particularly as these are reshaped in the context of digital transformation. Organizational identity refers to the shared understanding of "who we are" as an organization, while professional role identity encompasses the individual's sense of self within their professional domain (Cherni, 2010; Wessel et al., 2021). Both dimensions are profoundly affected when firms embark on transformation initiatives that introduce new value propositions, business logics, and technological practices. As Wessel et al. (2021) argue, digital transformation fundamentally redefines organizational identities, often producing tensions when emergent digital aspirations collide with established traditions rooted in legacy systems and practices. Addressing such

tensions is critical to avoid resistance and to ensure that strategic objectives remain congruent with cultural transformations (Mühlburger & Krumay, 2024).

The adaptability of organizational identity is thus a decisive factor in the success of transformation efforts. Flexible, cohesive identities provide a foundation for change, whereas rigid identities risk reinforcing inertia. Iden and Bygstad (2024) show that organizations which seamlessly integrate their social and technical systems are better positioned to develop dynamic capabilities and seize digital opportunities. In this regard, identity work—the deliberate reshaping of organizational identity—emerges as a crucial mechanism. Leaders play a pivotal role by articulating visions that reconcile traditional and digital identities, fostering continuity while enabling change. This often requires rearticulating organizational narratives so that they align with digital aspirations without alienating stakeholders (Tana et al., 2023).

Digital transformation also brings about a dynamic interplay between organizational identity and professional role identity. Narratives that resonate with employees' professional values reduce resistance and enhance engagement, while misalignment between the two may exacerbate role conflicts and impede transformation (Mühlburger & Krumay, 2023). Thus, transformation trajectories are not only shaped by top-down visions but also by the ways in which individual employees experience and negotiate their evolving roles.

At the micro level, professional role identities are disrupted as employees recalibrate their roles in response to new technologies and processes. Malik et al. (2024) emphasize that professionals must acquire new competencies—such as data analytics and digital fluency—to remain relevant in increasingly digitalized work environments. This often involves shifts in how effectiveness and success are defined within a role. However, the very technologies that enable transformation can also undermine the tasks and expertise that have traditionally defined professional identities, creating feelings of threat. Such disruptions may provoke resistance, particularly among employees accustomed to established workflows (Iden & Bygstad, 2024). In this context, individual agency becomes critical: employees who proactively experiment with digital tools and cultivate new skills are better positioned to realign their role identities with the organization's evolving objectives. Participatory approaches that involve employees in shaping their new roles foster inclusion and empowerment, helping individuals assume ownership of their contributions to transformation (Tana et al., 2023).

In the broader framework of this dissertation, identity research offers an indispensable perspective for understanding scaling agility. It reveals how organizational efforts to extend agility across wider structures intersect with employees' lived realities, and how role identities evolve—or resist—in response. This lens illuminates the subtle cultural and individual dynamics that accompany structural and technological change, and it will be applied in Paper VI, where the focus lies on how identity shifts shape employees' behaviors in the context of scaling agility.

2.3.3 Organizational Inertia

A third perspective centers on organizational inertia, the well-documented tendency of established firms to resist change due to entrenched routines, structures, and cognitive frames (Hannan & Freeman, 1984; Gilbert, 2005). While agility aspires to enhance speed and adaptability, incumbents often struggle to overcome the weight of legacy systems, ingrained processes, and prevailing mindsets. This friction explains why scaling agility cannot simply be achieved by applying agile frameworks; rather, it requires confronting the deep-seated forces that constrain transformation.

Besson and Rowe (2012) emphasize that digital transformation efforts are particularly exposed to such rigidities, as the magnitude of change they entail collides with organizations' cognitive and structural path dependencies. Building on this foundation, Kaganer, Gregory, and Sarker (2023) extend the view by showing that inertia is not merely a static barrier but a processual challenge that manifests across multiple dimensions—psychological, sociocognitive, sociotechnical, political, and economic. Their longitudinal study of AsiaBank demonstrates that inertia can be actively reduced through four interrelated processes: embracing the consumerization of digital technologies, diffusing digital business practices, enabling distributed organizing, and revamping IT architectures. These processes gradually reframe change as opportunity, loosen hierarchical and technological rigidities, and embed new value creation logics.

For this dissertation, these insights highlight why scaling agility is both a response to inertia and a site where inertia manifests most visibly. Paper VII explicitly examines how work-related identities reinforce resistance, showing that identity-driven inertia can slow down or even block digital transformation. In this way, scaling agility emerges not only as a structural mechanism for fostering adaptability but also as an ongoing attempt to loosen the very organizational rigidities that otherwise obstruct transformation.

2.3.4 Digital Transformation Process Model (Vial, 2019)

Vial's (2019) process model of digital transformation provides a meta-framework for understanding the broader trajectories within which scaling agility is embedded. He conceptualizes digital transformation as a sequence of triggers, mechanisms, and outcomes, where digital technologies disrupt established practices and compel organizations to adapt. In this view, scaling agility can be understood as one such mechanism, reconfiguring organizational structures while shaping value creation paths. This is particularly relevant for Paper VIII, which examines how structural redesigns under scaling agility foster IT-business alignment and impact value creation.

The framework also highlights organizational barriers—especially inertia—that often slow or block transformation. These frictions resonate with the findings of Paper VII, which shows how work-related identities contribute to inertia in digital transformation, underscoring the need to address sociocultural as well as structural constraints. Finally, Vial (2019) emphasizes that digital innovation is closely intertwined with digital transformation, as the introduction of new technologies not only disrupts established practices but also creates novel opportunities for value generation. While this dissertation primarily focuses on digital transformation, Paper II explicitly addresses the question of where and how digital innovation creates value. By shedding light on the mechanisms of value generation, Paper II provides insights into how structural changes—such as scaling agility—can be directed more purposefully to support broader transformation objectives.

Overall, the digital transformation process lens situates scaling agility not in isolation, but as part of the larger process that defines how organizations navigate digital transformation. The framework of Vial (2019) thus underpins the positioning of the three mentioned papers, but also serves as a more general backdrop against which all papers of this dissertation can be situated.

2.3.5 IT-Business Alignment

A fifth perspective concerns IT-business alignment, a theme that has long been recognized as central to business success. Alignment is broadly defined as the degree to which IT and business requirements, goals, and structures correspond (Gerow et al., 2014). Early work, most notably synthesized by Chan and Reich (2007), emphasized the importance of linking business and IT plans and ensuring congruence between business and IT strategies. Over time, this perspective has expanded to incorporate multiple dimensions and observable alignment activities that have been shown to contribute to superior performance empirically.

More recent contributions highlight both the achievements and the limitations of traditional models. Luftman et al. (2017), for example, point out that many alignment frameworks remain overly static and insufficiently theorized. In response, a dynamic, capability-based view has gained prominence, identifying key dimensions such as IT-business communications, value analytics, collaborative governance, affiliation, the scope of IT initiatives, and IT skill development. Together, these factors illuminate alignment not as a one-time achievement but as an evolving organizational capability that contributes directly to improved firm performance. At its core, strategic IT-business alignment refers to the degree to which an organization's IT strategy, planning, and initiatives are harmonized with its overarching business goals (Avison et al., 2004; Chan & Reich, 2007). This strategic dimension involves leveraging IT to secure competitive advantage, enhance organizational flexibility, and maintain consistency between business and IT trajectories. Complementing this, operational alignment focuses on the execution of these imperatives in practice (Wagner & Weitzel, 2012). The costs of misalignment are significant, ranging from poor user satisfaction and inefficient utilization of IT resources to reduced returns on IT investments (Luftman & Brier, 1999). These risks underscore why alignment must increasingly be understood as a dynamic, multi-level process that adapts continuously to shifting organizational contexts.

In the specific setting of scaling agility, these challenges are amplified. Distributed agile teams innovate rapidly, but without mechanisms of alignment, their efforts risk fragmentation and strategic drift. It is precisely in such contexts that alignment becomes both more difficult and more consequential: sustaining coherence between strategic objectives and decentralized experimentation requires ongoing translation, negotiation, and integration across organizational layers. These dynamics are examined in depth in Paper IX of this dissertation, which investigates the role of IT-business alignment in enabling scaled-agile organizations to maintain coherence while fostering adaptability**.**

All in all, these lenses extend the theoretical framework beyond structural foundations toward a more nuanced appreciation of the *social, organizational, and epistemic* challenges that accompany scaling agility. They also provide the conceptual scaffolding for several of the dissertation papers, allowing their individual contributions to be positioned within a coherent and cumulative research agenda.

2.4 RESEARCH QUESTIONS

Building on the theoretical foundations outlined in the preceding chapters, this section turns from conceptual perspectives to the empirical questions that guide the dissertation. While the earlier discussion highlighted the relevance of digital transformation, organizational design, and agile concepts as well as complementary lenses, these perspectives also revealed gaps in our understanding of how scaling agility unfolds in incumbent firms. To move from theoretical framing to concrete investigation, the research objectives are further detailed in form of concrete research questions. They provide a structured agenda for examining the design, management, and effects of scaling agility, thereby translating the dissertation's conceptual groundwork into a coherent empirical program.

The recurrent recognition by both practitioners and scholars of the potential benefits of scaled-agile organizations in fostering organizational agility, combined with the notable lack of comprehensive research into their design and implementation, provides the central motivation for this study. While scaled-agile organizations are frequently praised for their capacity to integrate IT and business operations, to cultivate collaboration, and to support firms in navigating the complexities of digital transformation (Gerster et al., 2020, Limaj & Bernroider, 2022), systematic insight into their structural and procedural foundations—as well as their broader ramifications—remains scarce. Against this backdrop, the overarching aim of this dissertation is to investigate how scaling agility unfolds in incumbent firms, both in its organizational design and in its broader impact. To achieve this aim, three research objectives are pursued, each linked to a set of guiding research questions equal to the research questions from the papers included in this dissertation.

Research Objective 1: Understanding scaling agility

The growing digitalization of value creation compels incumbent firms to adopt agile practices at scale. Yet, current efforts frequently rely on templates borrowed from digital-native companies—templates that often misalign with the structural realities of incumbent organizations (Tumbas et al., 2018; Drechsler et al., 2020). Existing research is fragmented, with much of the literature concentrated on software development contexts and offering only isolated snapshots of agile transformation. As a result, the field still lacks a consolidated and theoretically grounded understanding of scaling agility. Given that only a minority of organizations manage to achieve their intended transformation outcomes (De Smet, 2018), there is an urgent need for a more precise definition of scaling agility that captures its structural, procedural, and cultural dimensions across diverse business functions (Gerster et al., 2020; Limaj & Bernroider, 2022).

Research question 1*: What is currently known about scaling agility in incumbent firms, and what avenues for future research can be identified?*

Digital innovation has become a critical and dynamic research area in information systems and management studies, with scholarly publications rising significantly over recent years (Fichman et al., 2014; Fielt & Gregor, 2016; Nambisan et al., 2017; Yoo et al., 2010; Yoo et al., 2012). While much of the literature has focused on describing digital innovation (Nambisan et al., 2017; Yoo et al., 2010), there is a notable gap in synthesizing evidence on how it creates economic value and profitable business models (Brynjolfsson & McAfee, 2011), prompting calls for new theoretical developments and further research into value creation and capture (Fichman et al., 2014; Yoo et al., 2012).

Research question 2: *where does digital innovation create economic value for organizations?*

Research Objective 2: Understanding how scaling agility can be managed

In today's rapidly evolving digital landscape, incumbent firms are compelled to adopt scaling agility in order to remain competitive. Despite its growing adoption, the conceptual understanding and management of scaling agility remain fragmented: existing frameworks are limited (Kalenda et al., 2018), and many organizations struggle with inherent organizing tensions (Smith & Lewis, 2011; Alvesson & Sandberg, 2011), challenges in calibrating team autonomy (Drechsler et al., 2020; Tumbas et al., 2018), and significant impacts on professional role identities (Cherni, 2010; Stets & Burke, 2000; Strich et al., 2021). This fragmented understanding not only impedes the effective implementation of scaling agility (Gerster et al., 2020; Rigby et al., 2018) but also contributes to organizational inertia during digital transformation (Kaganer et al., 2023; Besson & Rowe, 2012), thereby highlighting the need for a consolidated assessment that clarifies the organizational design configurations of scaling agility, resolves organizing tensions, and explicates the interplay between structural changes and work-related identities. Consequently, this dissertation seeks to address a variety of management challenges concerning scaling agility.

Paper III positions the structural embodiment of scaling agility, scaled-agile organizations, as a response to the increasing necessity for expediency and adaptability in product delivery due to digital transformation. The paper emphasizes that scaled-agile organizations extend agile methodologies beyond IT to include business functions, thereby enabling enhanced coordination and integration (Gerster et al. 2020; Rigby et al. 2018). Despite their growing adoption, a conceptual understanding of scaled-agile organizations remains underdeveloped, with limited frameworks for guiding their design and implementation (Kalenda et al. 2018). To address this gap, the study develops a taxonomy of design criteria (based on Nickerson et al. 2013) based on six case studies, with the aim of clarifying the different configurations possible for scaled-agile organizations. This work seeks to answer the central research question:

Research question 3: *How do different scaled-agile organization designs impact their implementation in incumbent organizations?*

Scaling agility promises incumbent organizations the flexibility and responsiveness of born-digital companies (Gerster et al., 2020) as they launch large digital transformation programs to address challenges such as market and customer convergence (Lyytinen et al., 2016), accelerated product development, and heightened customer expectations (Tallon et al., 2019), yet these efforts often yield disappointing results (Bucy et al., 2016; Carroll et al., 2022). These challenges stem in part from inherent organizing tensions—where the need for flexibility conflicts with the requirements of scale (Smith & Lewis, 2011; Alvesson & Sandberg, 2011) and are further exacerbated by the structural differences between incumbents and digital-native firms (Tumbas et al., 2018; Drechsler et al., 2020)—highlighting a critical research gap regarding the longitudinal dynamics and nuanced tensions of digital transformation pathways (Soh et al., 2023; Viljoen et al., 2022; Gerster et al., 2020) and prompting further inquiry as advocated by Carroll et al. (2022).

Research question 4: *Which organizing tensions are associated with scaling agility over time, and how do they shape digital transformation pathways?*

Amongst other structural levers, team autonomy is increasingly recognized as a critical component of

scaling agility, yet its optimal level in incumbent firms remains unclear due to the tension between the benefits of flexibility and the constraints of entrenched hierarchical structures and legacy infrastructures (Drechsler et al., 2020; Tumbas et al., 2018). Existing research offers only snapshot views and predominantly positive perspectives on autonomy (Gerster et al., 2020; Limaj & Bernroider, 2022; Frey et al., 2021), highlighting the need for more nuanced, longitudinal studies that explore how organizations implement and calibrate team autonomy to balance its facilitating benefits with potential challenges (Carroll et al., 2023; Krancher et al., 2023). While Paper IV focuses on the organizing tensions concerning autonomy and alignment in scaling agility, Paper V explicitly seeks to answer:

Research question 5: *How do organizations implement team autonomy when they pursue scaling agility?*

While scaled-agile organizations enhance organizational agility and facilitate dynamic responses to market changes (Nambisan et al., 2017; Henfridsson et al., 2018; Lyytinen et al., 2016; Yoo et al., 2012), they also fundamentally alter individual professional roles and identities—critical determinants of employee attitudes and behaviors (Cherni, 2010; Stets & Burke, 2000; Strich et al., 2021; Stryker & Serpe, 1982; Chreim et al., 2007; Barley, 1989; Müller et al., 2024)—yet the interplay between organizing practices and professional role identities remains underexplored (Vial, 2021; Dingsøyr et al., 2019; Ibarra, 1999; Kelman, 2004; Tripp et al., 2016; Wessel et al., 2021), motivating a further central research question of this dissertation.

Research question 6: *How is an employee's professional role identity affected by the implementation of a scaled-agile organization?*

In the broader context of digital transformation—where organizations invest heavily to remain competitive (Nambisan et al., 2017) yet face frequent failures (Forth et al., 2020)—organizational inertia has emerged as a critical barrier. This inertia, defined as the inability to enact sufficient internal change in response to external shifts (Kaganer et al., 2023), is influenced not only by entrenched organizational identities but also by multiple work-related identities (Caza et al., 2018; Welbourne & Paterson, 2017) that can foster a reluctance to change, including structural change such as the adoption of scaling agility. However, the differential effects of these identities on various inertia dimensions, such as negative psychological and socio-cognitive inertia (Besson & Rowe, 2012; Kaganer et al., 2023), remain insufficiently understood. Consequently, this study seeks to address research question 7.

Research question 7: *How do work-related identities affect different inertia dimensions in digital transformation?*

Research Objective 3: Understanding how scaling agility affects digital transformation

Besides the necessity to understand the delineation of scaling agility, and how scaling agility can best be managed, a third part of this dissertation focuses on understanding how scaling agility can actually be of benefit for the broader success of digital transformation. By focusing on two selected pillars that contribute to digital transformation success –enhancing changes to value creation paths and IT-business alignment – this third objective is addressed.

The scientific motivation for paper VII arises from the need to bridge critical gaps in understanding how scaling agility, as a structural change, influences value creation paths during digital transformation. At the

heart of digital transformation is the development of dynamic capabilities—the ability to sense, seize, and reconfigure resources in response to rapid change (Teece, 2007). However, there is a dearth of comprehension regarding the microfoundations that underpin these capabilities (Felin et al., 2012; Warner & Wäger, 2019). Scaling agility has emerged as a pivotal enabler of organizational agility (Fuchs & Hess, 2018). Nevertheless, empirical evidence of its tangible impact on value creation paths remains scant (Gerster et al., 2020; Salmela et al., 2022). This study addresses the call for research into the interplay between organizational structures, individual actions, and collective routines (Schilke et al., 2018; Iden & Bygstad, 2021). It focuses on how structural changes under scaling agility influence critical elements of value creation, such as cross-functional collaboration and value chain integration. Moreover, traditional organizations encounter distinctive challenges in adopting scaling agility, including structural complexity and entrenched cultures, which can impede its efficacy (Sebastian et al., 2020). By examining the barriers and constraints associated with scaling agility in large, non-digital-native organizations, the study aims to provide nuanced insights into its implementation. Finally, the research addresses the paucity of empirical evidence connecting scaling agility to changes in value creation paths, offering real-world insights into how agility-driven structural changes manifest in practice. This, in turn, advances both theoretical understanding and practical applications in the context of digital transformation. To address these gaps, the study poses the following research question:

Research question 8: *How does the structural change of scaling agility affect changes in value creation paths in digital transformation?*

Paper IX investigates the role of scaling agility in enhancing IT-business alignment within the broader context of digital transformation. The study emphasizes that IT-business alignment—defined as the congruence between IT and business objectives, structures, and operations—is vital for organizational competitiveness (Luftman et al., 2017; Sabherwal & Chan, 2001). In pursuit of enhanced competitiveness, organizations are increasingly striving to established agile organizations — such as with Scaling Agility—to bridge the gap between IT and business functions, promote higher agility, and foster innovation and customer centricity (Carroll et al., 2023; Fuchs & Hess, 2018; Limaj & Bernroider, 2022; Tallon et al., 2022); yet, doubts persist regarding its effectiveness in incumbent firms (Carroll et al., 2023; Gerster et al., 2020). Operational alignment, which relies on collaborative coordination between IT and business managers (Luftman et al., 2017), is vital given the significant negative consequences of misalignment (Bick et al., 2018), but current research remains limited in explaining the specific alignment activities and skills that facilitate synergistic IT-business interactions, particularly in the context of Scaling Agility (Coltman et al., 2015; Karpovsky & Galliers, 2015; Queiroz et al., 2017). This paper addresses this gap by investigating the underlying mechanisms of scaling agility and its role in enhancing IT-business alignment, ultimately seeking to answer the following research question.

Research question 9: *What is the role of scaling agility in IT-business alignment?*

By providing answers towards these nine research questions (clustered along the three objectives) this dissertation aims to shed light on a selected set of less understood elements concerning scaling agility. As can be inferred from the three overarching objectives this dissertation aims to improve the understanding of scaling agility. Thus, to do so, this dissertation focuses on qualitative methods supplemented by review and taxonomy methods which will be outlined in the following chapter.

3 Research Approach, Design and Data Analysis

This dissertation mainly employs a qualitative research approach with a case study design and interview data as is data basis to explore phenomena in their natural and contextual settings (Creswell & Creswell, 2018; Yin, 2018). While the primary emphasis lies on qualitative methods, the work is complemented by two literature reviews (Papers I and II) and a taxonomy paper (Paper III). Qualitative methods are particularly well suited for examining phenomena holistically, especially where the boundaries between phenomenon and context are blurred (Smith, 2019). They allow researchers to probe deeply into concrete situations and to uncover unique, contingent, and subjective meanings (Jones, 2020). Quantitative approaches, although valuable for identifying general patterns, tend to isolate specific aspects and may overlook the broader context in which phenomena unfold (Recker, 2021). As Recker (2021) observes, quantitative methods are nomothetic in nature, seeking universal regularities that often fail to capture the dynamic and interconnected character of organizations. By adopting an idiographic perspective, qualitative approaches privilege depth and richness of understanding over generalizability, making them especially appropriate for the aims of this dissertation. The following sections focus on applying a research study classification, outlining how methodological rigor has been ensured and provide details on the general research design, data and analysis of this cumulative dissertation.

3.1 Classification of Research Studies

In line with Recker's (2021) framework, studies are classified along distinct dimensions of the research process, each shaping the scope, approach, and contribution. This dissertation adopts a pluralistic research design that combines conceptual synthesis with empirically grounded inquiry to capture the complexity of scaling agility in incumbent firms. Table 4 summarizes the classification applied to this dissertation.

Table 4. Methodological classification of the dissertation

Dimension	Description
Research objectives	• Most papers are exploratory, aiming to surface novel constructs and relationships rather than test predefined hypotheses. • Papers I & II: systematic literature reviews consolidating fragmented knowledge and identifying research gaps. • Paper III: classificatory objective, developing a taxonomy of SAO design choices (Nickerson et al., 2013). • Papers IV–IX: empirical case studies exploring distinct socio-technical phenomena in practice.
Methodological frameworks	• Papers I & II: systematic literature reviews. • Paper III: taxonomy development using Nickerson et al. (2013). • Papers IV–IX: qualitative case study research (Yin, 2018; Eisenhardt, 2021). ➢ Focus on qualitative inquiry: well-suited for exploring organizational processes, subjective meanings, and emergent dynamics.
Data sources	• Papers I & II: secondary data from published research. • Paper III: combination of secondary literature and primary case data to validate taxonomy. • Papers IV-VI, VIII-IX: primary longitudinal case data, including 72 semi-structured interviews, company documents, and immersive fieldwork. Triangulation strengthens robustness of findings. • Paper VII: single case study data based on semi-structured interviews.

Contextual focus	• Predominantly organizational level: design and management of scaled-agile organizations during digital transformation.
	• Cross-level analyses:
	  • Papers III, V, VIII & IX connect organizational and team levels.
	  • Papers VI & VII connect individual and organizational levels by examining professional role identities.
	➢ Overall, a multi-level perspective situates scaling agility in incumbent firms, with implications across industries.

Time orientation	• Reviews (Papers I–II) and taxonomy (Paper III): cross-sectional. • Case studies (Papers IV-IX): longitudinal. For instance, papers IV, VI, VII: trace developments over up to three years. ➢ Captures scaling agility as a process of ongoing adaptation and negotiation rather than a static condition.
Philosophical assumptions	• Grounded in interpretivism: uncovers how actors make sense of scaling agility, meanings, and role changes. • Scaling agility treated as socially constructed and context-dependent. • Elements of critical realism in Papers IV and VII: focus on generative mechanisms (e.g., tensions, inertia) underlying observable practices. ➢ Interpretivism captures lived complexity, critical realism enables theorizing of deeper structures shaping change.

Research objectives. With the exception of Paper III, which follows a classificatory objective by developing a taxonomy of design choices in scaled-agile organizations, the objectives of all other papers are exploratory in nature. The literature reviews (Papers I and II) explore under-theorized areas of scaling agility and digital innovation, aiming to consolidate fragmented knowledge and uncover gaps. The empirical studies (Papers IV–IX) investigate phenomena such as organizing tensions, team autonomy, role identity change, inertia, IT–business alignment, and value creation paths in real organizational settings, with the goal of surfacing novel constructs and relationships rather than testing predefined hypotheses. This exploratory orientation reflects the emergent and complex character of scaling agility in incumbent firms, where established theory remains limited.

Methodological frameworks. To achieve these objectives, the dissertation applies a range of methodological approaches. Papers I and II conduct systematic literature reviews, Paper III develops a taxonomy following Nickerson et al.'s (2013) structured approach, and Papers IV–IX employ qualitative case study research (Yin, 2018; Eisenhardt, 2021).

Data sources. The studies rely on both secondary and primary data. The reviews (Papers I and II) use published research as their data source, while Paper III combines secondary literature with primary case data to validate its taxonomy. Papers IV–VI and VIII-IX draw on extensive primary data from longitudinal case studies of incumbent firms, including 72 semi-structured interviews, company documents, and immersive fieldwork. This triangulation across sources strengthens the robustness of the findings. Paper VII relies on a single case study with data from a regional bank.

Contextual focus. The main analytical focus is on the organizational level, where firms design and manage scaling agility as part of digital transformation. Some studies also extend to the individual level—for example, Papers VI and VII examine how professional role identities evolve within scaled-agile organizations. Others, such as Papers III, V, VIII and IX, connect the organizational with the team level, for instance by exploring IT-business alignment and value creation paths. This multi-level perspective situates scaling agility firmly within the context of incumbent organizations, while still yielding insights that resonate across industries.

Time orientation. While the literature reviews and taxonomy work are inherently cross-sectional, the case study research adopts a longitudinal perspective. Papers IV, VI, and VIII in particular follow developments over periods of up to three years, tracing how tensions, role identities, and organizational inertia shift over time. This temporal depth ensures that scaling agility is theorized not as a static condition but as a process of ongoing adaptation.

Philosophical assumptions. The research design is grounded in an interpretivist orientation, which seeks to uncover how actors make sense of scaling agility, how meanings evolve, and how organizational members negotiate tensions and role changes in practice. This reflects the view that scaling agility is socially constructed and context-dependent, requiring methodologies that capture subjective interpretations and lived realities. At the same time, elements of critical realism are present, particularly in Papers IV and VII, which emphasize the generative mechanisms—such as tensions or inertia—that underlie observable practices. Critical realism here allows for an explanation of why certain patterns persist across organizations and time, even as local interpretations differ. This philosophical blend strengthens the contribution: interpretivism captures the lived complexity of scaling agility, while critical realism enables the theorization of deeper structures that

condition organizational change.

This pluralistic design provides coherence across the dissertation while reflecting its exploratory orientation. By combining conceptual and empirical work, cross-sectional and longitudinal designs, and interpretivist with critical-realist assumptions, the dissertation ensures both methodological rigor and epistemological transparency (Recker, 2021). This design makes it possible to capture scaling agility as a complex, evolving phenomenon and to develop theoretical contributions that are grounded in practice while attentive to broader organizational structures.

3.2 Qualitative Research Methodology and Case Study Research

Qualitative research in the information systems field seeks to understand meanings, interpretations, and the social dynamics of technology use within organizational and societal contexts. This makes it particularly valuable for studying complex, context-dependent information systems phenomena (Schultze et al., 2011). Grounded in interpretivist and constructivist epistemologies, qualitative methods—such as semi-structured interviews, participant observation, ethnography, and document analysis—generate insights that cannot be captured through purely quantitative approaches (Schultze et al., 2011; Gehman et al., 2018). Recker (2021) underscores their capacity to illuminate socio-technical interactions, capture user perspectives, and reveal contextual conditions shaping technology adoption.

Among qualitative approaches, case study research is one of the most widely used in information systems. It enables in-depth, empirical examination of real-world IT practices while preserving the contextual richness essential for meaning-making (Cavaye, 1996; Eisenhardt, 2021). Case studies can both generate novel theoretical insights and refine existing ones through empirical validation (Yin, 2018). This positions them as a structured yet flexible vehicle for investigating information systems phenomena such as digital transformation. Still, case study research faces challenges—subjectivity, data complexity, and limited generalizability—that demand rigorous validation techniques, including triangulation, theoretical replication, and systematic coding strategies (Recker, 2021).

A critical methodological distinction lies between inductive, deductive, and abductive approaches. Inductive research, often associated with grounded theory and the Eisenhardt method, begins with empirical observation and develops constructs directly from data (Eisenhardt, 2021; Urquhart, 2010; Gioia et al., 2013). This bottom-up logic ensures theoretical insights are grounded in empirical reality, particularly relevant for exploratory information systems research where new practices often outpace established theory. However, as Urquhart (2010) warns, purely inductive approaches risk remaining descriptive unless carefully linked to existing theory. Deductive research follows the opposite logic, testing hypotheses derived from theory in empirical settings. While often associated with positivist traditions, deductive case studies contribute by refining or falsifying theories in practice (Cavaye, 1996). Abductive research occupies a middle ground, iterating between data and theory to refine conceptual models (Gioia et al., 2013). Its responsiveness to unexpected findings makes it especially useful in information systems research, where emergent practices frequently challenge theoretical assumptions.

The Eisenhardt method exemplifies a structured form of inductive case study research, combining comparative logic, theoretical sampling, and data triangulation to generate theoretical insights (Eisenhardt,

2021). Unlike grounded theory approaches that avoid prior literature, it balances openness to discovery with integration of existing theory, producing results that are both empirically grounded and theoretically meaningful. Gioia's methodology enhances rigor through systematic coding—first-order categories reflecting informant views, and second-order categories shaped by researcher interpretation (Gioia et al., 2013). Urquhart (2010) likewise stresses the importance of linking emerging categories to theoretical frameworks, preventing purely descriptive outcomes. Taken together, these approaches provide IS scholars with robust strategies for ensuring transparency, credibility, and theoretical depth in qualitative case study research.

Qualitative inquiry also plays an indispensable role in complementing other research traditions. Quantitative methods excel at testing hypotheses and establishing generalizable patterns, but they often struggle to capture the deeper meanings and contextual contingencies of IS phenomena (Urquhart, 2010; Schultze et al., 2011). Qualitative approaches address these gaps by uncovering hidden mechanisms, theorizing emergent practices, and generating explanations that reflect the complexity of real-world contexts (Eisenhardt, 2021; Gioia et al., 2013). They also enhance mixed-methods research, helping to interpret counterintuitive quantitative results and offering a more holistic understanding of technology adoption and organizational change (Cavaye, 1996). When combined with experimental, survey-based, or computational approaches, qualitative insights help bridge abstract models with lived realities, ensuring findings remain both theoretically robust and practically relevant.

Nevertheless, qualitative research is not without its limitations. Subjectivity, contextual embeddedness, and limited generalizability require careful attention to rigor. Recker (2021) highlights the importance of credibility, confirmability, dependability, and transferability, which can be ensured through systematic data collection, contextualization, triangulation, and transparent reporting. These principles, emphasized others as well, such as by Gioia et al. (2013), Gioia (2021) and Urquhart (2010), provide the foundation for the methodological rigor employed in this dissertation.

While qualitative research excels at generating rich and contextual insights, its credibility depends on rigorous methodological standards explicated in quality criteria tailored to qualitative research, mostly adapted from quantitative research traditions. To address common critiques of qualitative inquiry and test the four criteria mentioned by Recker, qualitative scholars have developed frameworks that articulate clear quality criteria. These frameworks ensure that qualitative studies are not only insightful but also systematic, transparent, and trustworthy in their execution. Wrona (2006) proposes one of the most comprehensive approaches, connecting the four interrelated dimensions of quality: credibility, transferability, dependability, and confirmability. Together, these dimensions provide a structured basis for evaluating qualitative research and for embedding rigor directly into the design and reporting process.

- Credibility or internal validity refers to the degree to which findings faithfully represent the phenomenon under study. It can be enhanced through triangulation (drawing on multiple data sources, methods, or theoretical lenses), member checking (allowing participants to validate interpretations), and the use of thick descriptions that capture contextual detail. These strategies collectively ensure that findings are trustworthy and resonate with the lived reality of participants.
- Transferability or generalizabilizy addresses whether findings are meaningful beyond the immediate

research setting. Achieving this requires comprehensive contextualization, including detailed descriptions of research settings, participants, and conditions. Rich documentation allows readers to judge whether findings apply to their own contexts, thereby extending the practical relevance of qualitative work.

- Dependability or reliability concerns the consistency and reliability of the research process. This can be supported through audit trails that document decisions from data collection to final analysis, code–recode procedures that test the stability of coding decisions over time, and peer reviews that subject the study to external scrutiny. Such practices ensure that results are not idiosyncratic but can be trusted as systematically derived.
- Confirmability or construct validity emphasizes the importance of minimizing researcher bias. Reflexivity is central here, requiring the researcher to make explicit their assumptions, positionality, and potential biases throughout the study. Transparency in documenting data and analytic decisions, alongside external audits where independent reviewers examine both the process and the conclusions, provides an additional safeguard for neutrality and rigor.

The systematic incorporation of these four dimensions into research design, data collection, analysis, and reporting strengthens both the academic and practical contributions of qualitative studies. As both Wrona and Recker emphasize, such a structured approach enhances credibility, supports reproducibility, and broadens the applicability of qualitative insights across different contexts. For this dissertation, the careful application of these criteria ensures that findings are not only richly grounded in empirical reality but also robust in terms of methodological rigor and scholarly contribution.

3.2.1 Data Collection and Analysis

3.2.1.1 Data Collection

The main empirical foundation of this dissertation is a three-year longitudinal case study series examining the design and implementation of scaled-agile organizations. To capture the complexity of this phenomenon, three complementary data collection methods were employed: (1) three rounds of semi-structured interviews conducted over a 36-month period, (2) the systematic analysis of public and internal documentation—including company reports, strategy and implementation presentations, internal magazines, and databases, and (3) prolonged on-site engagement at TaxCo, which included immersive participation in 20 internal meetings.

In total, 72 semi-structured interviews were conducted across seven organizations. Interviewees represented a broad spectrum of roles within the transformation process, including product owners, scrum masters, developers, business analysts, release train engineers, transformation managers, and senior managers. This diversity ensured that perspectives were captured across multiple organizational levels. The interviews addressed topics such as organizational design and its influence on scaling agility, benefits and challenges at organizational, team, and individual levels, changing demands on stakeholders, the creation of new roles, evolving responsibilities, coordination mechanisms, and implications for organizational goals. To ensure comparability across cases, closed questions were also included. A particularly valuable component of the research was the in-depth screening of internal documentation from the participating organizations. These

materials—covering strategic roadmaps, implementation guidelines, and reflections on scaling agility practices—offered an inside view of how firms conceptualized and enacted their transition to scaled-agile organizations. This process provided both a validation of interview insights and an additional layer of context for understanding events within the organizations. The resulting data set serves as the empirical basis for the majority of the dissertation's papers. Papers I and II, however, are literature reviews relying solely on secondary sources (see Section 3.4.1), while Paper VII draws on a separate case study of a German regional bank, conducted over 12 months. For the papers based on the primary data set, some analyses employed subsets of cases, but each paper integrated at least two cases to ensure breadth and triangulation. To analyze this material, a pluralistic strategy was adopted, combining inductive and deductive approaches in different phases. This approach enabled the identification of emergent patterns while also applying and refining existing theoretical frameworks (Recker, 2021). The result is a data foundation that is both empirically robust and theoretically versatile, offering a strong basis for the dissertation's contributions to the study of scaling agility.

3.2.1.2 Data Analysis

Building on the data collection strategy described above, the material gathered was processed and organized to ensure systematic and rigorous analysis. All interviews were recorded, transcribed verbatim, anonymized, and stored in a secure repository. To manage the large volume of qualitative material and enable comparative analysis across firms and time points, MAXQDA software was employed. In addition, field notes, company documents, and industry reports were compiled, resulting in a rich multi-source dataset that allowed for extensive triangulation and contextual depth.

Given the focus of the research questions addressed in this dissertation, the analytical strategy combined inductive approaches with some elements of deductive inquiry, both applied in different strands of the work. This pluralism ensured both openness to emergent insights and engagement with established theoretical frameworks.

Papers VIII and IX employed an inductive approach, applying grounded theory techniques (Urquhart, 2010) and the Gioia methodology (Gioia et al., 2013). The first-order coding phase remained close to the participants' own terms, capturing descriptive categories from their narratives. Through iterative comparison across firms and time points, these codes were refined and linked to higher-level conceptual themes in the second-order coding phase. This process yielded theoretical constructs that were deeply grounded in empirical evidence while also contributing to broader organizational and technological debates (Eisenhardt, 2021).

Papers IV to VI employ a deductive qualitative analysis, beginning with predefined constructs derived from the literature (Fife & Gossner, 2024). Using an a priori coding framework, transcripts were analyzed to assess how well established models aligned with the empirical material. Pattern matching techniques were then applied to identify convergences and divergences between theoretical expectations and field observations, enabling both validation and refinement of existing frameworks.

To enhance credibility and trustworthiness, the analysis integrated several triangulation strategies. Data triangulation combined interviews, documents, and observations; methodological triangulation balanced inductive and deductive logics (Recker, 2021). Member checking further strengthened validity, as preliminary

findings were shared with participants for feedback and resonance troughout the case study period (Schultze et al., 2011). Throughout the process, an audit trail in form of a logbook documented coding decisions, category refinements, and analytical adjustments for the Papers covering lengthier periods of the data collection, ensuring transparency and reproducibility.

A central strength of the dataset is its longitudinal design. Coding strategies were tailored to capture not only cross-sectional variation but also changes over time, tracing how organizational practices, adoption of scaling agility, and strategic orientations evolved over three years. Comparative analysis across firms and periods allowed for the identification of recurring patterns as well as firm-specific trajectories, thereby enhancing the transferability of findings to diverse contexts (Eisenhardt, 2021). For instance, Paper VI follows two cases closely contrasting their trajectories while Paper IV follows all six cases destilling common characteristics and differentiating ones.

In the final analytical stage, empirical insights were integrated with theoretical frameworks to form a coherent narrative. Thick descriptions (cf. Barbour, 2018), supported by illustrative quotations and case excerpts, were used to convey both authenticity and depth. The inductive strands of the work generated novel constructs, while the deductive analyses refined existing ones. Taken together, this dual approach yielded a comprehensive account of the organizational and technological dynamics at play in scaling agility.

By employing this rigorous, multi-method analytical framework (cf. Recker, 2021; Eisenhardt, 2021; Gioia et al., 2013; Urquhart, 2010), the dissertation ensures transparency, credibility, and theoretical robustness. Each paper contributes individually, while collectively they provide valuable insights for both academic theory and managerial practice. The two strands of connecting data collection and data analysis thus complement one another: inductive analyses generate novel constructs, deductive analyses refine and test established theories, ensuring both empirical grounding and theoretical advancement. While induction provides “an interpretive portrayal of the phenomenon studied” (Kennedy et al., 2018, p. 51, based on Charmaz, 2014) the inclusion of deductive elements helps to focus the data analysis and ground it more firmly in established theory.

3.3 Literature Review

While the central contribution of this dissertation lies in qualitative case study research, additional methodological approaches are employed to address complementary research questions. Specifically, two literature reviews and a taxonomy development are used to extend the empirical findings with systematic theoretical synthesis and structured conceptualization. Literature reviews serve as crucial starting points for consolidating prior research and identifying gaps, while taxonomy development provides a systematic framework for classifying and differentiating design criteria for scaled-agile organizations (SAOs).

A literature review is a systematic synthesis of prior research that consolidates knowledge, identifies gaps, and establishes a foundation for future studies (Webster & Watson, 2002). In information systems research, such reviews are fundamental to cumulative knowledge-building and help prevent redundancy while guiding theoretical advancement (vom Brocke et al., 2009). Reviews can take different forms: narrative reviews provide broad overviews, systematic reviews follow structured protocols to ensure replicability, meta-analyses

apply statistical aggregation, scoping reviews map the breadth of a field, and critical reviews challenge established assumptions (Rowe, 2014; Arksey & O'Malley, 2005). Among these, systematic approaches are particularly valued for their rigor and reliability (Cooper, 1988).

A literature review is inherently iterative, often requiring researchers to revisit and re-interpret the same material multiple times (Templier & Paré, 2015, vom Brocke et al., 2015). The process typically follows six steps: defining the research problem, systematically searching the literature, screening studies, assessing quality, extracting relevant data, and synthesizing findings into themes and research gaps (Levy & Ellis, 2006; Cooper, 2009). Transparency at each stage is essential to ensure credibility and reproducibility (Templier & Paré, 2018). Without such rigor, reviews risk bias and limited replicability (Paré et al., 2015). Well-conducted literature reviews contribute significantly to academic progress by integrating disparate findings, challenging theoretical assumptions, and pointing to new avenues of inquiry (Gough et al., 2012; Alvesson & Sandberg, 2011).

In this dissertation, two developmental reviews (Templier & Paré, 2015) are conducted. Developmental reviews aim not only to synthesize prior work but also to propose innovative conceptualizations and frameworks. Following von Wolfswinkel's grounded theory approach (2013), Paper I systematically developed conceptual categories from the literature, while Paper II followed Webster and Watson's structured review method to organize and integrate findings. Both reviews adhered to strict transparency criteria (Templier & Paré, 2018), employed rigorous quality filters (e.g., Harzing's quality list), and combined forward and backward searches to ensure comprehensiveness. Moreover, in line with the guidance of Boell and Cecez-Kecmanovic (2015), the literature reviews in this dissertation were conducted as systematically as possible to ensure rigor and transparency. Both reviews followed a clear protocol, applied explicit relevance and inclusion–exclusion criteria, and sought to maintain the researcher's neutrality throughout the process. This systematic approach allowed for comprehensive coverage of prior work while avoiding bias in the selection and interpretation of studies. Paper I applies this method to consolidate and structure the fragmented discourse on scaling agility, while Paper II uses the same systematic logic to refine the understanding of digital innovation value. Together, they demonstrate how a rigorous review process strengthens the conceptual and theoretical foundations and provide robust foundations for the empirical papers in this dissertation.

3.4 Taxonomy Development

In addition to literature reviews, Paper III employs a taxonomy development approach to systematically classify design criteria for scaled-agile organizations. As Nickerson et al. (2013) emphasize, taxonomies provide structured frameworks for organizing objects, concepts, or phenomena based on shared characteristics, thereby enhancing analytical clarity. Their seven-step iterative approach alternates between conceptual-to-empirical and empirical-to-conceptual development, ensuring that taxonomies are both theoretically grounded and empirically validated. The aim of Paper III was to identify and classify the design criteria and corresponding choices involved in implementing scaled-agile organizations, thereby addressing the research question of how these designs affect incumbent organizations. Rigor was ensured by applying Nickerson et al.'s (2013) objective ending conditions (uniqueness, non-redundancy) and subjective conditions (clarity, comprehensibility).

3.5 SUMMARY

The methodological framework of this dissertation combines qualitative case study research with complementary approaches such as literature reviews and a taxonomy development. Together, these methods provide both breadth and depth: literature reviews consolidate and structure prior work, taxonomy development organizes complex design choices, and empirical case studies allow for in-depth exploration of the lived dynamics of scaling agility. In sum, the studies in this dissertation demonstrate a pluralistic methodological strategy with a focus on qualitative, inductive inquiry. This pluralism reflects the complexity of scaling agility: some research questions required testing and refining existing models, while others demanded the generation of novel concepts grounded in empirical data. This methodological foundation sets the stage for the presentation of the main research results in the next chapter. Having clarified how the studies were designed, how data were collected and analyzed, and how deductive and inductive approaches were combined, the following section now turns to the substantive insights gained. Chapter 4 will present the findings of the individual papers, structured around the core themes of this dissertation.

4 MAIN RESEARCH RESULTS

Across the nine studies of this dissertation, several central findings emerge that together advance our understanding of how scaling agility unfolds in incumbent firms. These findings illuminate the structural, organizational, and individual challenges that arise when extending agile principles across large, traditionally hierarchical organizations, and they highlight solution approaches that can address thes**e** challenges in practice.

The research shows that scaling agility requires far-reaching structural changes, which often disrupt the foundations of traditional hierarchies. Integrating IT and business functions, shifting toward cross-functional teams, and reconfiguring division of labor and integration of effort fundamentally alter how work is organized. While these changes are intended to enhance responsiveness of the organization to changes in markets or customer needs and innovation, they frequently create role conflicts, resistance, and uncertainty as employees adapt to new job functions and career trajectories (Paper VI). Moreover, scaling agility necessitates a careful balance between autonomy and alignment: excessive autonomy without appropriate governance can lead to inefficiencies and misalignment, rather than improved agility. Effective scaled-agile organizations therefore require mechanisms that preserve team autonomy while simultaneously ensuring coordination and stability across business units (Papers IV and V).

Beyond structural transformation, scaling agility also deeply affects role identities (Paper VI). Employees are compelled to reinterpret their roles in ways that can both empower and unsettle them. Former managers must navigate shifts in responsibilities as traditional hierarchies dissolve, while technical experts and developers are pressed to broaden their skill sets and distribute domain expertise. For some, these shifts foster motivation and engagement; for others, they generate resistance and role insecurity. Addressing these dynamics requires organizations to actively support employees in role transitions, provide clarity concerning career paths, and foster trust in new structures—ensuring that agility enhances, rather than undermines, workforce motivation and innovation.

At the same time, while scaling agility is often promoted as a lever for IT–business alignment and value creation, its effectiveness in practice remains conditional (Papers VIII and IX). The studies show that while

scaling agility can strengthen collaboration and support the development of dynamic capabilities, its success depends on overcoming distinct challenges. Moreover, organizational inertia (Paper VII), cultural resistance, and structural complexity (Paper III) are challenges organizations face during the process. Many incumbent firms continue to treat digital technologies as infrastructural rather than as strategic enablers, limiting their ability to fully exploit the transformative potential of agility. The findings thus suggest that scaling agility delivers on its promise only when the above mentioned concepts are holistically managed.

In order to structure the diverse findings of this dissertation, the nine papers are grouped according to the three overarching objectives of Chapter 4: defining scaling agility, managing scaling agility, and assessing its impact. This structuring reflects the progression of the research journey—from clarifying the conceptual contours of scaling agility, through examining the organizational and individual challenges of its implementation, to evaluating its broader consequences for IT–business alignment and value creation paths in digital transformation.

Table 7 provides a concise overview of each paper, its research focus, main results, and specific contributions to these objectives. As shown, Papers I–II sharpen the conceptual understanding of scaling agility embedded in broader digital phenomena research, Papers III–VII unpack the managerial dynamics of scaling agility, and Papers VIII–IX demonstrate its potential effects on alignment and value creation. Together, the studies reveal scaling agility as a multifaceted organizational transformation, whose benefits and limits become visible only when analyzed across different levels and contexts.

The sections that follow present the results of each paper in turn and link them back to the overarching objectives of this chapter: defining scaling agility, managing its implementation, and assessing its broader organizational effects.

Table 7. Summary of dissertations's findings

Paper	Focus	Main Results	Contribution to Chapter Objectives
I	Review on scaling agility	Synthesizes four dimensions (structure, methodology, governance, dependencies) and nine themes; identifies six research opportunities.	**Definition**: Clarifies conceptual boundaries of scaling agility and improves understanding what scaling agility entails and requires.
II	Review on digital innovation	Identifies five digital innovation value loci and develops a three-stream research agenda.	**Definition**: Refines conceptualization of value creation in digital innovation, foundation for understanding scaling agility's importance.
III	Taxonomy	Develops taxonomy based on six cases; highlights design criteria (e.g., autonomy, leadership styles) and trade-offs.	**Management:** Establishes structural configurations of SAOs and shows how design choices shape scaling agility.
IV	Tensions in SAOs	Explicates three organizing tensions of autonomy versus alignment, receptive responses, and ricochet effect.	**Management**: Shows that tensions are inherent to scaling agility and require dynamic, adaptive management strategies.
V	Team autonomy	Identifies mechanisms to establish team autonomy.	**Management**: Provides a framework for enacting team autonomy without undermining organizational coherence.
VI	Role identity change	Based on structural change criteria, identifies recurring patterns of role identity shifts over time.	**Management**: Explains how scaling agility transforms role identities and how organizations can support adaptation.
VII	Inertia	Reveals how work-related identities reinforce organizational inertia in structural changes of digital transformation.	**Management**: Theorizes identity-driven inertia as a paradoxical outcome of scaling agility, showing how identity both enables and constrains transformation.
VIII	IT–business alignment	Develops IT–Business Alignment Improvement Model (i.e., communicator, mediator, motivator roles).	**Effect**: Demonstrates how scaling agility fosters alignment through impact on communication, mediation, and motivation.
IX	Value creation paths	Identifies three structural changes (cross-functionality, self-organization, value chain interconnectedness) and two barriers (complexity trap, resource foundation).	**Effect**: Shows how scaling agility enables new value creation paths while highlighting contextual limits in incumbents.

4.1 Chapter I: Understanding Scaling Agility

Building on this overview, the first cluster of studies (Papers I–II) is dedicated to defining scaling agility. These papers focus on sharpening conceptual clarity, synthesizing fragmented perspectives, and developing structured frameworks that allow for a more precise understanding of scaling agility as both an organizational and strategic phenomenon. Together, they establish the theoretical foundations for the subsequent parts of this dissertation: Paper I systematically reviews the literature to delineate the core dimensions and themes of scaling agility; Paper II extends this effort by situating scaling agility within the broader discourse on digital innovation and value creation.

By tracing the evolution of scaling agility from an IT-centered practice to an enterprise-wide paradigm, these studies provide the conceptual grounding for understanding how scaling agility is instantiated in incumbent firms. This foundation is essential for the following chapters, which turn to the management and effect of scaling agility in practice.

4.1.1 Paper I: *Scaling Agility in Incumbent Firms: A Literature Review*

The findings of the literature review on scaling agility in incumbent firms highlight several key insights. First, the field is relatively nascent, as evidenced by the high number of recent conference contributions, indicating that research on scaling agility has gained significant traction only in the past years. Most studies employ qualitative methods, reflecting the need for deeper explanations while simultaneously revealing a lack of generalizability and validation in existing findings. Research primarily focuses on the organizational level, followed by team and individual levels, although some studies span multiple levels of analysis. Industry-specific insights remain scarce, with software, government, and banking being the most represented sectors, though many studies do not specify their industry context. Additionally, research differentiates between various forms of scaling agility, including IT agile with a project focus, enterprise agile without business unit integration, and full enterprise agility. However, distinct clusters among these categories do not emerge, suggesting that scaling agility's impact is best understood through a broader thematic approach rather than rigid categorical distinctions. The study synthesizes nine themes into four aggregate dimensions—structure, methodology, governance, and dependencies—offering a structured perspective on scaling agility in incumbent firms. Overall, the findings reveal that while scaling agility holds promise for enhancing organizational flexibility and responsiveness, significant barriers remain, necessitating further research into its implementation, measurement, and contextual dependencies. These insights contribute to a more precise definition of scaling agility by distinguishing its different forms and highlighting the critical structural and procedural elements that shape its effectiveness in incumbent firms. The findings of the paper also serve as gateway for a variety of papers in Chapters II and III of this dissertation as they motivate the more detailed analysis of scaling agility concerning its management and impact. In particular, the structure dimension is more closely analyzed in Papers III to V and serves as groundwork for the structure change analysis in paper VI, and the dependencies dimension is more analyzed in papers VIII and IX.

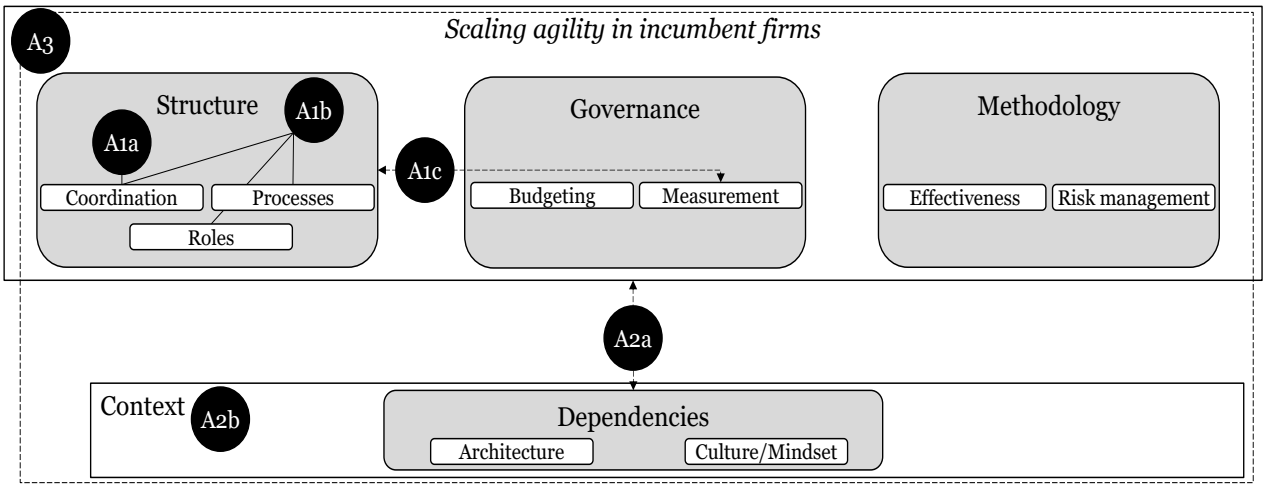


Figure 1. Scaling agility landscape for incumbents and avenues for future research

4.1.2 Paper II: *Debating Digital Innovation: A Literature Review*

The findings of paper II reveal that digital innovation creates value across multiple dimensions within organizations. The research identifies five key loci of digital innovation value: organizational knowledge, product/service, human capital, collaboration, and competition, each with distinct perspectives and implications for firms. Organizational knowledge is crucial for digital innovation, fostering agility, transparency, and efficiency in processes, which in turn enhances organizational performance. In terms of products and services, digital innovation contributes by increasing functionality, improving customization, and enhancing consumer-perceived value. Human capital benefits from digital innovation through employee empowerment, the reduction of path dependencies in decision-making, and the facilitation of distributed teamwork structures. On an interorganizational level, collaboration facilitated by digital platforms and pooled knowledge sharing improves external knowledge absorption and fosters innovation. Similarly, competition is positively influenced through increased market responsiveness, user-base scalability, and enhanced improvisational capabilities, leading to strategic advantages for firms. The findings highlight the necessity for organizations to undergo structural changes to fully leverage digital innovation, particularly by aligning business strategies with emerging technological opportunities. This can be seen as a call to further study organizational structural changes such as scaling agility. This research underscores the need for organizations to rethink their structures, processes, and competencies to better facilitate digital transformation and maximize innovation-driven value creation. The results further support the argument that structural change is essential for digital innovations to be effectively realized and integrated into organizational strategies, helping firms maintain competitive advantage in rapidly evolving markets – a supportive argument for scaling agility in general.

4.2 Chapter II: Managing Scaling Agility

With these foundations in place, the second set of studies (Papers III–VII) investigates the management of scaling agility in practice. Rather than asking what scaling agility is, these papers turn to the challenges of how it operates once implemented. Paper III develops a taxonomy of design criteria and choices for scaled-agile organizations, offering a structured lens to analyze organizational configurations. Further, the chapter examines the tensions between autonomy and alignment (Paper IV), the orchestration of team autonomy (Paper V), the reconfiguration of role identities (Paper VI), and the interplay between identity and inertia in digital transformation (Paper VII).

Collectively, these papers underscore that scaling agility is not a fixed organizational blueprint but an evolving process of adjustment and negotiation. They show that its management relies on receptive responses to organizational tensions, carefully designed mechanisms for implementing team autonomy, and deliberate attention to identity dynamics. In this way, they transform the conceptual models from Chapter I into empirically grounded insights on the lived practice of scaling agility.

4.2.1 Paper III: *Designing Scaled-agile Organizations A Taxonomy of Design Criteria*

The paper develops a taxonomy of eight design criteria for scaled-agile organizations, which are divided into two distinct categories: organizational-level and team-level dimensions. Each criterion comprises two or three distinct design options, reflecting the flexibility and variability inherent to scaled-agile organizations' configurations. The taxonomy provides a systematic framework for understanding the design of scaled-agile organizations across different organizations, emphasizing that no single configuration is universally optimal. Instead, the design is contingent upon the organizational goals, contextual factors and constraints. At the organizational level, three design criteria have been identified. The implementation strategy is concerned with the practical aspects of putting the design into effect. Organizations may choose to adhere strictly to predefined frameworks (e.g. SAFe or LeSS), to follow these frameworks loosely, or to develop their own customized approach. Second, the scaled-agile organization may be implemented as a virtual organization, a physical organization, or a combination of the two. Third, the degree of alignment and autonomy is a crucial aspect to consider (see also Papers IV and V). At the team level, five design criteria are delineated. The geographical distribution of the teams, the style of leadership adopted, the degree of modularity exhibited by teams, the number of hierarchical levels within the organizational structure, and the allocation of agile coaches. The findings illustrate the existence of a multitude of configurations, thereby demonstrating that scaled-agile organizations are highly adaptable to the specific needs and constraints of the organizational context. For example, some organizations utilize hybrid configurations, such as virtual organizations with actual pilot teams, as a transitional arrangement prior to the complete adoption of a conventional organizational structure. Similarly, teams that are partly congregated can be considered a middle ground between fully distributed teams and fully congregated teams. The taxonomy was applied across six case studies, which revealed unique configurations in each organization. This underscores the flexibility and contextual dependence of scaled-agile organization designs. The findings also elucidate the trade-offs associated with various design choices. For example, high team autonomy fosters innovation but can complicate coordination, while strong alignment enhances integration but reduces flexibility. Table 8 depicts the main result of the paper.

Table 8. Taxonomy of SAO

Design criteria		Design choices		
Organizational level	Implementation strategy	Strict adherence to distinct framework(s)	Loosely following distinct framework(s)	Own framework development or no framework
	Structural implementation	Virtual organization	Virtual organization with real pilot teams	Real organization
	Alignment choice	Aligned	Autonomy with guardrails	Autonomous
Team level	Geographical distribution	Congregated	Partly congregated	Distributed
	Leadership, governance style	Single leader	Duo	Trio
	Team modularity	Cross-functional	Semi cross-functional	
	Hierarchy levels	Two	Three	Four
	Agile coach allocation	Per team	Rotating	

4.2.2 Paper IV: *Scaling Agility for Digital Transformation: How Organizations Manage Arising Tensions*

Paper IV uncovers how the management of organizing tensions fundamentally shapes the trajectory of scaling agility in incumbent firms. The study identifies three central tensions—balancing autonomy with alignment at structural, operational, and decision-making levels—and demonstrates that their resolution requires receptive "both-and" responses rather than rigid "either-or" approaches. Two main transformation pathways emerge. In one, tensions remain unresolved, reinforcing hierarchies, role conflicts, and boundaries between agile and non-agile units, which ultimately stall digital transformation. In the other, organizations apply both-and responses, such as routinized mechanisms of coordination and adaptation, which sustain transformation progress. Yet even on this more favorable path, tensions tend to resurface, necessitating continuous recalibration. Organizations that manage to respond swiftly remain on a virtuous trajectory, while those reverting to top-down control risk sliding back in the process. Importantly, the study highlights the possibility of recovery through renewed commitment to both-and logics, emphasizing that successful transformation is never permanent but requires constant organizational vigilance.

Beyond these within-tension dynamics, the study introduces the concept of the ricochet effect, showing how the resolution of one tension often inadvertently exacerbates others. For example, granting structural autonomy through cross-functional teams may fragment processes, while standardization efforts to restore alignment constrain autonomy again. Similarly, granting decision-making independence can create strategic incoherence, prompting renewed centralization that undermines the very autonomy initially intended. Such ricochets highlight that tensions are deeply interrelated: managing one always has consequences for the

others. The findings underscore that sustainable pathways in scaling agility demand not only a both-and thinking within each type of tension but also continuous rebalancing between different tension dimensions over time. This dynamic interplay ultimately shapes whether organizations entrench in vicious cycles of stalled change or evolve toward virtuous cycles of adaptive learning and enduring transformation. The paper builds upon the results from Paper I by diving deeper into the structure and governance dimension and Paper III by incorporating the design criteria into case selection and analysis. Paper V extends the results of Paper IV by complementing team autonomy research (i.e., analyzing mechanisms for team autonomy). Figure 2 depicts the main result of Paper IV.

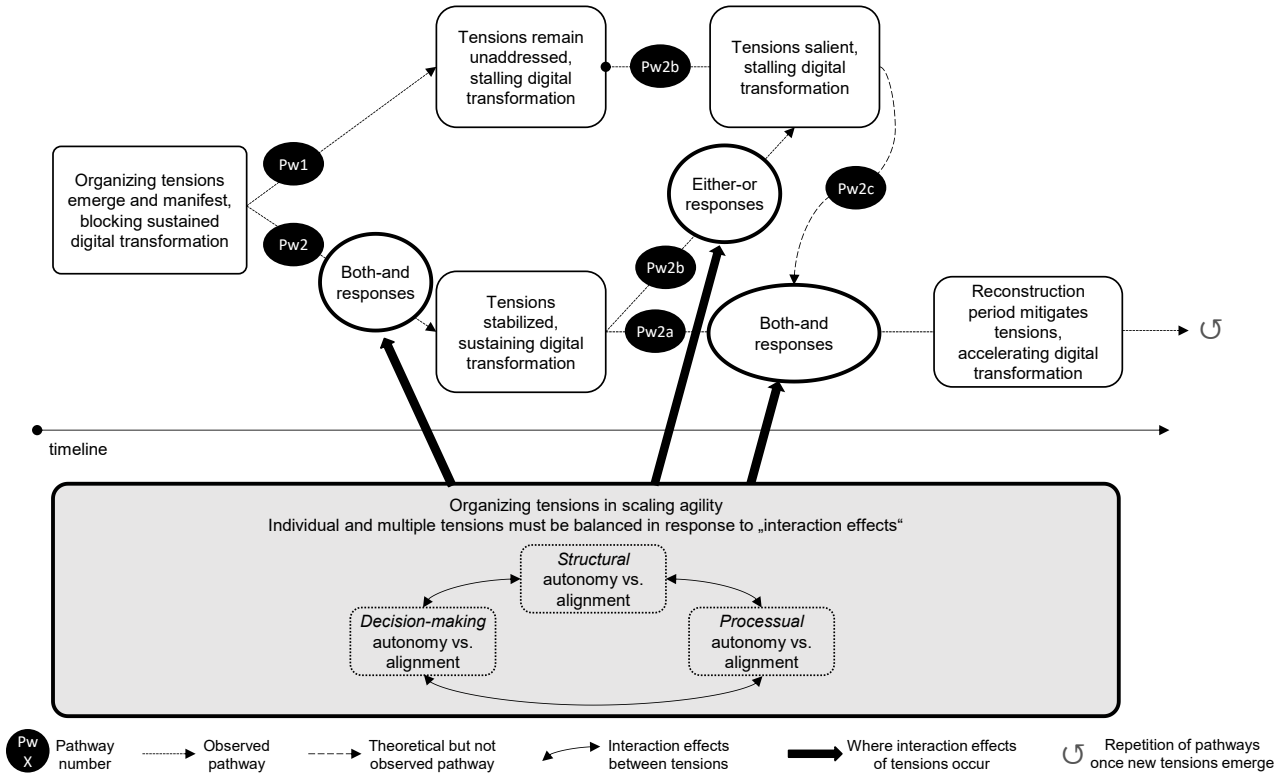


Figure 2. Main result of Paper IV: Pathways in Scaling Agility

4.2.3 Paper V: *Easier Said Than Done: Implementing Team Autonomy in Scaling Agility*

The study identifies key challenges and mechanisms for implementing team autonomy in scaling agility, emphasizing three core aspects: (1) structuring team cross-functionality along the value stream, (2) managing dependencies while preserving autonomy, and (3) balancing stability and flexibility as a result of autonomy. The findings reveal that autonomy is not an inherent outcome of scaling agility but must be actively facilitated through explicit governance structures, coordination mechanisms, and clearly defined decision-making processes. Teams struggle with contraditions between hierarchical control and agile frameworks, often requiring structured interventions to prevent role ambiguity and ensure operational efficiency. Managing team autonomy is critical in scaling agility because it directly influences organizational responsiveness, innovation, and employee engagement. Without clear autonomy structures, teams may face decision paralysis, inefficiencies, or conflicts, undermining the benefits of agility. To address these themes, the study proposes four key mechanisms: implementing clear communication models, setting boundaries for managerial involvement, establishing structured decision-making procedures, and strategically freezing design choices to prevent constant

rework. These findings contribute to a more nuanced understanding of scaling agility, highlighting the need for carefully balancing autonomy with structured coordination to maintain agility without sacrificing alignment and stability. This research helps organizations manage scaling agility by identifying concrete steps to implement team autonomy in a way that supports organizational efficiency and long-term transformation success. Moreover, it adds to the results of Paper IV as it delves deeper into the aspect of how explicitly team autonomy is managed as part of an overall tensions view within scaling agility, thus connecting papers IV and V. Figure 3 depicts the main results.

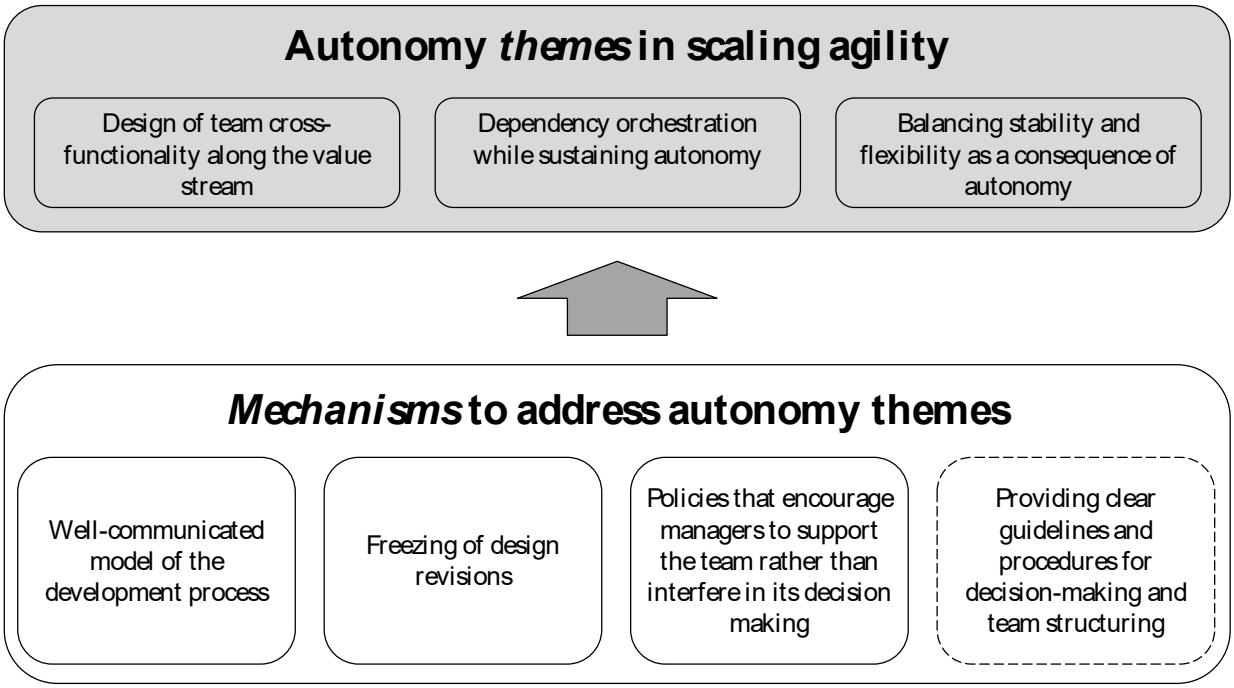


Figure 3. Autonomy themes and mechanisms in scaling agility.

4.2.4 Paper VI: When Agile Scales: The Interplay Between Role Identity and Scaled-Agile Organizations

The findings reveal that the implementation of SAOs fundamentally reshapes role identities by altering the division of labor and integration of effort. The transition from traditional hierarchical structures to scaled-agile organizations, where IT and business functions merge, forces employees to reconsider their roles and career trajectories. While some employees embraced the change as an opportunity to expand responsibilities and autonomy, others experienced identity threats, leading to role protection behaviors and resistance. Managers, in particular, struggled with the redistribution of authority, while experts felt challenged by the need to develop T-shaped skills and share deep knowledge, which threatened their specialist identities. In contrast, developers gained a stronger sense of ownership and intrinsic motivation through increased autonomy and end-to-end product responsibility. To manage these identity shifts effectively, four propositions were developed. These include: (1) identity threat leading to professional role identity protection when managerial roles are split; (2) trust and understanding of new responsibilities increasing the likelihood of identity empowerment; (3) expert identity threats prompting knowledge withholding; and (4) autonomy, responsibility, and skill expansion fostering identity extension. These propositions help to better manage scaled-agile organizations by identifying key tensions and providing guidance on mitigating role conflicts, enhancing leadership

transitions, and ensuring that scaling agility fosters both organizational efficiency and employee engagement. Figure 4 summarizes the main findings of the Paper showing the identity appraisal and work dynamics during the transformation toward a scaled-agile organization.

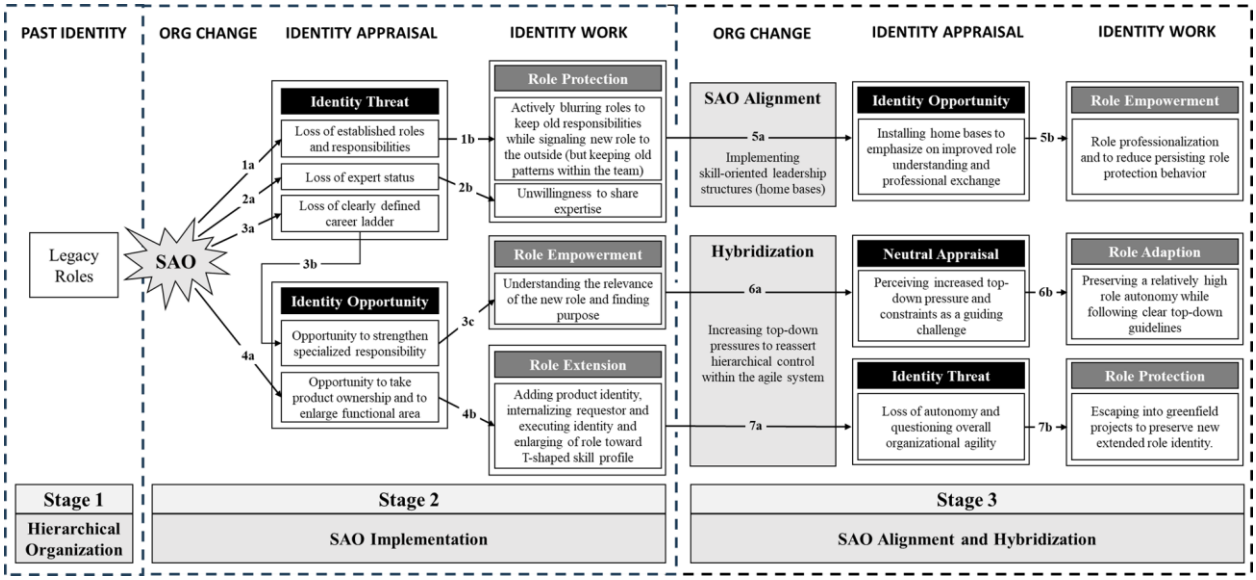


Figure 4. Identity Appraisal and Work Dynamics during SAO Transformation

4.2.5 Paper VIII: *We Are the Change: How Work-related Identities Influence Inertia during Digital Transformation*

This study explores how work-related identities influence organizational inertia during digital transformation. Inertia, defined as the inability of organizations to enact sufficient internal change in response to environmental shifts (Kaganer et al., 2023), presents a significant barrier to digital transformation efforts. The study identifies four types of work-related identities—organizational, professional, team, and job—and demonstrates their distinct impacts on various dimensions of inertia. Socio-cognitive inertia, stemming from entrenched norms and values at both the organizational and professional levels, is a salient example. At DigiBank, the identity conflict between its long-held "Community Bank" identity and the newly adopted "Digital Bank" identity engenders resistance to the adoption of digital practices. Employees perceive these identities as incompatible, leading to misalignment and a reluctance to embrace change. A similar phenomenon is observed in the case of socio-technical inertia, which stems from professional identity conflicts, particularly the shift from face-to-face to digital services. This transformation is perceived as undermining the personal and community-focused nature of banking, impeding the adoption of digital tools. Furthermore, political inertia manifests as employees resist changes that threaten their authority or professional roles. For instance, DigiBank branch managers are reluctant to transition to centralized roles due to concerns about a perceived loss of status and professional identity. This resistance is further exacerbated by the management's communication of changes without providing clear implications for employees' roles, allowing for speculation and reinforcing resistance. The phenomenon of negative psychology inertia, characterized by a reluctance to embrace change, has been linked to the strength of team and job identities. In such cases, employees often prefer to maintain their existing roles and teams, avoiding the uncertainty associated with relocation to centralized digital hubs. This attachment to the status quo has been shown to impede the progress of digital

transformation initiatives, as employees often hesitate to leave their familiar environments and established team dynamics.

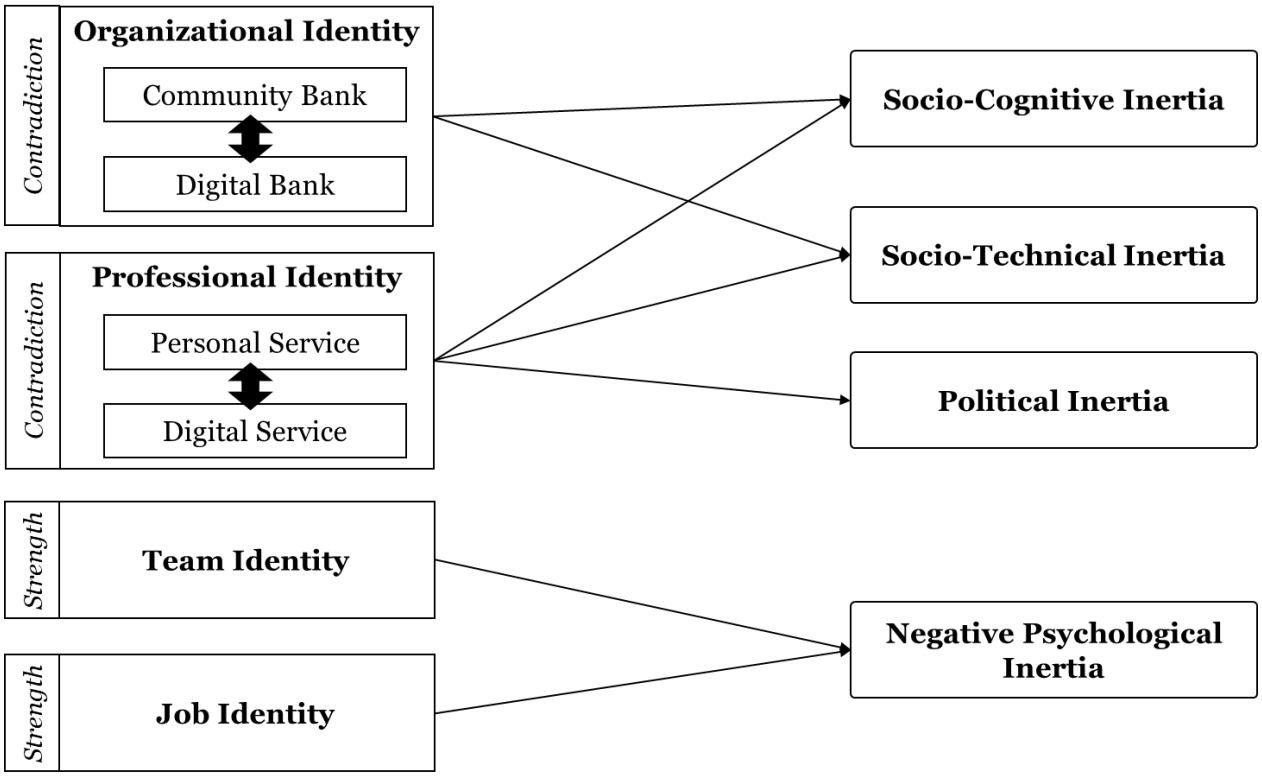


Figure 5. The Impact of Work-related Identities on Different Inertia Dimensions

The findings of the study culminate in a conceptual model that connects specific work-related identities to inertia dimensions (see Figure 5). Organizational identity fosters socio-cognitive inertia by anchoring employees to traditional values, while professional identity contributes to both socio-cognitive and socio-technical inertia through conflicts with evolving role expectations. The study underscores the significance of identity work, defined as the recalibration or maintenance of identities in response to change (Sveningsson & Alvesson, 2003), as a critical strategy to mitigate inertia.

4.3 Chapter III: Effects of Scaling Agility

The final cluster of studies (Papers VIII–IX) shifts the focus to the effects of scaling agility, examining its influence on IT-business alignment and value creation paths. Having established what scaling agility entails and how it can be managed, these studies address in more detail the question of what it achieves. Paper VIII explores how structural shifts—such as cross-functionality and self-organization—reshape value creation paths, while also highlighting barriers like resource limitations and organizational complexity. Paper IX demonstrates how scaling agility functions as a facilitator of communication, trust, and motivation between IT and business units, thereby strengthening IT-business alignment.

Together, these contributions reveal that scaling agility can be a powerful enabler of digital transformation benefits, yet its effects are highly context-dependent. They illustrate both the opportunities and the limitations inherent in transformations towards scaled-agile organizations, thereby completing the analytical arc of this dissertation and positioning scaling agility as both a promise and a challenge for incumbent firms.

This perspective connects directly to the broader digital transformation literature, where Vial (2019) emphasizes how digital transformation redefines value creation through new business models, processes, and customer experiences, and Orlikowski and Scott (2023) highlight how less visible *digital undertows* can gradually displace established institutional arrangements. Against this backdrop, Papers VIII and IX examine how scaling agility shapes both value creation and alignment in incumbent organizations.

4.3.1 Paper VIII: *Digital Transformation: How Scaling Agility Affects Value Creation Paths*

Paper VIII examines how scaling agility alters value creation paths and identifies both enabling mechanisms and critical barriers. The findings highlight three structural changes driven by scaling agility, alongside two significant barriers that constrain its effectiveness.

The first structural change is cross-functionality for creative ideas. By breaking down silos between IT and business units, scaling agility fosters collaboration and innovation. In Case Gamma, for example, the introduction of a “tribe logic” merged previously separate functions into cross-functional teams. This integration enhanced responsiveness to market opportunities and customer needs while stimulating creativity.

The second structural change is fostering self-organization. Scaling agility promotes autonomy by empowering teams to make decisions and manage workflows independently. At Delta, employees shifted from rigid project management practices toward adaptive, iterative processes supported by agile mindsets. While effective, this transition required extensive training and cultural support to overcome resistance to new ways of working.

The third structural change is higher value chain interconnectedness. Scaling agility aligns activities across the value chain, from strategy through to delivery. Beta and Gamma demonstrated improvements in coordination between departments, reducing gaps between IT and business goals. However, this interconnectedness also introduced challenges, as increased complexity required more intensive coordination to avoid bottlenecks.

Alongside these benefits, two barriers were identified. The complexity trap highlights the difficulties large organizations face when attempting full cross-functional integration. Regulatory demands and legacy systems at Delta, for instance, reintroduced hierarchical processes that undermined agility. The resource foundation problem reflects the significant financial and human investments required for scaling agility. At Beta, shortages of skilled personnel and incomplete role coverage created communication overload and resistance to change, limiting the potential impact of agile practices. All these changes and barriers are summarized in Table 9.

Overall, the findings demonstrate that scaling agility can reconfigure value creation paths by fostering creativity, autonomy, and interconnectedness, but its full potential is constrained by structural complexity and resource scarcity. The study emphasizes that scaling agility is a double-edged phenomenon: it enables dynamic and innovative value creation, while simultaneously surfacing new organizational challenges that must be carefully managed.

Table 9. Structural changes and barriers

Type	Observation	Description
Structural changes	Cross-functionality to allow for the emergence of creative ideas	Creating a work environment that empowers employees to think holistically about novel products and allowing teams to be more responsive to changing market conditions and digital opportunities
	Fostering self-organizing to seize digital opportunities	Implementing the structural necessities to empower employees to take ownership of their work, make decisions independently and implement novel digital solutions
	Higher value chain interconnectedness for improved delivery	Close collaboration and communication between different teams and departments in the value chain to enhance the delivery of value to customers
Barriers	Complexity trap	The large size and amount of peculiarities of the organizational structure in the large organization lead to exponentially growing coordination and standardization constraints that inhibit agility
	Resource foundation	Lack of sufficient financial and human resources puts pressure on the agile organizational structure by reintroducing stricter resource regimes and scarce human resources with the right skillsets

4.3.2 Paper IX: *From Communication to Motivation: Leveraging Scaling Agility for IT-Business Alignment*

The findings of Paper IX provide a comprehensive understanding of how scaling agility influences IT-business alignment. The study identifies three primary roles that scaling agility plays in this process: communicator, mediator, and motivator. Each role is supported by specific activities and dynamics that drive alignment across IT and business functions.

As a *communicator*, scaling agility establishes effective and transparent channels of exchange between IT and business stakeholders. This fosters shared understanding, collaboration, and strategic alignment of IT initiatives with broader business goals (Gerow et al., 2014; Luftman et al., 2017). Key activities include joint workshops, where IT developers and business specialists work side by side in real time, and flexible communication structures enabled by cross-functional teams that eliminate rigid boundaries and facilitate continuous dialogue. The role of *mediator* addresses historical communication gaps and builds a foundation of trust, openness, and shared commitment to organizational objectives. Activities such as trust-building through shared goals—for instance, annual product contracts updated quarterly—and inclusive decision-making, where multiple departments contribute to strategic choices, enhance organizational cohesion. By reducing mistrust and fostering transparency, the mediator role ensures that alignment is sustained at both operational and strategic levels. As a *motivator*, scaling agility strengthens intrinsic motivation, self-determination, and collective responsibility. Employees develop a deeper appreciation of how their contributions connect to broader business objectives, while autonomy and ownership allow them to drive alignment initiatives independently and innovatively. These motivational factors foster a culture where alignment is not imposed but becomes an inherent organizational priority.

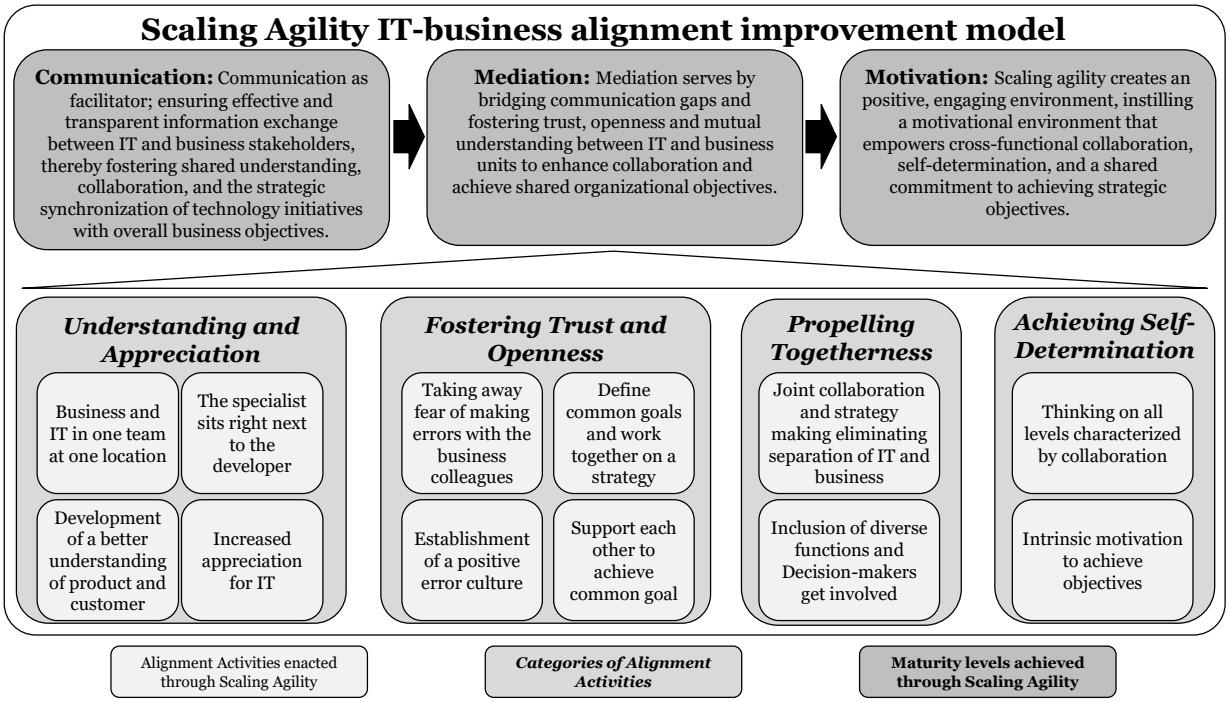


Figure 6. Scaling Agility IT-Business Alignment Improvement Model

Together, these roles form the IT-Business Alignment Improvement Model (see Figure 6), which synthesizes alignment activities into four core categories: understanding and appreciation, fostering trust and openness, propelling togetherness, and achieving self-determination. The model illustrates how scaling agility generates a virtuous cycle: transparent communication, trust, collaboration, and motivation mutually reinforce one another, thereby strengthening alignment across all levels of the organization (Karpovsky & Galliers, 2015; Limaj & Bernroider, 2022). The findings highlight that scaling agility integrates structural and cultural shifts in ways that enhance IT-business alignment in both scope and depth.

Jointly, both papers show that scaling agility not only resonates with the transformative shifts described by Vial (2019) but also makes visible undertow-like dynamics in the sense of Orlikowski and Scott (2023), as roles, coordination routines, and governance mechanisms are subtly displaced in the process of extending agility. Thus, scaling agility emerges as a transformative force that enables alignment, reshapes value creation paths, and surfaces new challenges organizations must confront as they expand agility across their structures.

The analyses presented in Chapter 4 demonstrate that scaling agility is a deeply multifaceted phenomenon. It unfolds through structural redesigns that challenge established hierarchies, through tensions and role renegotiations that reshape everyday work, and through organizational outcomes that affect IT-business alignment and value creation. While each paper illuminates a specific angle, together they provide a comprehensive picture of how scaling agility is defined, managed, and experienced in incumbent firms undergoing digital transformation. At the same time, these findings also surface broader theoretical implications, raising the question of how this dissertation contributes to ongoing scholarly conversations on agility, digital transformation, and organizational change. This reflection is the focus of the following chapter.

5 CONTRIBUTIONS

Chapter 5 positions the dissertation's findings within the wider body of academic discourse, articulating how they advance theory and practice. The results of the paper extend the current state of knowledge through distinct theoretical contributions and, therefore, amalgamate in an overall oeuvre, which is presented in this section. In addition, this section presents recommendations for practitioners. This chapters starts with an overall positioning of the research in terms of theoretical contribution (5.1), continues with the contributions specific to each of the three Chapters (5.2) and finishes with recommendations for practice (5.3).

5.1 THEORETICAL FOUNDATIONS OF A THEORETICAL CONTRIBUTION

Theory is "a scientifically grounded statement of relations among concepts within a boundary set of assumptions elucidating why or how something occurs" (Leidner & Gregory, 2024, p. 502). As Leidner and Gregory summarize, theory is a body of knowledge (Markus, 2014) that establishes scientific truths, enlightens us, provides a narrative (DiMaggio 1995), and helps to solve problems (Laudan 1978).

The primary aim of this chapter is to articulate why and how the research presented in this dissertation makes a meaningful contribution to theory. As Whetten (1989) reminds us, demonstrating a theoretical contribution requires clarifying what concepts matter, how they interrelate, why these relationships exist, and who, where, and when the theory applies. Equally, Gregory and Henfridsson (2021) argue that theorizing is both a science—requiring logic, rigor, and prescience—and an art—requiring discovery, imagination, and storytelling. By weaving these perspectives together, this chapter positions the dissertation's contributions as simultaneously rigorous and imaginative, scholarly and relevant.

First, this dissertation begins with the recognition of scaling agility as an emergent phenomenon of growing importance in incumbent firms. It manifests structurally in the rise of scaled-agile organizations, where agile principles are extended from team-level practices to the enterprise level. Gregory and Henfridsson (2021) emphasize that strong theory emerges from "intellectual dwelling with the phenomenon under study" (p. 1509), underscoring the art of theorizing through curiosity and discovery. By engaging longitudinally with explorative case studies, this research remains grounded in the lived organizational realities of scaling agility. From Whetten's perspective, this stage establishes the *what* of theory: identifying central constructs or concepts such as scaled-agile organizations (Paper III), organizing tensions (Paper IV), team autonomy (Paper V), role identity change (Paper VI), organizational inertia in digital transformation (Paper VII), or IT-business alignment (Paper IX). These concepts are central to understanding the phenomenon and provide the scaffolding for theorizing.

The second step in theorizing involves showing how this research challenges conventional assumptions. Leidner and Gregory (2024) cite DiMaggio as he argues that impactful theorizing often requires "clearing away conventional notions to make room for artful and exciting insights" (p. 391). This dissertation problematizes several assumptions: that agility is primarily a practice confined to the IT function, that scaling is a simple replication of practices, or that agility naturally resolves organizational inertia.

Here, the art of theorizing lies in reframing scaling agility as a tension-laden transformation. The science lies in systematically positioning this work against prior scholarship on agile practices, organizational design,

and digital transformation. Whetten's How and Why are addressed across the dissertation: showing, for instance, how scaled-agile organizational design embeds paradoxical tensions (Paper III), why organizing tensions persist in transformation trajectories (Paper IV), or how alignment unfolds as a paradoxical process (Paper IX). Each study uncovers causal mechanisms that extend beyond existing explanations.

The third element involves crafting a theory that explains current dynamics but also endures into the future. Gregory and Henfridsson (2021) stress that theorizing requires imagination—the art of metaphor and model building—combined with logical precision. This dissertation achieves that balance by conceptualizing scaling agility as a structural and identity reconfiguration process and grounding this claim in longitudinal case data. Whetten's Who, Where, and When are specified through clear boundary conditions: the focus on incumbent firms, the interplay of team and organizational levels, and the temporal dimension captured over three years of fieldwork. This ensures parsimony and scope clarity. Papers VI and VII, for instance, demonstrate how role identity and inertia evolve over time, while Papers VIII and IX show how scaling agility reshapes value creation paths and IT-business alignment across contexts.

Ultimately, theory has value only when communicated in ways that resonate. Gregory and Henfridsson (2021) highlight the role of storytelling in theorizing, and this dissertation seeks to inspire by weaving detailed empirical narratives with conceptual clarity. Leidner and Gregory (2024) argue that strong theory should be useful, falsifiable, parsimonious, explicit, and insightful. This research meets these criteria:

First, a central strength of this theorizing lies in its utility. By clarifying how scaling agility unfolds across organizational design, tensions, role identity, IT–business alignment, and inertia, the framework offers guidance both to scholars seeking to refine theoretical understanding and to practitioners navigating the challenges of agile transformation. The findings show, for instance, how the structural changes of scaled-agile organizations and value-creation paths operate in practice, thereby providing actionable insights for incumbent firms (Papers VIII).

Second, equally important is the falsifiability of the theorizing. The dissertation formulates propositions about organizing tensions, identity change, IT-business alignment, and organizational inertia that can be tested in other contexts and across time. This allows future research to confirm, refine, or contest the claims presented here, ensuring that the insights are not bound to the studied cases alone but can travel across empirical settings. The contribution also demonstrates breadth, moving beyond the idiosyncrasies of individual cases to capture more general dynamics of organizational change and digital transformation. Although situated in incumbent firms, the theoretical mechanisms identified—such as the negotiation of tensions, the reshaping of role identities, and the persistence of inertia—speak to a broader range of organizations confronting similar challenges.

Third, at the same time, the theory retains parsimony by focusing on a bounded set of constructs. Rather than dispersing across numerous adjacent concepts, the work concentrates in the two empirical chapters on a select set of pillars: scaled-agile organizational design, organizing tensions, team autonomy, role identity change, organizational inertia, and IT–business alignment. This focus ensures explanatory clarity without sacrificing depth.

Fourth and closely related is the explicitness of the theorizing. Concepts and relationships are carefully

defined, and boundary conditions are specified—most notably the focus on incumbent firms undergoing digital transformation (for instance, right from the start with Paper I and for all subsequent Papers concerning scaling agility). Such transparency makes it possible for other scholars to extend and empirically test the claims, strengthening cumulative knowledge-building.

Finally, the dissertation offers insight by challenging the widespread assumption that agility scales naturally and seamlessly. Instead, it reveals scaling agility as a paradoxical transformation: one that is rife with tensions (Paper IV), shaped by persistent inertia (Paper VII), and marked by both enabling and constraining dynamics. This revelatory perspective (cf. Corley & Gioia, 2011) provides a new lens for understanding organizational transformation, as the findings of the individual papers demonstrate.

The contribution of this dissertation is further strengthened by drawing on three complementary approaches to theorizing: paradox-based theorizing, inductive top-down theorizing, and phenomenon-based theorizing (cf. Leidner & Gregory, 2024). Each approach highlights different aspects of scaling agility (see Table 10), while together they form an integrative perspective that balances empirical grounding, conceptual innovation, and theoretical integration.

Paradox-based theorizing begins from the premise that organizational life is inherently contradictory and that these contradictions should be theorized rather than resolved away (Poole & Van de Ven, 1989). Scaling agility epitomizes such a paradoxical transformation: it requires organizations to increase autonomy while maintaining alignment, embrace change while preserving stability, and innovate while remaining efficient. This dissertation leverages paradox-based theorizing across several studies. Paper III shows how scaled-agile organizational design embeds a duality of demands along a continuum of design criteria. Paper IV places paradoxical tensions at the center, examining how firms navigate tensions along scaling agility. Paper VI demonstrates how the adoption of agile roles forces individuals to negotiate paradoxes of identity—continuity versus change, or professional expertise versus agile “generalism”. Paper VII addresses inertia, highlighting how stability can be both a necessary foundation and a barrier to transformation. In sum, these studies illustrate how paradox-based theorizing explains scaling agility not as a linear journey but as an ongoing negotiation of contradictions.

Table 10. Theorizing approaches in this dissertation (based on Leidner & Gregory, 2024)

Theorizing Approach	Description	Examples from Dissertation
Paradox-based theorizing	Explains organizational life as inherently contradictory; contradictions are not resolved but continuously navigated.	Paper III: Paradox of design choices in scaled-agile organizations Paper IV: Tensions persist and create ricochet effects Paper VI: Role identity contradictions Paper VII: Inertia as both stabilizing and obstructive
Inductive top-down theorizing	Integrates fragmented literatures into coherent frameworks, informed by empirical grounding.	Paper I: Reconciles agile methods with organizational design Paper IV: Bridges tensions theory and digital transformation Paper VI: Combines organizational design and role identity Paper VII: Links inertia theory and role identity theory Paper IX: Integrates IS alignment and scaling agility
Phenomenon-based theorizing	Starts from observation of emergent, under-theorized phenomena in practice.	Papers I: Structural instantiation of scaled-agile organizations Paper IV: Persistent tensions in transformation Paper VI: Role identity renegotiations Paper VII: Inertia amid transformation Paper IX: Evolving IT-business alignment
Literature-based theorizing	Creates models trough informing thoughts, combining them with reflection, internal dialogues with the aim of achieving coherence and resolving inconsistencies.	Papers I integrates the different research streams scaling agility stems from and unites them in a novel framing, moreover inconsistencies about the term are addressed. Paper II analyses digital innovation literature from a different perspective as value loci are destilled and formulated in a coherent table.

Inductive top-down theorizing (based on Shepherd & Sutcliffe, 2011) is a strategy that begins with empirical observations but seeks to integrate fragmented literatures into more coherent theoretical accounts. Scaling agility sits at the intersection of agile software development, organizational design, digital transformation, IT-business alignment, and identity theory. Each provides useful but partial insights, often in tension with one another. This dissertation engages in inductive top-down theorizing by bridging these divides. Paper I, for example, reconciles agile software development research with organizational design perspectives to identify key structural criteria for scaled-agile organizations. Paper IV integrates paradox theory with digital transformation studies to explain how tensions unfold during change. Paper VI combines role identity theory with agile practice research to theorize how professional identities are reshaped. Paper VII links theories of

organizational inertia with agility research to demonstrate why resistance persists despite transformation efforts. Paper IX synthesizes IS alignment literature with agile transformation research to show how alignment is sustained in dynamic contexts. Through these integrations, the dissertation contributes not only to each individual literature but also to a consolidated framework of scaling agility as organizational transformation.

Phenomenon-based theorizing (Fisher et al., 2021) takes as its starting point the close observation of emerging or under-theorized phenomena in practice. Scaling agility, when this dissertation began, was not a fully developed concept in the academic literature, but it was already a pressing reality for incumbent firms. Through longitudinal case studies, the dissertation identifies defining features of this phenomenon: the structural instantiation of scaled-agile organizations (Papers I, III and VIII), the persistent tensions that shape transformation trajectories (Paper IV), the renegotiation of role identities prompted by agile roles (Paper VI), the evolving alignment dynamics between business and IT (Paper IX), and the paradox of inertia that emerges alongside transformation (Paper VII). By theorizing these features, the dissertation provides conceptual language and explanatory mechanisms for a phenomenon recognized by practitioners but under-theorized in academia.

Lastly, this dissertation builds on literature-based theorizing (Leidner & Tona, 2021). Literature-based theorizing builds on the creation of new models based on existing data sources. The creation of new models is achieved through the integration of thoughts, which are then refined through reflection and internal dialogue. This process aims to achieve coherence and resolve inconsistencies. In Papers I, the various research streams are integrated, and the concept of scaling agility is introduced. This novel framing unites these different research streams, while also addressing inconsistencies in the terminology. Paper II employs a distinctive approach by systematically distilling and structuring findings from the extant literature on digital innovation in a tabular format, thereby offering a novel perspective on the subject. In relation to this theoretical approach, Leidner and Tona also point to the miner-prospector metaphor (Breslin & Gatrell, 2025), which differentiates between whether a literature review synthesizes a field (miner approach) or brings together literature from different fields with the aim of developing a new theory or adapting the research perspective on a phenomenon (prospector approach). Concerning the two literature reviews used, it can be said that Paper I can be assigned more to the prospector category as it tries to bridge computer science and information systems literature to come to a new, holistic understanding of scaling agility and shifting the focus towards the design side and Paper II to the miner category as it digs deep into digital innovation literature to come up with novel insights concerning the value of digital innovations.

Integrating the four approaches, the theorizing strategy becomes stronger than each perspective alone. Phenomenon-based theorizing ensures that the work is grounded in the lived reality of organizations experimenting with scaling agility. Paradox-based theorizing explains why this reality is marked by enduring tensions that cannot simply be resolved. Inductive top-down theorizing then integrates insights from fragmented literatures to provide coherence and theoretical advancement. Together, these approaches demonstrate how scaling agility can be theorized as a distinct organizational phenomenon: one that is emergent in practice, paradoxical in nature, and situated at the intersection of multiple research traditions.

5.2 CONTRIBUTIONS TO LITERATURE

Having established in the previous section why and how this dissertation makes a theoretical contribution—by grounding the work in the phenomenon of scaling agility, problematizing prior assumptions, and theorizing its paradoxical and transformative nature—the following section turns to the specific contributions this research makes to extant literature. While Chapter 5.1 outlined the general value of the theorizing approach, Chapter 5.2 details the substantive insights gained for distinct research streams.

In line with the three overarching research objectives of this dissertation, the contributions are structured along three chapters. Chapter I consolidates and clarifies the concept of scaling agility by engaging with fragmented literatures. Chapter II develops a taxonomy of design choices and investigates how scaling agility is managed in practice, theorizing the tensions, team autonomy, role identity shifts that shape its enactment and also show how role identities can explain inertia persistence in digital transformation. Chapter III demonstrates the effects of scaling agility, specifically how it influences IT–business alignment and value creation paths in incumbent firms. By positioning each set of findings within the broader theoretical lenses introduced in Chapter 2, the discussion highlights how this dissertation extends current understanding of scaling agility vis-a-vis organizational design (Puranam et al., 2014), digital transformation (Vial, 2019; Orlikowski & Scott, 2023), organizing tensions (Smith & Lewis, 2011, Soh et al., 2023), role identity dynamics (Wessel et al., 2021), and IT–business alignment (Luftman et al., 2017). Collectively, they build a coherent picture of scaling agility as both a structural innovation and a tension-laden transformation process.

5.2.1 Contributions of Chapter I: Understanding Scaling Agility

The first chapter consolidates and advances the conceptual foundations of scaling agility and helps to move forward our understanding of what scaling agility entails. At the outset of this research endeavor, the landscape around the phenomenon has been fragmented and was not well-bounded. Paper I helps to answer these unadressed questions. It (a) provides a delineation of the concepts, (b) collects and consolidates its roots from different research domain and (c) provides a unified picture toward the open research avenues that pertain scaling agility. It categorizes existing research into four overarching dimensions—structure, methodology, governance, and dependencies—and identifies nine central themes. In doing so, it clarifies how scaling agility has evolved from an IT-centered practice to an enterprise-wide paradigm. The review highlights barriers incumbent firms face—coordination, procedural complexity, and cultural resistance—that digital-born firms are less likely to encounter. By clarifying the relationship between agile practices, organizational design, and agility outcomes, the study addresses conceptual ambiguities identified by Conboy and Carroll (2019) and extends earlier reviews such as Dikert et al. (2016) and Kalenda et al. (2018). Importantly, it incorporates more recent insights from Limaj and Bernroider (2022), showing how scaling agility must be viewed as a holistic transformation that spans structural, cultural, and technological dimensions. The study demonstrates that scaled-agile design functions as the structural mechanism through which agile approaches enable organizational agility (Gerster et al., 2020), thereby connecting to Vial's (2019) argument that structural change enables new value creation and to Orlikowski and Scott's (2023) notion of digital undertow as institutional displacement.

Paper II extends this by reframing digital innovation value. It introduces a framework of "value loci," high-

lighting that digital innovation outcomes cannot be reduced to financial metrics but include social, experiential, and structural dimensions. By systematically analyzing existing research, the review consolidates prior research recommendations and identifies critical gaps. Moreover, by mapping value loci, the paper reduces conceptual ambiguity in information systems value debates and refines evaluation approaches. This addresses calls for further research on value creation and value capture (Schryen, 2016), advances research that connects digital innovation with resource and design questions (Henfridsson et al., 2018; Sedera et al., 2016), to overall provide a conceptual foundation for studying how digital innovation can best be supported by a well-thought out organizational design. It also connects directly to Vial (2019), who emphasizes the importance of understanding value creation as a dynamic process within digital transformation.

In summary, Chapter I contributes to literature by defining scaling agility as a distinct organizational paradigm and situating it in the broader transformation process. It consolidates fragmented insights (Dikert et al., 2016; Kalenda et al., 2018; Limaj & Bernroider, 2022), integrates them with design perspectives (Gerster et al., 2020), and demonstrates how scaling agility embodies both the structural enablers of value creation (Vial, 2019) and the institutional displacements described by Orlikowski and Scott (2023). Papers I–II thus lay the conceptual foundation for theorizing scaling agility as a transformative organizational phenomenon.

5.2.2 Contributions of Chapter II: Managing Scaling Agility

The challenge of managing scaling agility lies in navigating the organizational frictions and identity shifts that emerge when firms extend agile principles beyond IT into the core of their business. While scaling agility promises higher agility paired with cross-functional integration, this set of studies demonstrates that it is less a linear redesign and more a dynamic process of handling tensions, calibrating autonomy, and renegotiating identities.

Paper III responds directly to this call by developing a taxonomy of scaled-agile organizations, guided by Nickerson et al.'s (2013) iterative approach. The taxonomy distinguishes structural features such as modular team setups, leadership models, and the autonomy–alignment balance. These design criteria extend insights by Gerster et al. (2020) and Limaj and Bernroider (2022), showing that scaled-agile organizations are not universal templates but context-sensitive arrangements that connect operational flexibility with strategic coherence. In doing so, the study echoes Kalenda et al. (2018) on contextual contingencies and highlights that scaled-agile organizations serve as key enablers of digital transformation (Rigby et al., 2018), linking organizational design to broader digital transformation processes (Vial, 2019).

Paper IV complements this structural view by uncovering the enduring tensions of scaling agility. Building on paradox theory (Smith & Lewis, 2011), the study shows that autonomy and alignment are not opposites to be resolved but enduring paradoxes that must be managed continuously. Extending recent insights by Soh et al. (2023), it demonstrates that tensions unfold longitudinally and require receptive practices such as tandem working, shadowing systems, and formal rituals. The longitudinal character of the case studies shows that transformations evolve along cyclical pathways rather than linear maturity ladders: unresolved tensions stall progress, incremental management stabilizes it, and receptive, both-and responses enable virtuous cycles of adaptation. Successful pathways depend less on eliminating tensions and more on embedding adaptive micro-practices such as role tandems and coordination rituals, which over time develop into tension-balancing routines. Importantly, Paper IV identifies a "ricochet effect," where addressing one tension often

triggers changes in other tensions elsewhere, underscoring the dynamic balancing emphasized in paradox research (Viljoen et al., 2022). This resonates strongly with the structure dimension highlighted in Paper I and the taxonomy criteria in Paper III.

Paper V advances the understanding of autonomy in scaled-agile organizations by conceptualizing it as a multidimensional construct shaped by cross-functionality, dependency management, and the interplay of stability and flexibility. Building on Gerster et al. (2020), Limaj and Bernroider (2022), and Werder and Maedche (2018), the study identifies four mechanisms to manage autonomy: development models, revision freezes, supportive managerial policies, and formalized decision-making guidelines. In doing so, it also extends Gerwin and Moffat's (1997) foundational work on team autonomy by showing how formalized structures can enable stability and responsiveness at scale, ensuring that autonomy supports rather than undermines organizational coherence. These insights also build upon the structure dimension from Paper I and extends the findings from Papers III and IV by further analyzing questions of autonomy and coordination in scaling agility.

Finally, Papers VI and VII highlight the micro-level dynamics of scaling agility by focusing on professional role identity and inertia. Drawing on Wessel et al. (2021), Iden and Bygstad (2024), and Mühlburger and Krumay (2024), Paper VI shows how professional identities are disrupted and reshaped when employees must reconcile traditional expertise with hybrid or generalized roles. Paper VII builds on Besson and Rowe (2012) and Kaganer et al. (2023) to situate these identity shifts as reasons for persistent organizational inertia during structural changes in digital transformation, demonstrating how entrenched attachments reinforce resistance, while identity renegotiation can unlock transformation potential. In doing so, the papers extend Vial's (2019) process view of digital transformation, showing how structural changes and identity dynamics are deeply intertwined. This speaks directly to the identity and role change theme raised in Paper I, confirming its significance and offering empirical depth. From both papers, professional and organizational identities emerge as critical levers: unmanaged identity conflicts reinforce inertia, while deliberate renegotiations open pathways for change.

Taken together, the contributions of this chapter underscore that managing scaling agility is not merely a structural redesign but a lived process of balancing tensions, orchestrating autonomy, and renegotiating identities. By connecting paradox theory (Smith & Lewis, 2011), digital transformation pathways (Soh et al., 2023; Vial, 2019), and identity research (Wessel et al., 2021), these studies provide a richer understanding of how scaling agility unfolds in incumbent firms. At the same time, they directly advance the research fields highlighted in Paper I demonstrating that these remain central to theorizing and managing scaling agility in practice.

5.2.3 Contributions of Chapter III: Effects of Scaling Agility

The third chapter turns to the organizational effects of scaling agility, focusing on two pillars that are central to digital transformation: IT–business alignment and value creation. Together, Papers VIII and IX illuminate how scaling agility not only enables new forms of collaboration and adaptability but also exposes barriers that shape the outcomes of transformation efforts.

Paper VIII explores how scaling agility reshapes value creation paths. It shows that structural features such

as cross-functionality, self-organization, and interconnected value chains operate as microfoundations of dynamic capabilities—sensing, seizing, and transforming (Teece, 2007; Vial, 2019). These findings confirm and extend insights from Gerster et al. (2020) and Fuchs and Hess (2018), demonstrating how practices of scaling agility can enhance collaboration and responsiveness in incumbent organizations. At the same time, the study identifies two structural barriers: the "complexity trap," where large-scale organizational intricacies obstruct full cross-functional collaboration, and the "resource foundation," where financial and human resource constraints undermine scaling agility's potential. These barriers resonate with Orlikowski and Scott's (2023) notion of the digital undertow, whereby institutional legacies and resource dependencies counteract transformative ambitions. In this way, the paper contributes a more balanced view of scaling agility as both an enabler of dynamic capabilities and a phenomenon constrained by organizational realities. Importantly, it addresses a gap highlighted in Paper I, which called for deeper inquiry into the value creation mechanisms of scaling agility. Moreover, Paper VIII extends Paper III's taxonomy by illustrating how specific design dimensions—such as modular teams or leadership configurations—shape the conditions under which value creation is amplified or inhibited.

Paper IX extends the focus by examining how scaling agility enables IT–business alignment. Building on foundational studies of strategic and operational alignment (Chan & Reich, 2007; Luftman et al., 2017), the paper identifies four categories of alignment activities: understanding and appreciation, fostering trust and openness, propelling togetherness, and achieving self-determination. These activities are enacted through three roles of scaling agility: communicator, mediator, and motivator. Conceptualizing alignment as an evolving process rather than a static outcome, the paper responds to Luftman et al.'s (2017) call for dynamic, capability-based perspectives. It also shows how scaling agility bridges the gap between micro-level practices (e.g., joint workshops, shared metrics, and cross-functional teams) and macro-level outcomes (strategic coherence, organizational agility). Yet, consistent with Orlikowski and Scott's (2023) digital undertow, the findings reveal how entrenched governance structures and institutional logics continually pull against alignment, requiring ongoing renegotiation. By embedding alignment mechanisms directly within scaling agility practices, Paper IX contributes not only to IT-business alignment literature but also to digital transformation research. These insights directly connect to Paper IV's findings on tensions, showing that the pursuit of alignment often triggers new or excarbates existing tensions illustrating the ricochet effect that complicates efforts to proceed with digital transformation successfully.

The contributions of Chapter III underscore that scaling agility significantly shapes the outcomes of digital transformation, but in paradoxical ways. On one hand, it enhances organizational agility by enabling new value creation paths and facilitating IT–business alignment. On the other, it is persistently challenged by structural complexity, resource scarcity, and legacy institutions that resist transformation. Papers VIII and IX show that the potential benefits of scaling agility are harder to realize in incumbent firms than in digital-native settings, a conclusion that echoes Carroll et al. (2023) and Sebastian et al. (2020). By connecting the avenues for further research identied in Paper I with empirical evidence, Chapter III situates scaling agility as both a driver and a constraint of digital transformation. Moreover, it links back to Chapter II's insights on managing scaling agility well. Only if the tensions-laden, identity-changing nature of the process is understood can the associated effects bloom in full force. Ultimately, this chapter demonstrates that the long-term

success of scaling agility depends less on adopting static frameworks and more on cultivating adaptive processes that balance enabling forces with the challenges connected to the digital undertow.

Table 11. Broader questions of this dissertation and corresponding implications from its findings.

Broader Question	Implications from Findings
What is scaling agility in incumbent firms? (Chapter (Ch.) I)	Scaling agility is a structural approach that integrates IT and business beyond project contexts. A taxonomy of SAO design dimensions (Paper III) shows that effective scaling requires context-sensitive configurations, not universal templates. Literature remains fragmented, underscoring the need for integrated, theory-driven approaches (Paper I).
What constitutes the central paradox of scaling agility? (Ch. II)	Autonomy–alignment is multi-level and interdependent. Theories must treat it as three coupled tensions whose resolution in one realm reconfigures the others (Ricochet effect; Paper IV).
How do agile transformations evolve over time? (Ch. II)	Pathways are cyclical and path-dependent. Models should replace linear "maturity ladders" with dynamic trajectories (vicious, moderately virtuous, virtuous) that allow relapse and recovery (Paper IV).
What mechanisms govern successful large-scale agility? (Ch. II)	Receptive both-and responses—adaptive structures, roles, and rituals—outperform static blueprints. Future theory should formalize these micro-practices as tension-balancing routines that enable organizational learning (Papers IV–V).
How do invisible dynamics undermine or reinforce agility? (Ch. II)	The sociomaterial digital undertow shows that backstage effects (e.g., overloaded gatekeepers, mis-fitting standards, architectural debt) can silently displace intended agile logics. Theory for scaling agility must integrate such hidden institutional shifts (Papers IV, VII).
When does architecture become a strategic bottleneck? (Ch. II & III)	Decentralized micro-service designs create new tensions between local autonomy and enterprise-wide integration, underscoring IT architecture as both an antecedent and constraint of large-scale agility (Papers IV, VIII).
How should success be conceptualized and measured? (Ch. II & III)	Traditional velocity metrics overlook critical outcomes such as innovation quality, effectiveness, and customer value. Multi-dimensional, tension-sensitive performance constructs are needed (Papers VI–IX).
What are the effects of scaling agility on digital transformation? (Ch. III)	Scaling agility enhances IT–business alignment through communication, mediation, and motivation roles (Paper IX) and reshapes value creation paths by enabling collaboration and responsiveness but also confronting complexity traps and resource constraints (Paper VIII).

Overall, this dissertation demonstrates that scaling agility in incumbent firms is neither a straightforward structural redesign nor a mere extension of agile practices from IT into the wider organization. Instead, it

emerges as a dynamic, tension-laden process that reshapes structures, identities, and value creation paths while simultaneously being constrained by institutional legacies and resource limitations. It should therefore be theorized as a paradoxical and socio-material process in which structural innovations, identity renegotiations, and hidden institutional dynamics interact. Architecture itself can become a strategic bottleneck, as moves toward decentralized micro-services amplify tensions between autonomy and enterprise-wide coherence. Furthermore, traditional measures of agile success, such as velocity or "sprint points", fail to capture outcomes that truly matter—such as innovation quality, effectiveness, and customer value. As such, future research must embrace multi-dimensional, tension-sensitive constructs of success to adequately reflect the lived reality of scaling agility in incumbent firms. Table 11 provides some guidance on broader questions and answers this dissertation provides as a starting point.

5.3 Recommendations for Practice

The findings of this dissertation offer several implications for managers and practitioners who seek to implement scaling agility within the broader context of digital transformation. Rather than adopting off-the-shelf frameworks or treating agility as a one-time organizational redesign, the results emphasize that scaling agility is a continuous balancing act—one that reshapes structures, identities, and alignment processes. Based on this insight, five overarching recommendations can be derived.

Assess the potential for scaling agility in light of overall digital transformation objectives.

Scaling agility should not be pursued as an isolated structural upgrade but must be evaluated against the organization's strategic transformation agenda. If customer centricity, faster product delivery, or improved responsiveness to market shifts are at the core of transformation goals, then scaling agility can provide meaningful support. Yet, without a clearly defined strategic direction, agility risks producing fragmented efforts, disconnected teams, and additional complexity. Managers should therefore begin with a strategic assessment that clarifies how scaling agility contributes to digital transformation outcomes and positions it as a mechanism to achieve—not replace—broader goals.

Tailor scaling agility to organizational specifics rather than relying on rigid frameworks.

The case studies highlight that standardized frameworks often clash with incumbent realities such as entrenched silos, hierarchical decision-making, or complex architectures. Organizations benefit from adapting agile practices to their own structures and cultures—for example, designing release trains around value streams, customizing role definitions to manage the degree of autonomy and accountability, or revising team interfaces to manage dependencies. Agility at scale succeeds when practices are carefully calibrated to organizational contexts rather than copied from digital-native templates.

Connect design choices in scaling agility to the overall digital strategy.

Decisions about team topology, leadership roles, or planning rituals should be explicitly linked to strategic priorities. Where innovation is the objective, structures must allow experimentation, iteration, and fast feedback loops. Where efficiency and coherence dominate, coordination mechanisms need to strengthen integration and reduce redundancies. The findings demonstrate that agility fails when it is confined to team-level practices without alignment to the larger organizational direction. Strategic anchoring ensures that agility

serves as a driver of transformation rather than an isolated initiative.

Address identity dynamics as an integral part of scaling agility.

Scaling agility not only reorganizes teams but also reconfigures professional roles and leadership responsibilities. Product owners, for instance, face tensions between short-term delivery and long-term strategy, while team members may feel unprepared to exercise autonomy after years of hierarchical work structures. Such shifts often provoke resistance or uncertainty if left unaddressed. Organizations should therefore invest in coaching, transparent communication, and deliberate role clarification to support employees as they renegotiate professional identities. Recognizing identity dynamics as part of transformation is essential for building trust, sustaining motivation, and avoiding the inertia that arises when legacy identities remain unchallenged.

Identify barriers and contextual factors that may limit the benefits of scaling agility.

The dissertation highlights how hidden obstacles—such as centralized IT architectures, fragmented knowledge domains, misaligned incentive systems, or rigid governance—can undermine the promise of agility even when structural redesigns are in place. These barriers often manifest as the "digital undertow": invisible institutional forces that pull organizations back toward legacy practices. Managers should actively surface and address such constraints, whether technological, structural, or cultural, to avoid superficial transformations. Removing these bottlenecks is critical to realizing the benefits of scaling agility, such as enhanced collaboration, faster decision-making, and improved value creation. Table 12 summarizes these recommendations with implications for managers.

Table 12. Practical recommendations and implications for managers

Recommendation	Implication for Managers
Assess the potential for scaling agility in light of overall digital transformation objectives	Begin with a strategic assessment: clarify how scaling agility directly supports digital transformation priorities (e.g., customer centricity, speed-to-market) and avoid fragmented or disconnected initiatives.
Tailor scaling agility to organizational specifics rather than relying on rigid frameworks	Adapt practices to internal realities (e.g., silos, governance, legacy structures) by customizing release trains, roles, and coordination mechanisms; avoid "one-size-fits-all" frameworks.
Connect design choices in scaling agility to the overall digital strategy	Ensure that team structures, leadership roles, and rituals align with strategic objectives (e.g., innovation vs. efficiency) so that agility is not reduced to team-level speed but supports organizational goals.
Address identity dynamics as an integral part of scaling agility	Recognize that transformations reshape professional roles and leadership identities; invest in coaching, transparent communication, and role clarity to reduce resistance and sustain engagement.
Identify barriers and contextual factors that may limit the benefits of scaling agility	Actively uncover and address hidden obstacles such as centralized IT architectures, misaligned incentives, or cultural inertia, to prevent superficial transformations and enable true benefits of agility.

6 LIMITATIONS

Despite the breadth of its contributions, this dissertation inevitably leaves important questions unanswered. Its limitations span methodological, substantive, and theoretical domains, and together highlight the boundaries of what this research can claim about scaling agility.

Methodologically, the reliance on qualitative research and case study designs means that findings are deeply contextualized but less generalizable. Papers III–IX are grounded in rich longitudinal data from incumbent European firms, but these settings capture only a portion of the diverse environments in which scaling agility unfolds. Participant perspectives are another limitation: most interviews involved managers, product owners, and transformation leaders, whose vantage points may underrepresent the lived experiences of frontline employees. Papers I and II, despite their systematic literature review approaches, were limited by the scope of included databases and the exclusion of non-indexed or practitioner-oriented work, potentially omitting relevant streams of research. Similarly, the taxonomy in Paper III reflects design choices observed in a finite number of case studies and may not cover the full spectrum of scaling patterns present in global contexts.

Substantively, the research is bounded by its focus on organizational structures and human dynamics in scaling agility. While the dissertation contributes to debates on autonomy, role identity, inertia, value creation paths and alignment it pays less attention to the technological underpinnings of agile transformation, such as IT architecture or the role of automated, data-driven decision-making, that increasingly shape incumbent firms. Moreover, while the analysis focuses on incumbent firms, digital-native organizations—where agility is embedded from the outset—are treated only indirectly, limiting insights into cross-organizational comparisons. Similarly, the studies focus largely on internal organizational dynamics, with little attention to ecosystem-level interactions, regulatory environments, or competitive pressures that may strongly influence the feasibility and outcomes of scaling agility. While the data set includes some information concerning these topics and papers I, IV and VIII touch briefly upon these interactions, they are not the focus of this dissertation.

Theoretically, the dissertation advances scaling agility research through various lenses, i.e., organizational design, tensions, the overall digital transformation process, role identity, inertia, and IT–business alignment. Yet this parsimony comes with limitations: other potentially valuable perspectives—such as the theory of the contribution of the IT function in organizations (see Chapter II) or institutional theory —remain unexplored. As such, while the dissertation strengthens conceptual clarity and provides propositions for future testing, it cannot claim to have exhausted the theoretical possibilities for explaining scaling agility. Even within its chosen concepts, gaps remain: for example, while we know more about how tensions emerge and are managed (Paper IV), less is known about the interaction with other central departments of an incumbent firm that are not part of the scaled-agile organization – a gap that has already been identified in the literature (see Paper I). While we have evidence on identity shifts and their effects (Papers VI–VII), we lack detailed understanding of how identity change interacts with organizational culture or leadership styles over time. And while IT–business alignment is reframed through scaling agility (Paper IX), questions remain about the durability of these alignment mechanisms in the face of environmental shocks or strategic redirection.

These limitations underscore that while the dissertation advances our understanding of scaling agility in

incumbent firms, it leaves open critical questions about its sustainability, contextual variability, and theoretical scope. These gaps provide fertile ground for future research to broaden empirical bases, diversify theoretical perspectives, and extend inquiry into underexplored dimensions of agile transformation. Table 13 provides future research potentials based on some overarching limitations of this dissertation while the next chapter provides additional future research avenues structured along the three chapters.

Table 13. Overarching limitations and future research potential

Overarching Limitation	Contribution of Each Paper	Future Research Potential
Restricted Organizational Contexts and Participant Characteristics	Papers II, III, IV, V, VI, and VII largely studied large, digitally mature firms, often from Europe. Participants were mainly middle or upper management and agile coaches, underrepresenting operational staff.	Extend studies to SMEs, public sector, and emerging markets. Diversify participant samples to include developers, business-side actors, and external stakeholders (e.g., customers, suppliers) to capture broader scaling effects.
Reliance on Retrospective and Interview-Based Methods	Papers III, IV, V, and VII primarily used interviews and limited observation, potentially leading to recall bias or social desirability effects. Short-term ethnographic glimpses were used but no full immersion.	Conduct long-term ethnographic studies and longitudinal shadowing of transformation initiatives to observe tensions, identity shifts, and coordination dynamics as they unfold in real time.
Focus on Organizational Structures over Sociotechnical Dynamics	Papers II, III, IV, VI focused more on formal structures (roles, frameworks) than on how technology (e.g., architecture choices) shapes scaling agility. Papers I, III and IV mention IT architecture briefly but do not deeply analyze it.	Study the interaction between scaling agility and digital infrastructure (e.g., microservices, data platforms). Explore how architectural decisions (centralized vs decentralized) shape autonomy-alignment tensions and organizational pathways.
Underrepresentation of Emotional, Identity, and Cultural Dimensions	Papers VI and VII address role identity, but more from a role conflict perspective. Broader emotional and cultural dynamics remain underexplored across all papers.	Investigate how organizational culture on an organizational level or individual level concepts such as psychological safety shape the success or failure of scaling agility. Apply sociomaterial and sensemaking perspectives to unpack these layers.

7 FUTURE RESEARCH

Building on the identified limitations, the findings of this dissertation should be understood less as definitive answers and more as theoretical propositions that require further empirical validation. Several papers (for instance, Papers IV, VI and VII) have already taken a longitudinal perspective, tracing the evolution of tensions, role identities, and inertia over time. These contributions enrich our understanding of scaling agility as a dynamic and iterative process rather than a static condition. However, the models and propositions developed remain largely untested—both quantitatively and in organizational contexts beyond those examined

here. Future research should therefore aim not only to refine but also to validate these conceptual insights, ensuring their robustness across industries, cultures, and organizational forms.

7.1 Understanding Scaling Agility

The systematic review (Paper I) highlighted fragmentation in scaling agility research and identified several persistent gaps. Despite advances in later chapters, some of these gaps remain unresolved. Three areas stand out: first, the measurement of success remains underdeveloped (part of the governance dimension in Paper I); second, the interface with non-agile units—a persistent practical challenge—has yet to be systematically theorized; and third, the dependence on IT architecture (dependency dimension in Paper I; cf. Uludag et al., 2019) remains insufficiently understood.

Future research should therefore develop measurement models for scaling agility success (cf. Bjarnason et al., 2012; Tsilionis et al., 2022; Olszewska et al., 2016), explore how agile and non-agile structures coexist in hybrid organizations, and examine how architectural and infrastructural choices condition the feasibility of scaling agility. In this regard, testing the Mirroring Hypothesis—that organizational structures tend to reflect system architectures (cf. Conway, 1968; Colfer & Baldwin, 2016) — could provide critical insights into whether scaling agility is enabled or constrained by underlying IT architectures, and whether certain architectural patterns (e.g., microservices vs. enterprise systems) systematically shape agility outcomes.

Similarly, Paper II highlights the diverse loci of digital innovation value, pointing to the need for future studies on how scaling agility influences different types of value creation—financial, strategic, or cultural—across industries. Lastly, while the longitudinal research in this dissertation (Papers IV, VI, and VII) provides a first process view, systematic testing across industries—using both quantitative surveys and comparative qualitative studies—remains an important next step.

7.2 Managing Scaling Agility

The management of scaling agility has been examined through models of organizing tensions (Paper IV), autonomy (Paper V), and role identity change (Papers VI, VII). These contributions already provide a processual perspective, showing how tensions recur, how autonomy mechanisms evolve, and how identities shift during transformation. What is still lacking, however, are confirmatory tests of these propositions in broader empirical settings. For instance, the mechanisms of autonomy and coordination identified in Paper V should be validated quantitatively to assess their performance effects. Similarly, the identity–inertia model proposed in Paper VII requires testing, applied to the same cases or in other industries and cultural contexts to establish its generalizability. A promising methodological avenue here is qualitative comparative analysis. Given that Papers IV, V, and VII develop propositions and Paper III provides design categories, qualitative comparative analysis would allow researchers to compare multiple cases systematically and identify equifinal pathways leading to successful or failed scaling outcomes. This approach would extend the processual insights of the present work by revealing cross-case regularities and alternative causal configurations. Stronger ethnographic elements could further explore how identity dynamics vary across organizational types, while surveys could measure the prevalence and strength of the identified relationships.

7.3 Effects of Scaling Agility

The final set of contributions concerns the effects of scaling agility, particularly toward value creation paths (Paper VIII) and IT–business alignment (Paper IX). While these insights extend alignment and dynamic capability literatures (cf. Luftman et al., 2017; Vial, 2019), they remain exploratory. The IT–Business Alignment Improvement Model, for example, requires empirical validation to assess its applicability across diverse organizational contexts. Likewise, the barriers identified in value creation (complexity trap, resource foundation) should be systematically examined to determine when and how they impede transformation. Future studies could adopt quantitative and mixed-method designs to test whether these propositions hold across industries and geographies, and to uncover context-specific contingencies.

In sum, this dissertation provides models and propositions on how scaling agility is designed, managed, and what effects it produces, but it stops short of testing them systematically. If one were to initiate a new research program on the basis of these findings, a promising direction would be to systematically test the models and propositions developed here across broader contexts and with complementary methods.The next step for research could therefore be twofold: (1) to empirically validate the proposed frameworks through quantitative studies and comparative qualitative research, and (2) to extend inquiry into unresolved areas highlighted in the literature review (Paper I), including governance, success measurement, hybrid interfaces with non-agile units, and the role of IT architecture.

Moreover, the application of organization design theories and models on scaling agility cases in incumbent firms can be a fruitful next endeavor. Organization design research offers several theories that have not been applied to but suggest interaction effects with the structural change building block of digital transformation (Kretschmer & Khashabi, 2020; Vial, 2019). For instance, applying established lenses such as meta-organization design (Gulati et al., 2012) or structural recombination (Albert, 2018) are only two theoretical approaches to consider. Also theories originating from IS literature such as the theory of the contribution of the IT function in organizations (Guillemette & Paré, 2012) could be viable further lenses to study scaling agility.

Such efforts would not only strengthen the empirical robustness of the insights generated here but also broaden their generalizability and increase theoretical diversity and depth. In practical terms, they would help clarify which organizational setups consistently support agility, under what conditions role identity shifts are sustainable, and how structural choices in scaled agile organizations shape long-term digital transformation outcomes. Ultimately, a new wave of research could move the field from exploratory theorizing toward confirmatory, comparative, and intervention-oriented studies, thereby enriching both academic discourse and managerial practice in the domain of scaling agility.

8 Conclusion

The overarching objective of this dissertation has been to advance our understanding of how organizations implement and manage scaling agility in the context of digital transformation. At its core, the study set out to address the guiding question: *What is scaling agility, how can it best be managed, and what are its effects on incumbent organizations' digital transformation?* In pursuing this question, the dissertation examined the phenomenon from multiple angles—its definition and conceptualization, its embedding in digital innovation

research, its design configurations, the organizing tensions that arise during its implementation, the dynamics of team autonomy, the role of professional identities, complemented by a view on inertia during digital transformation, and lastly the broader effects on IT-business alignment and value creation.

Taken together, the findings reveal that scaling agility is neither a straightforward extension of agile practices nor a universally applicable blueprint. Instead, it is a complex and tension-laden process of structural and cultural transformation. The research highlights how scaled-agile organizations embed paradoxes between autonomy and alignment, how team autonomy must be orchestrated through both formal mechanisms and flexible practices, and how professional identities both enable and obstruct transformation. Furthermore, it demonstrates that scaling agility plays a crucial role in shaping IT-business alignment and altering value creation paths, while also being constrained by organizational inertia and contextual barriers such as resource scarcity and structural complexity.

Methodologically, this dissertation contributes by combining systematic literature reviews, taxonomy development, and longitudinal qualitative case studies. This pluralistic approach allowed for both conceptual clarification and empirical depth, producing insights that are simultaneously grounded in organizational practice and connected to broader theoretical debates in information systems, organizational design, and digital transformation.

Theoretically, the work strengthens the conceptual foundation of scaling agility by explicitly linking it to organizational agility and situating it within the broader framework of digital transformation (Vial, 2019; Orlikowski & Scott, 2023). It clarifies scaling agility as a structural and cultural mechanism for enabling agility at scale, but also underscores that it is subject to the "digital undertow" of institutional inertia and identity tensions (Orlikowski & Scott, 2023; Wessel et al., 2021). By integrating perspectives such as organizational design, paradox theory, role identity theory, and the digital transformation process (e.g., Vial, 2019), the dissertation develops a richer understanding of the management levers that shape whether scaling agility succeeds or stalls in incumbent firms.

For practice, the findings offer actionable guidance to managers. They show that scaling agility requires not only structural adjustments such as cross-functional team design and modular organizational setups, but also cultural and identity work to ensure employee engagement and alignment. They emphasize the importance of managing tensions dynamically rather than resolving them once and for all, and they demonstrate how alignment activities and value creation processes can be enhanced through specific practices enabled by scaled-agile organizations.

At the same time, several limitations remain. Despite the longitudinal insights generated in this dissertation, many of the proposed models and propositions still require systematic testing—both through quantitative approaches and across broader industry and geographic contexts. Likewise, open questions remain regarding the measurement of scaling agility's success, the role of IT architecture and governance in enabling or constraining scaling, and the integration with non-agile units in hybrid organizational forms. These limitations point directly to a fertile agenda for future research, which must deepen theoretical models, refine measurement approaches, and expand empirical validation.

All in all, this dissertation shows that scaling agility represents both a promise and a paradox. It holds the

potential to enable incumbent organizations to adapt more swiftly and innovate more effectively, yet it also confronts them with new structural tensions, identity disruptions, and the enduring undertow of institutional inertia. By clarifying its design, management, and effects, this dissertation contributes to a more nuanced and actionable understanding of scaling agility as a cornerstone of digital transformation. For scholars, it advances theoretical debates on organizational agility, digital transformation, and alignment. For practitioners, it provides guidance on navigating the difficult but necessary journey of scaling agility. Ultimately, the findings affirm that scaling agility is not a state to be achieved, but an ongoing process of negotiation, adaptation, and renewal—one that will remain at the heart of organizational transformation in the digital era.

REFERENCES

Adner, R. (2021). *Winning the right game: How to disrupt, defend, and deliver in a changing world*. MIT Press.

Adner, R., & Lieberman, M. (2021). Disruption through complements. *Strategy Science*, *6*(1), 91-109.

Agile Alliance. (2020). *Agile 101*. Retrieved from https://www.agilealliance.org/agile101/

Albert, D. (2018). Organizational module design and architectural inertia: Evidence from structural recombination of business divisions. *Organization Science*, *29*(5), 890-911.

Alvesson, M., & Sandberg, J. (2011). Generating research questions through problematization. *Academy of Management Review, 36*(2), 247–271.

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology, 8*(1), 19–32.

Ashrafi, A., Constantinides, P., Mehandjiev, N., & Thatcher, J. B. (2025). Mobilising new frontiers in digital transformation research: A problematization review. *Information Systems Journal*, *35*(1), 97-139.

Autio, E., Nambisan, S., Thomas, L. D., & Wright, M. (2018). Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems. *Strategic entrepreneurship journal*, *12*(1), 72-95.

Avison, D. E., Cuthbertson, C. H., & Powell, P. (1999). The paradox of information systems: strategic value and low status. *The Journal of Strategic Information Systems*, *8*(4), 419-445.

Avison, D., Jones, J., Powell, P., & Wilson, D. (2004). Using and validating the strategic alignment model. *The Journal of Strategic Information Systems*, *13*(3), 223-246.

Awad, N. F., & Krishnan, M. S. (2006). The personalization privacy paradox: an empirical evaluation of information transparency and the willingness to be profiled online for personalization. *MIS quarterly*, 13-28.

Baham, C., & Hirschheim, R. (2022). Issues, challenges, and a proposed theoretical core of agile software development research. *Information Systems Journal*, *32*(1), 103-129.

Baiyere, A., Avital, M., Berente, N., Henfridsson, O., Hinings, C. B., Tuertscher, P., & Yoo, Y. (2019). Digital" X": In Need of New Theories or Do Prior Theories Suffice?. In *79th Academy of Management Annual Meeting (AOM)* (pp. 9-13).

Barbour, R. S. (2018). Quality of data collection. *The SAGE handbook of qualitative data collection*, 217-230.

Barley, S. R. (1989). Careers, identities, and institutions: The legacy of the Chicago School of Sociology. In M. B. Arthur, D. T. Hall, & B. S. Lawrence (Eds.), *Handbook of career theory* (pp. 41–65). Cambridge University Press.

Barrett, M., & Orlikowski, W. (2021). Scale matters: Doing practice-based studies of contemporary digital phenomena. *MIS Quarterly*, *45*(1), 467-472.

Batra, D., Xia, W., Van der Meer, D. E., & Dutta, K. (2020). Balancing agile and structured development approaches to successfully manage large distributed software projects: A case study from the financial services industry. *Communications of the Association for Information Systems, 46*(1), 11.

Baygi, R. M., Introna, L. D., & Hultin, L. (2021). Everything flows: Studying continuous socio-technological transformation in a fluid and dynamic digital world. *MIS quarterly*, *45*(1), 423-452.

Besson, P., & Rowe, F. (2012). Strategizing information systems-enabled organizational transformation: A transdisciplinary review and new directions. *The Journal of Strategic Information Systems, 21*(2), 103–124.

Bick, S., Spohrer, K., Hoda, R., Scheerer, A., & Heinzl, A. (2018). Coordination challenges in large-scale software development: A case study of planning misalignments in a multi-team agile project. *Information and Software Technology, 100*, 156–169.

Bjarnason, E., Wnuk, K., & Regnell, B. (2012). A case study on benefits and side-effects of agile practices in large-scale requirements engineering. *Empirical Software Engineering, 17*(6), 718–760.

Boell, S. K., & Cecez-Kecmanovic, D. (2015). On being 'systematic' in literature reviews in IS. *Journal of Information Technology*, *30*(2), 161-173.

Breslin, D., & Gatrell, C. (2023). Theorizing through literature reviews: The miner-prospector continuum. *Organizational Research Methods*, *26*(1), 139-167.

Brueller, N. N., & Capron, L. (2021). Acquisitions of startups by incumbents: the 3 Cs of co-specialization from startup inception to post-merger integration. *California Management Review*, *63*(3), 70-93.

Burton, R. M., & Obel, B. (2018). The science of organizational design: fit between structure and coordination. *Journal of Organization Design*, *7*(1), 1-13.

Calnan, M. and Rozen, A. (2019). "ING's Agile Transformation—Teaching an Elephant to Race," *Journal of Creating Value*, 5 (2), 190–209.

Carroll, N., Helfert, M., & Lynn, T. (2023). Scaling agile in large organizations: Challenges, practices, and outcomes. *Journal of Information Technology, 38*(2), 101–120.

Cavaye, A. L. (1996). Case study research: a multi-faceted research approach for IS. *Information systems journal*, *6*(3), 227-242.

Caza, B. B., Vough, H., & Puranik, H. (2018). Identity work in organizations and occupations: Definitions, theories, and pathways forward. *Journal of Organizational Behavior, 39*(7), 889–910.

Chakravarty, A., Grewal, R., & Sambamurthy, V. (2013). Information technology competencies, organizational agility, and firm performance: Enabling and facilitating roles. *Information Systems Research, 24*(4), 976–997.

Charmaz, K. (2014). *Constructing grounded theory* (2nd Ed.). Sage.

Cherni, A. (2010). The role of organizational identity in shaping IT adoption. *Information Systems Journal, 20*(1), 1–28.

Chreim, S., Williams, B. E., & Hinings, C. R. (2007). Interlevel influences on the reconstruction of professional role identity. *Academy of Management Journal, 50*(6), 1515–1539.

Ciriello, R. F., Richter, A., & Schwabe, G. (2019). The paradoxical effects of digital artefacts on innovation practices. *European Journal of Information Systems*, *28*(2), 149-172.

Colfer, L. J., & Baldwin, C. Y. (2016). The mirroring hypothesis: theory, evidence, and exceptions. *Industrial and Corporate Change*, *25*(5), 709-738.

Coltman, T., Tallon, P., Sharma, R., & Queiroz, M. (2015). Strategic IT alignment: Twenty-five years on. *Journal of Information Technology, 30*(2), 91–100.

Conboy, K. (2009). Agility from first principles: Reconstructing the concept of agility in information systems development. *Information systems research*, *20*(3), 329-354.

Conboy, K., & Carroll, N. (2019). Implementing large-scale agile frameworks: Challenges and recommendations. *IEEE Software, 36*(2), 44–50.

Constantinides, P., Henfridsson, O., & Parker, G. G. (2018). Introduction—platforms and infrastructures in the digital age. *Information systems research*, *29*(2), 381-400.

Conway, M. E. (1968). How do committees invent. *Datamation*, *14*(4), 28-31.

Cooper, H. M. (1982). Scientific guidelines for conducting integrative research reviews. *Review of Educational Research, 52*(2), 291–302.

Cooper, H. M. (1988). *Integrating research: A guide for literature reviews* (2nd Ed.). Sage.

Cooper, H. M. (2009). *Research synthesis and meta-analysis: A step-by-step approach* (4th Ed.). Sage.

Corbin, J., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology, 13*(1), 3–21.

Corley, K. G., & Gioia, D. A. (2011). Building theory about theory building: What constitutes a theoretical contribution? *Academy of Management Review, 36*(1), 12–32.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Dahabiyeh, L., & Constantinides, P. (2022). Legitimating digital technologies in industry exchange fields: The case of digital signatures. *Information and Organization*, *32*(1), 100392.

Davenport, T. H., & Westerman, G. (2018). Why so many high-profile digital transformations fail. *Harvard Business Review*, *9*(4), 15.

De Smet, A. (2018). The agile manager. *The McKinsey Quarterly*, *3*, 76-81.

Dikert, K., Paasivaara, M., & Lassenius, C. (2016). Challenges and success factors for large-scale agile transformations: A systematic literature review. *Journal of Systems and Software, 119*, 87–108.

Dingsøyr, T., Moe, N. B., Fægri, T. E., & Seim, E. A. (2019). Exploring software development at the very large-scale: A revelatory case study and research agenda for agile method adaptation. *Empirical Software Engineering, 24*(2), 670–708.

DiMaggio, P. J. (1995). Comments on" What theory is not". *Administrative science quarterly*, *40*(3), 391-397.

Dorobantu, S., Gruber, M., Ravasi, D., & Wellman, N. (2024). The AMJ management research canvas: A tool for conducting and reporting empirical research. *Academy of Management Journal*, *67*(5), 1163-1174.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review, 14*(4), 532–550.

Eisenhardt, K. M. (2021). What is the Eisenhardt Method, really? *Strategic Organization, 19*(1), 147–160.

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal, 50*(1), 25–32.

Felin, T., Foss, N. J., Heimeriks, K. H., & Madsen, T. L. (2012). Microfoundations of routines and capabilities: Individuals, processes, and structure. *Journal of Management Studies, 49*(8), 1351–1374.

Fisher, G., Mayer, K., & Morris, S. (2021). From the editors—Phenomenon-based theorizing. *Academy of Management Review*, *46*(4), 631-639.

Forth, P., Reichert, T., Strube, G., & Schmitz, E. (2020). *It's not a digital transformation without a digital culture*. Boston Consulting Group.

Frey, J., Hund, A., & Beimborn, D. (2021). Scaling Agility: How Organizations Balance Tensions in Scaled-agile Organizations.

Fuchs, C., & Hess, T. (2018). Becoming agile in the digital transformation: The process of a large-scale agile transformation. *Proceedings of the 39th International Conference on Information Systems (ICIS)*, San Francisco, USA.

Gehman, J., Glaser, V. L., Eisenhardt, K. M., Gioia, D., Langley, A., & Corley, K. G. (2018). Finding theory–method fit: A comparison of three qualitative approaches to theory building. *Journal of management inquiry*, *27*(3), 284-300.

Gerow, J. E., Thatcher, J. B., & Grover, V. (2014). Six types of IT-business strategic alignment: An investigation of the constructs and their measurement. *European Journal of Information Systems, 23*(5), 463–478.

Gerster, D., Dremel, C., Brenner, W., & Kelker, P. (2020). How enterprises adopt agile forms of organizational design: a multiple-case study. *ACM sigmis database: the database for advances in information systems*, *51*(1), 84-103.

Gerwin, D., and Moffat, L. (1997). "Withdrawal of Team Autonomy during Concurrent Engineering," *Management Science*, 43(9), 1275–1287.

Gilgun, J. F. (2019). Deductive qualitative analysis and grounded theory: Sensitizing concepts and theory development. *Qualitative Report, 24*(4), 761–774.

Gioia, D. (2021). A systematic methodology for doing qualitative research. *The Journal of Applied Behavioral Science*, *57*(1), 20-29.

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational research methods*, *16*(1), 15-31.

Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018). On the fintech revolution: Interpreting the forces of innovation, disruption, and transformation in financial services. *Journal of management information systems*, *35*(1), 220-265.

Gong, C., & Ribiere, V. (2021). Developing a unified definition of digital transformation. *Technovation*, *102*, 102217.

Gough, D., Thomas, J., & Oliver, S. (2012). Clarifying differences between review designs and methods. *Systematic reviews*, *1*(1), 28.

Gregory, R. W., & Henfridsson, O. (2021). Bridging Art and Science: Phenomenon-Driven Theorizing. *Journal of the Association for Information Systems*, 22(6), 1509-1523.

Gregory, R. W., Keil, M., Muntermann, J., & Mähring, M. (2015). Paradoxes and the nature of ambidexterity in IT transformation programs. *Information Systems Research*, *26*(1), 57-80.

Guillemette, M. G., & Paré, G. (2012). Toward a new theory of the contribution of the IT function in organizations. *MIS Quarterly*, 36(2), 529–551.

Gulati, R., Puranam, P., & Tushman, M. (2012). Meta-organization design: Rethinking design in interorganizational and community contexts. *Strategic management journal*, *33*(6), 571-586.

Hammersley, M. (1987). Some notes on the terms 'validity' and 'reliability'. *British Educational Research Journal, 13*(1), 73–82.

Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of management studies*, *58*(5), 1159-1197.

Haskamp, T., Hund, A., Raabe, J. P., & Uebernickel, F. (2023). The Unfolding of Digital Transformation in Pre-Digital Companies: A Meta-Case Analysis. *Proceedings of the 44th International Conference on Information Systems (ICIS)*, Hyderabad, India.

Henfridsson, O., Nandhakumar, J., Scarbrough, H., & Panourgias, N. S. (2018). Recombination in the open-ended value landscape of digital innovation. *Information and Organization, 28*(2), 89–100.

Horlach, B., Drews, P., Schirmer, I., & Böhmann, T. (2017). Increasing the agility of IT delivery: Five types of bimodal IT organization. *Proceedings of the 50th Hawaii International Conference on System Sciences (HICSS)*.

Ibarra, H. (1999). Provisional selves: Experimenting with image and identity in professional adaptation. *Administrative Science Quarterly, 44*(4), 764–791.

Iden, J., & Bygstad, B. (2025). Sociotechnical micro-foundations for digital transformation. *European Journal of Information Systems*, *34*(2), 367-382.

Iivari, J. 2021. A Paradox Lens to Systems Development Projects: The Case of the Agile Software Development. *Communications of the Association for Information Systems*, 49(1), 1–37.

Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic management journal*, *39*(8), 2255-2276.

Kaganer, E., Gregory, R. W., & Sarker, S. (2023). A process for managing digital transformation: An organizational inertia perspective. *Journal of the Association for Information Systems*, *24*(4), 1005-1030.

Kalenda, M., Hyna, P., & Rossi, B. (2018). Scaling agile in large organizations: Practices, challenges, and success factors. *Journal of Software: Evolution and Process, 30*(10), e1954.

Kane, G. (2019). The technology fallacy: people are the real key to digital transformation. *Research-Technology Management*, *62*(6), 44-49.

Karpovsky, A., & Galliers, R. D. (2015). Aligning in practice: From current cases to a new agenda. *Journal of Information Technology, 30*(2), 136–160.

Kelman, H. C. (2004). Reconciliation as Identity Change: A Social-Psychological Perspective. In Y. Bar-Siman-Tov (Ed.), *From conflict resolution to reconciliation* (pp. 111-124). Oxford University Press.

Kennedy, B. L., & Thornberg, R. (2018). Deduction, induction, and abduction. *The SAGE handbook of qualitative data collection*, 49-64.

Kischelewski, B., & Richter, J. (2020). Implementing large-scale agile-an analysis of challenges and success factors. In *28th European Conference on Information Systems (ECIS)* (p. 176).

Kretschmer, T., & Khashabi, P. (2020). Digital transformation and organization design: An integrated approach. *California management review*, *62*(4), 86-104.

Lange, D., & Pfarrer, M. D. (2017). Editors' comments: Sense and structure—The core building blocks of an AMR article. *Academy of Management Review*, *42*(3), 407-416.

Langley, A., Smallman, C., Tsoukas, H., & Van de Ven, A. H. (2013). Process studies of change in organization and management: Unveiling temporality, activity, and flow. *Academy of Management Journal, 56*(1), 1–13.

Laudan, L. (1978). Progress and its problems: Towards a theory of scientific growth. University of California Press.

Leidner, D. E., & Gregory, R. W. (2024). About theory and theorizing in information systems research. *Journal of the Association for Information Systems, 25*(1), 1–17.

Leidner, D. E., & Tona, O. (2021). A thought-gear model of theorizing from literature. *Journal of the Association for Information Systems*, *22*(4), 874–892.

Levinthal, D. A., & Workiewicz, M. (2018). When two bosses are better than one: Nearly decomposable systems and organizational adaptation. *Organization Science*, *29*(2), 207-224.

Levy, Y., & Ellis, T. J. (2006). A systems approach to conduct an effective literature review in support of information systems research. *Informing Science, 9*, 181–212.

Limaj, E., & Bernroider, E. W. (2022). A taxonomy of scaling agility. *The journal of strategic information systems*, *31*(3), 1–22.

Lindskog, C., & Magnusson, M. (2021). Ambidexterity in Agile software development: a conceptual paper. *Journal of Organizational Effectiveness: People and Performance*, *8*(1), 16-43.

Lohrasbinasab, I., Acharya, P. B., & Colomo-Palacios, R. (2020, July). BizDevOps: a multivocal literature review. In *International Conference on Computational Science and Its Applications* (pp. 698-713). Cham: Springer International Publishing.

Lucas Jr, H. C., & Goh, J. M. (2009). Disruptive technology: How Kodak missed the digital photography revolution. *The Journal of Strategic Information Systems*, *18*(1), 46-55.

Luftman, J., & Brier, T. (1999). Achieving and sustaining business-IT alignment. *California management review*, *42*(1), 109-122.

Luftman, J., Lyytinen, K., & Zvi, T. B. (2017). Enhancing the measurement of information technology (IT) business alignment and its influence on company performance. *Journal of Information Technology*, *32*(1), 26-46.

Lyytinen, K., Yoo, Y., & Boland, R. J. (2016). Digital product innovation within four classes of innovation networks. *Information Systems Journal, 26*(1), 47–75.

Malik, M., Andargoli, A., Clavijo, R. C., & Mikalef, P. (2024). A relational view of how social capital contributes to effective digital transformation outcomes. *The Journal of Strategic Information Systems*, *33*(2), 101837.

March, J. G., & Simon, H. A. (1993). *Organizations* (2nd ed.). Blackwell.

Markus, M. L. (2014). Maybe not the king, but an invaluable subordinate: A commentary on Avison and Malaurent's advocacy of 'Theory Light'IS research. *Journal of Information Technology*, *29*(4), 341-345.

Markus, M. L., & Rowe, F. (2023). The digital transformation conundrum: Labels, definitions, phenomena, and theories. *Journal of the Association for Information Systems*, *24*(2), 328-335.

Mikalsen, M., Moe, N. B., Wong, S. I., & Stray, V. (2021). Agile Information System Development Organizations Transforming to Large-Scale Collaboration. In: *Forty-Second International Conference on Information Systems,* Austin, 2021.

Mintzberg, H. (1979). *The structuring of organizations*. Prentice Hall.

Mirbabaie, M., & Marx, J. (2024). Micro-level dynamics in digital transformation: Understanding work-life role transitions. *Information Systems Journal*, *34*(5), 1810-1832.

Moe, N. B., Aurum, A., & Dybå, T. (2012). Challenges of shared decision-making: A multiple case study of agile software development. *Information and Software Technology*, *54*(8), 853-865.

Monteiro, E., Constantinides, P., Scott, S., Shaikh, M., & Burton-Jones, A. (2022). Qualitative research methods in Information Systems: A call for Phenomen-focused Problematization. *MIS Quarterly*, 46(4).

Mordi, A. and Schoop, M. (2021). "Scaling with an Agile Mindset â•fi A Conceptual Approach to Large-Scale Agile," In: *2021 Americas Conference on Information Systems*.

Mozaffar, H., & Candi, M. (2025). Extending the process frontier of digital transformation: A flow-oriented perspective. *Information Systems Journal*, *35*(2), 720-760.

Mühlburger, M., & Krumay, B. (2024). Towards a context-sensitive conceptualisation of digital transformation. *Journal of Information Technology*, *39*(4), 716-731.

Müller, L., Albrecht, G., Toutaoui, J., Benlian, A., & Cram, W. A. (2024). Navigating role identity tensions — IT project managers' identity work in agile information systems development. *European Journal of Information Systems*, *34*(2), 383-406.

Myers, M. D., & Newman, M. (2007). The qualitative interview in IS research: Examining the craft. *Information and Organization, 17*(1), 2–26.

Nambisan, S., Lyytinen, K., Majchrzak, A. and Song, M. (2017). "Digital Innovation Management: Reinventing Innovation Management Research in a Digital World," *MIS Quarterly*, 41 (1), 223–238.

Nickerson, R. C., Varshney, U., & Muntermann, J. (2013). A method for taxonomy development and its application in information systems. *European Journal of Information Systems, 22*(3), 336–359.

Oberländer, A. M., Karnebogen, P., Rövekamp, P., Röglinger, M., & Leidner, D. E. (2025). Understanding the influence of digital ecosystems on digital transformation: The OCO (orientation, cooperation, orchestration) theory. *Information Systems Journal*, *35*(1), 368-413.

Oberländer, A. M., Röglinger, M., & Rosemann, M. (2021). Digital opportunities for incumbents–A resource-centric perspective. *The Journal of Strategic Information Systems*, *30*(3), 101670.

Olszewska, M., Heidenberg, J., Weijola, M., Mikkonen, K. and Porres, I. (2016). "Quantitatively measuring a large-scale agile transformation," *Journal of Systems and Software,* 117, 258–273.

Orlikowski, W. J., & Scott, S. V. (2023). The digital undertow and institutional displacement: A sociomaterial approach. *Organization Theory*, *4*(2), 1–16.

Paasivaara, M., & Lassenius, C. (2016). Scaling scrum in a large globally distributed organization: A case study. In *2016 IEEE 11th international conference on global software engineering (ICGSE)* (pp. 74-83). IEEE.

Paré, G., Trudel, M. C., Jaana, M., & Kitsiou, S. (2015). Synthesizing information systems knowledge: A typology of literature reviews. *Information & management*, *52*(2), 183-199.

Poole, M. S., & Van de Ven, A. H. (1989). Using paradox to build management and organization theories. *Academy of Management Review, 14*(4), 562–578.

Power, K. (2014). "A Model for Understanding When Scaling Agile Is Appropriate in Large Organizations," In: Torgeir Dingsøyr/Nils Brede Moe/Roberto Tonelli et al. (Eds.). Agile Methods Large-Scale Development,

Refactoring, Testing, and Estimation - *XP 2014 International Workshops*. Cham, Springer, 83–92.

Pries-Heje, J., & Baskerville, R. L. (2021,). Achieving resilience through agility. In *International Conference on Information Systems: Building Sustainability and Resilience with IS: A Call for Action* (p. 2196). ICIS.

Puranam, P., Alexy, O., & Reitzig, M. (2014). What's "new" about new forms of organizing? *Academy of Management Review, 39*(2), 162–180.

Recker, J. (2021). *Scientific research in information systems: A beginner's guide*. Springer.

Rigby, D., Elk, S., & Berez, S. (2020). *Doing agile right: Transformation without chaos*. Harvard Business Press.

Rigby, D. K., Sutherland, J., & Noble, A. (2018). Agile at scale. *Harvard Business Review, 96*(3), 88–96.

Robey, D., & Boudreau, M. C. (1999). Accounting for the contradictory organizational consequences of information technology: Theoretical directions and methodological implications. *Information systems research*, *10*(2), 167-185.

Rowe, F. (2014). What literature review is not: Diversity, boundaries and recommendations. *European Journal of Information Systems, 23*(3), 241–255.

Sabherwal, R., & Chan, Y. E. (2001). Alignment between business and IS strategies: A study of prospectors, analyzers, and defenders. *Information systems research*, *12*(1), 11-33.

Salmela, H., Baiyere, A., Tapanainen, T. and Galliers, R. D. (2022). "Digital Agility: Conceptualizing Agility for the Digital Era," *Journal of the Association for Information Systems* 23 (5), 1080–1101.

Schryen, G. (2013). Revisiting IS business value research: what we already know, what we still need to know, and how we can get there. *European Journal of Information Systems*, *22*(2), 139-169.

Schultze, U., & Avital, M. (2011). Designing interviews to generate rich data for information systems research. *Information and organization*, *21*(1), 1-16.

Sebastian, I. M., Ross, J. W., Beath, C., Mocker, M., Moloney, K. G., & Fonstad, N. O. (2020). How big old companies navigate digital transformation. In *Strategic information management* (pp. 133-150). Routledge.

Sedera, D., Lokuge, S., Grover, V., Sarker, S., & Sarker, S. (2016). Innovating with enterprise systems and digital platforms: A contingent resource-based theory view. *Information & Management*, *53*(3), 366-379.

Shepherd, D. A., & Sutcliffe, K. M. (2011). Inductive top-down theorizing: A source of new theories of organization. *Academy of Management Review, 36*(2), 361–380.

Soh, C., Yeow, A., Goh, Q., & Hansen, R. (2019). Digital transformation: of paradoxical tensions and managerial responses. *Proceedings of the 40th International Conference on Information Systems (ICIS).*

Soh, C., Yeow, A., & Goh, Q. W. (2023). Shaping digital transformation pathways: dynamics of paradoxical tensions and responses. *Journal of the Association for Information Systems*, 24(6), 1594–1617

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Sage.

Strich, F., Mayer, A. S., & Fiedler, M. (2021). What do I do in a world of artificial intelligence? Investigating the impact of substitutive decision-making AI systems on employees' professional role identity. *Journal of the Association for Information Systems*, *22*(2), 9.

Stryker, S., & Serpe, R. T. (1982). Commitment, identity salience, and role behavior: Theory and research example. In W. Ickes & E. S. Knowles (Eds.), *Personality, roles, and social behavior* (pp. 199–218). Springer.

Sveningsson, S., & Alvesson, M. (2003). Managing managerial identities: Organizational fragmentation, discourse and identity struggle. *Human relations*, *56*(10), 1163-1193.

Sytch, M., Wohlgezogen, F., & Zajac, E. J. (2018). Collaborative by design? How matrix organizations see/do alliances. *Organization Science*, *29*(6), 1130-1148.

Tallon, P. P., & Pinsonneault, A. (2011). Competing perspectives on the link between strategic information technology alignment and organizational agility: insights from a mediation model. *MIS quarterly*, 463-486.

Tallon, P. P., Queiroz, M., Coltman, T., & Sharma, R. (2019). Information technology and the search for organizational agility: A systematic review with future research possibilities. *Journal of Strategic Information Systems, 28*(2), 218–237.

Tana, S., Breidbach, C. F., & Burton-Jones, A. (2023). Digital transformation as collective social action. *Journal of the Association for Information Systems*, *24*(6), 1618-1644.

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal, 28*(13), 1319–1350.

Templier, M., & Paré, G. (2015). A framework for guiding and evaluating literature reviews. *Communications of the Association for Information Systems*, *37*(1), 6.

Templier, M., & Paré, G. (2018). Transparency in literature reviews: An assessment of reporting practices across review types and disciplines. *Information & Management, 55*(5), 633–647.

Thomas, L. D., & Ritala, P. (2022). Ecosystem legitimacy emergence: A collective action view. *Journal of Management*, *48*(3), 515-541.

Toutaoui, J., Benlian, A., & Hess, T. (2022). Managing paradoxes in bi-modal information technology functions: A multi-case study. *Information Systems Journal*, *32*(6), 1177-1202.

Tripp, J. F., Riemenschneider, C., & Thatcher, J. B. (2016). Job satisfaction in agile development teams: Agile development as work redesign. *Journal of the Association for Information Systems*, *17*(4), 267 – 307.

Tsilionis, K. and Wautelet, Y. (2022). "A model-driven framework to support strategic agility: Value-added perspective," *Information and Software Technology*, 141.

Tumbas, S., Berente, N., & vom Brocke, J. Born Digital: Growth Trajectories of Entrepreneurial Organizations Spanning Institutional Fields. In *Proceedings of the 38th International Conference on Information Systems*, Seoul, Korea.

Uludag, Ö., Kleehaus, M., Caprano, C., & Matthes, F. (2018). Identifying and structuring challenges in large-scale agile development based on a structured literature review. In *2018 IEEE 22nd international enterprise distributed object computing conference (EDOC)* (pp. 191-197). IEEE.

Uludag, Ö., Nägele, S. and Hauder, M. (2019). "Establishing Architecture Guidelines in Large-Scale Agile Development Through Institutional Pressures: A Single-Case Study," In: *Twenty-fifth Americas Conference on Information Systems*, Cancun, 2019.

Urquhart, C., Lehmann, H., & Myers, M. D. (2010). Putting the 'theory' back into grounded theory: Guidelines for grounded theory studies in information systems. *Information Systems Journal, 20*(4), 357–381.

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems, 28*(2), 118–144.

Viljoen, A., Hein, A., Przybilla, L., Soto Setzke, D., & Krcmar, H. (2022). Striving for Global Optima in Digital Transformation: A Paradox Theory Approach. In *Proceedings of the 42nd International Conference on Information Systems*, Austin, Texas.

Volberda, H. W., Khanagha, S., Baden-Fuller, C., Mihalache, O. R., & Birkinshaw, J. (2021). Strategizing in a digital world: Overcoming cognitive barriers, reconfiguring routines and introducing new organizational forms. *Long Range Planning*, *54*(5), 102110.

Vom Brocke, J., Simons, A., Riemer, K., Niehaves, B., Plattfaut, R., & Cleven, A. (2015). Standing on the shoulders of giants: Challenges and recommendations of literature search in information systems research. *Communications of the association for information systems*, *37*(1), 9.

Wade, M., & Shan, J. (2020). Covid-19 Has Accelerated Digital Transformation, but May Have Made it Harder Not Easier. *MIS Quarterly Executive*, *19*(3).

Wagner, H. T., & Weitzel, T. (2012). How to Achieve Operational Business-IT Alignment: Insights from a Global Aerospace Firm. *MIS Quarterly Executive*, *11*(1).

Warner, K. S. R., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning, 52*(3), 326–349.

Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. *MIS Quarterly, 26*(2), xiii–xxiii.

Welbourne, T. M., & Paterson, T. A. (2017). Advancing a Richer View of Identity at Work: The Role-Based Identity Scale. *Personnel Psychology*, *70*(2), 315–356.

Werder, K., & Maedche, A. (2018). Explaining the emergence of team agility: a complex adaptive systems perspective. *Information Technology & People*, *31*(3), 819-844.

Wessel, L., Baiyere, A., Ologeanu-Taddei, R., Cha, J., & Blegind Jensen, T. (2021). Unpacking the difference between digital transformation and IT-enabled organizational transformation. *Journal of the Association for Information Systems, 22*(1), 102–129.

Whetten, D. A. (1989). What constitutes a theoretical contribution? *Academy of Management Review, 14*(4), 490–495.

Wimelius, H., Mathiassen, L., Holmström, J., & Keil, M. (2021). A paradoxical perspective on technology renewal in digital transformation. *Information systems journal*, *31*(1), 198-225.

Wolfswinkel, J. F., Furtmueller, E., & Wilderom, C. P. M. (2013). Using grounded theory as a method for rigorously reviewing literature. *European Journal of Information Systems, 22*(1), 45–55.

Wrona, T. (2006). Fortschritts-und Gütekriterien im Rahmen qualitativer Sozialforschung. In *Fortschritt in den Wirtschaftswissenschaften: wissenschaftstheoretische Grundlagen und exemplarische Anwendungen* (pp. 189-216). Wiesbaden: DUV.

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Sage.

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage.

Yoo, Y., Henfridsson, O., & Lyytinen, K. (2010). Research commentary—The new organizing logic of digital innovation: An agenda for information systems research. *Information Systems Research, 21*(4), 724–735.

Yoo, Y., Boland, R. J., Lyytinen, K., & Majchrzak, A. (2012). Organizing for innovation in the digitized world. *Organization Science, 23*(5), 1398–1408.

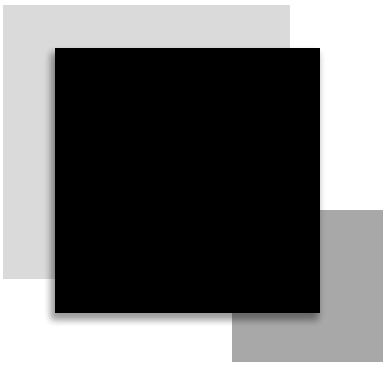
APPENDIX

Table A1. Overview of key terms and their definitions as used in this dissertation.

Key term	Definition	Based on
Scaling agility	"process of diffusing the initial adoption of agile concepts (e.g., principles, methods and practices) to additional organizational units"	Limaj and Bernroider, 2022, p. 1, based on Fuchs & Hess, 2018
Scaled-agile organizations (SAOs)	a novel form of organizational design that aims to improve the speed of product delivery by extensively implementing agile methods	Gerster et al., 2020; Limaj and Bernroider, 2022, p. 1, based on Fuchs & Hess, 2018
Organizational design	"a systematic approach to aligning structures, processes, leadership, culture, people, practices, and metrics to enable organizations to achieve their mission and strategy"	Burton and Obel, 2018, p. 3
Digital transformation	"process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies"	Vial, 2019, p. 121
Organizing tensions	*tensions* are contradictory characteristics within an organization that are plausible alone, but may work against or even contradict each other in combination, *organizing* refers to organizational structuring issues such as collaboration, direction, and empowerment	Putnam et al., 2016, p. 69; Smith and Lewis, 2011
Team autonomy	the discretion in making job-related decisions	Hackman and Oldham, 1980; Klein, 1991
Role identity	the set of meanings one attaches to oneself while occupying a particular role and establishes the interaction between work and identity by influencing employees' self-concepts derived from their work roles	Alvesson et al., 2008; Burke and Tully, 1977; Maurer and London, 2015; Stets & Serpe, 2013
Organizational inertia	profound incapacity of established entities to initiate and execute the internal changes necessary to adapt to evolving external environments	Hannan and Freeman 1984; Rumelt 1995
Value creation path	understood as the "redefinition of business models" within organizations	Vial, 2019
IT–business alignment	the degree to which one component's requirements, goals, and structures match those of the other	Gerow et al., 2015

Table A2. Common roles, descriptions, equivalents in practitioner literature as used in this dissertation.

Role	Description	Equivalents in practitioner literature
Chief product owner	Person responsible for the end-to-end delivery of complete software product groups.	Tribe lead, cluster lead, etc.
Software product group	Higher entity that consists out of several teams that are responsible for a set of value streams.	Tribe, cluster, etc.
Team	Entity including product owner, developer, agile master, etc. responsible for the delivery of a single product.	Squad, cell, etc.
Value stream	A series of processes that create value for the customer, from idea to final product. It includes all work and flow of information needed to transform inputs or ideas into a finished product. The goal is to continuously improve and optimize the flow of value to the customer.	
Coordinating role(s)	Roles that are implemented to coordinate the several levels and entities along levels required for scaling agility.	Release or solution train engineer, etc.
Agile manager	Disciplinary responsible person for a set of people (of a team or higher entities such as software product groups).	
Agile master	Person responsible for adherence to agile manifesto within the team.	Scrum master, kanban master, etc.
Product owner	Role that defines and prioritizes the product's features, and communicates them to the team with the aim to maximize the value of the product and make final decisions on its direction.	
Developer	Person active in a team, jointly with all team members responsible for product delivery.	Software engineer, frontend developer, backend developer, etc.



Chapter I: Understanding Scaling Agility

Paper I

SCALING AGILITY IN INCUMBENT FIRMS: A LITERATURE REVIEW

Julian Frey

University of Bamberg

Frey, J. (2023). Scaling agility in incumbent firms: A literature review. *Proceedings of the 44th International Conference on Information Systems*, Hyderabad, India. https://aisel.aisnet.org/icis2023/isdesign/isdesign/3

Paper II

DEBATING DIGITAL INNOVATION: A LITERATURE REVIEW

Julian Frey

University of Bamberg

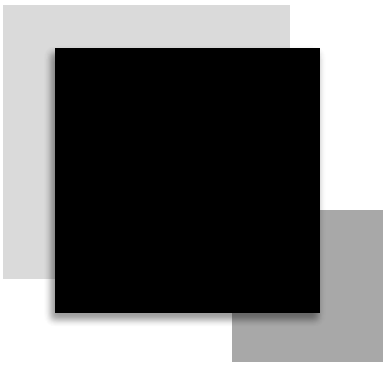
Friedrich Holotiuk

Frankfurt School of Finance & Management

Daniel Beimborn

University of Bamberg

Frey, J., Holotiuk, F., & Beimborn, D. (2020). Debating digital innovation: A literature review. *Proceedings of the 15th International Conference on Wirtschaftsinformatik*, Potsdam, Germany. https://doi.org/10.30844/wi_2020_h3-frey



Chapter II:
Managing Scaling Agility

Paper III

DESIGNING SCALED-AGILE ORGANIZATIONS: A TAXONOMY OF DESIGN CRITERIA

Julian Frey

University of Bamberg

Axel Hund

Neu-Ulm University of Applied Sciences

Daniel Beimborn

University of Bamberg

Frey, J., Hund, A., & Beimborn, D. (2022). Designing scaled-agile organizations: A taxonomy of design criteria. *Proceedings of the 17th International Conference on Wirtschaftsinformatik*, Nuremberg, Germany. https://aisel.aisnet.org/wi2022/ict_responsible_consumption/ict_responsible_consumption/2

Paper IV

SCALING AGILITY FOR DIGITAL TRANSFORMATION: HOW ORGANIZATIONS MANAGE ARISING TENSIONS

Julian Frey

University of Bamberg

Axel Hund

Neu-Ulm University of Applied Sciences

Daniel Beimborn

University of Bamberg

Submitted version

1 INTRODUCTION

Scaling agility, defined as the process of diffusing the initial adoption of agile concepts (e.g., principles, methods, and practices) to a larger organizational setting (Fuchs & Hess, 2018; Limaj & Bernroider, 2022), promises to help incumbent organizations become as flexible and responsive as born-digital companies (Gerster et al., 2020). Incumbent organizations "add[ing] digital technologies and capabilities onto industrial or service business models that are not fundamentally digitally-driven" (Tumbas et al., 2018, p. 2), i.e., initiating largescale digital transformation (DT) programs, spend vast resources to avail themselves of this promise (Aghina et al., 2021; Vial, 2019). In doing so, incumbents face three main challenges: (1) market and customer convergence (Lyytinen et al., 2016), (2) increased speed of product development, and (3) customer expectations of fast reaction times (Tallon et al., 2019). However, their hope that IT will drive the change of organizational structures and outcomes (cf. Wessel et al, 2021) often has disappointing results (Bucy et al., 2016; Carroll et al., 2022). We postulate that scaling agility confronts organizations with organizing tensions – opposing aspects related to organizational structuring issues that are plausible by themselves but contradictory when juxtaposed (Smith & Lewis, 2011). The term "scaling agility" itself seems to embody contradictory tensions, marrying agility (which requires flexibility) with scale (which requires standardization). These tensions challenge the established root metaphor (Alvesson & Sandberg, 2011) that scaling agility is as readily implementable for incumbent, born-traditional organizations as for born-digital organizations, despite their structural differences. The practice of merely replicating the operational procedures of born-digital enterprises has proven challenging, mainly because many born-traditional organizations possess distinctive characteristics that differentiate them from their born-digital counterparts. For example, they often perceive digital technologies as infrastructural (Tumbas et al., 2018) and their organizational structures are often not optimized for digital product architectures (Drechsler et al., 2020). Nevertheless, born-traditional organizations have adopted numerous templates from born-digital companies, including the "Spotify model" and the "Scaled Agile Framework" (SAFe). Although emulating successful solutions is common practice, born-traditional incumbent organizations frequently encounter obstacles and tensions when pursuing scaling agility because their starting points differ. A review of the relevant literature underscores the necessity for further research to answer the question "how and why can conflicting views, both inside organizations and within digital business ecosystems, be reconciled?" (Hanelt et al. 2021, p. 1181). The challenges associated with digital phenomena, both *at* scale but also *with* scale, have not yet been examined in detail (Barrett & Orlikowski, 2021). Recent research also identifies analyzing tensions within the context of organizations' digital endeavors as a promising avenue for future research (Hund et al., 2021) and there is a notable lack of clarity on the various forms of tensions inherent to endeavors aimed at enhancing organizational agility. Viljoen et al. (2023) calls for investigation into the prominence of paradoxical tensions in DT and incorporating diverse analytical perspectives.

How incumbent firms undertake DT can be observed in different DT pathways, the tensions inherent in these pathways, and management responses to them (Soh et al., 2023, Viljoen et al., 2022). However, we lack longitudinal research into the DT pathways, changes in resource allocation or autonomy, and relevant contexts (Mahringer & Danner-Schröder, 2025) that would pave the way for a more nuanced and empirically grounded understanding of DT pathways (Soh et al, 2023). Extant research does not adequately address the nuanced and sometimes subtle distinctions inherent to novel organizational designs (Gerster et al., 2020). As Gerster et al. note, extant research provides only "snapshots of the current state of agile transformation […]

with a high likelihood that adopted agile forms of organizational design will be further modified and enhanced over time" (2020, p. 99). Moreover, Carroll et al. (2023) see a need for models that capture the dynamic nature of the transformation process and weave narratives around stakeholders and sequences of events to explain how transformations evolved over time and emphasize the importance of analyzing how scalability affects structures and related factors in scaling agility.

To fill this research gap and in response the call of Carroll et al. (2022) to improve our understanding of how to overcome specific challenges in sustaining the DT process, we pose the following fundamental research question:

Which organizing tensions are associated with scaling agility over time, and how do they shape digital transformation pathways?

To answer this question, we conduct a multiple case study with six organizations and undertake a deductive qualitative analysis (DQA) (Fife & Gossner, 2024; Gilgun, 2019). We identify three organizing tensions resulting from scaling agility and corresponding managerial responses, and we show how their interaction over time determines the pathways of the organizations' DT (cf. Soh et al., 2023). The next section presents an overview of the relevant literature on organizing tensions, their appearance in DT and scaling agility. We then provide a detailed description of the methodology. Subsequently, we report on our findings, discussing three organizing tensions associated with scaling agility, as well as identified managerial responses. This study develops a pathways model demonstrating the management of organizing tensions in scaling agility over time and establishes four propositions about '*within*-tensions' and '*between*-tensions' and identifying a ricochet effect. In conclusion, we discuss the theoretical implications of our findings and develop an agenda for future research.

2 THEORETICAL BACKGROUND

The following sections outline the theoretical foundations of organizing tensions, summarize extant research into tensions in the context of DT, and introduce the phenomenological setting for this study: scaling agility in incumbent firms.

2.1 ORGANIZING TENSIONS

As defined by Putnam et al. (2016, p. 69) and Smith & Lewis (2011), tensions are contradictory characteristics within an organization that are plausible alone, but may work against or even contradict each other in combination. The term "tension" has been used for several decades to describe contradictory phenomena in the field of organization research (Handy, 1994). In particular, tensions are a phenomenon driven by external influences, including new technologies (Putnam et al., 2016), increasing competition (Smith & Lewis, 2011), and internal influences, such as "flexible yet decentralized structures" (Putnam et al., 2016, p. 66) and more complex organizational processes (Smith & Lewis, 2011). In general, organizing is prone to the emergence of tensions, for instance, between exploration vs. exploitation, collaboration vs. control, or profit vs. social responsibility (Smith & Lewis, 2011).

The theory of tensions is based on the assumption that complexities within systems are inherently associated with tensions. The theory suggests that the ability to navigate contradictory yet interconnected demands concurrently by identifying resolutions has the potential to foster sustainable future success (Lewis, 2000). Smith and Lewis (2011) identify four distinct types of tensions: tensions of belonging (relating to identity and encompassing differences in values, roles, and memberships), learning (the process of discarding the past to create a new future), organizing (organizational structuring issues such as collaboration, direction, and empowerment), and performing (competing goals). In this study, we focus on tensions of organizing because scaling agility constitutes a structural change in the context of DT.

In addition to the aforementioned categories of tensions, scholars have identified four general categories of managerial responses to these tensions (Poole & van de Ven, 1989). Organizations may choose to accept the contradictory phenomena, separate them spatially or temporarily, or synthesize them. In the first category of responses, the consequences of contradictory phenomena are managed. The second and third strategies actively resolve the tensions while leaving the underlying assumptions intact, as they are deemed plausible. The last strategy (synthesizing) assumes conceptual limitations in understanding the tensions and proposes the introduction of new concepts or perspectives to overcome them. Defensive responses are defined as short-term solutions based on spatial and temporal splitting (cf. Poole & van de Ven, 1989) while receptive responses are defined as long-term responses based on attending to both poles of the tension (Smith & Lewis, 2011; Soh et al., 2019).

2.2 Organizing Tensions in Digital Transformation Research

The tensions perspective has gained quite some traction in the field of information systems (IS) research (Schad et al., 2016). IS researchers have identified tensions in various contexts, including the role of IT in organizational change (promoter vs. impediment) (Robey & Boudreau, 1999), online consumer profiling (privacy vs. personalization) (Avison et al., 1999), and IT management (strategic value vs. low status) (Awad & Krishnan, 2006). In the context of DT, tensions have been analyzed in digital innovation practices (Ciriello et al., 2019), in IT transformation programs (Gregory et al., 2015), in the renewal of digital platforms and infrastructures (Wimelius et al., 2021), and in bimodal IT settings (Toutaoui et al., 2022). Tensions have also been analyzed in the context of agile software development and methods. Lindskog and Magnusson (2021) address the ambidexterity tension of agile software development (i.e., exploitation vs. exploration) while Iivari (2021) identifies tensions of priority, structure, and execution.

Prior research has examined the drivers contributing to DT tensions (Viljoen et al., 2022). Tension drivers fall into the following basic categories: plurality, scarcity, change (Smith & Lewis, 2011), as well as interpretative flexibility, intangibility, and data ownership and privacy (Viljoen et al., 2022).

In the context of DT, receptive responses for tensions may include integrating, splitting, pretending and avoiding (Soh et al., 2023; Viljoen et al., 2022; Wimelius et al., 2021; Smith & Lewis, 2011). While defensive responses lead to stalled DT efforts and exacerbate some tensions, receptive responses enable DT and mitigate salient tensions (Soh et al., 2019; Soh et al., 2023). This study focuses on receptive responses. Receptive responses can be broadly categorized regarding how they "localize" the solution to the tension: *both-and responses* embrace the dual polarity of the tension and try to cater to both poles at the same time, *either-or*

responses focus on strengethening one pole over the other by either supression of one pole or attempts to synthesize one pole with the other (Soh et al., 2023).

2.3 Scaling Agility in Incumbent Organizations

Scaling agility is defined as the process of diffusing the initial adoption of agile concepts (e.g., principles, methods, and practices) to a larger organizational setting (Fuchs & Hess, 2018; Limaj & Bernroider, 2022), resulting in organizational structures called scaled-agile organizations (SAOs) (Frey et al., 2023). Scaling agility involves iterative, incremental development and continuous adaptation to changing requirements, fostering close collaboration and customer-centricity (Baham & Hirschheim, 2022). Prior research has investigated scaling agility through multiple theoretical lenses and in various empirical contexts. Dikert et al (2016) emphasize the necessity to coordinate among teams in the scaling process of agile product development. However, their analysis focuses exclusively on IT organizations and excludes the complete merger of teams from the business, IT development, and IT operations units (BizDevOps) to form permanent teams with end-to-end product responsibility that takes place in SAOs, highlighting the challenges and success factors for comprehensive agile transformations. Scholars have identified that routines and interface design shape interdependencies in agile settings, where time pressure can turn sequential into reciprocal dependencies and resource harmonization may unintentionally increase complexity (Mahringer & Danner-Schröder, 2025). At the individual level, specific roles within scaling agility have been explored, such as the role of architects (Uludag & Matthes, 2020), or product owners (Bishop et al., 2020). Research has also been conducted into the optimal methods for coordinating and communicating within teams and across team and department boundaries (Dikert et al., 2016; Kalenda et al., 2018). In particular, Kalenda et al. (2018) provide a summary of the challenges and success factors associated with the implementation of agile methodologies. However, their focus is on software development departments within IT units. Bick et al. (2018) examine the role of dependency awareness in the scaling of agile enterprises, focusing on its organizational implications. Other studies address coordination in the context of operational release planning (Heikkila et al., 2015) and requirements prioritization (La Rojas & Macias, 2019), requirements communication (Pernstal et al., 2015), and requirements engineering challenges (Kasauli et al., 2021). However, thus far, research has not taken a tensions perspective on scaling agility, despite promising preliminary evidence. The role of the product owner in facilitating collaboration and resolving conflicts within and between teams through negotiation, coordination, and advocacy is emphasized by Shastri et al. (2021). Similarly, the involvement of a broader range of stakeholders has been found to increase the likelihood of conflicting requirements and interpersonal tensions (Mikalsen et al., 2021). While these sources indicate the potential for tensions within scaling agility, no studies have focused on these organizing tensions and attempts to reveal receptive responses. Scaling agility has been conceptualized as a “wicked problem” (Roschnik & Missionier, 2024), highlighting the challenging nature of the phenomenon. In contrast to complex problems, wicked problems are characterized by a lack in understanding of the underlying issues of the problem (Roschnik & Missionier, 2024) emphasizing the need for research aiming to better understand the underlying processes of scaling agility.

As with the existing tensions between formal strategic planning processes and opportunistic strategic agility (Weber & Tarba, 2014), and in line with the general ambivalent nature of innovative cultures (Pisano, 2019), scaling agility has the potential to create tensions that require attention. A tensions perspective is thus particularly well-suited, as it helps to elucidate and make sense of the ambivalent practices enabled by digital

artefacts (Ciriello et al., 2019, p. 3). Investigating paradoxical tensions in DT has thus been identified as a fruitful avenue for further research (Viljoen et al., 2023).

3 METHODOLOGY

The organizational structures underlying scaling agility are in a state of constant emergence and transformation (Levina, 2021), which increases the likelihood of tensions arising as industrial and digital characteristics are juxtaposed. Investigating these tensions requires critical qualitative analysis, enabling a phenomenon-driven approach to uncover challenges in seemingly successful DTs (Monteiro et al., 2022). Our research aims to enhance understanding of tension management mechanisms through an observational research approach, which identifies structures in real-world processes (Yin, 2014). When structures align with existing research, we apply a deductive approach; when discrepancies arise, we use an inductive approach to explain deviations.

To achieve this, we employ a case study approach (Eisenhardt, 2021; Yin, 2014) using deductive qualitative analysis (DQA; Fife & Gossner, 2024; Gilgun, 2019). The exploratory case study design (Eisenhardt, 2021; Myers & Newman, 2007) examines tensions and receptive responses across different organizational settings, following a common process design to analyze a shared phenomenon (Eisenhardt, 2021). Each case serves as an independent test of observed tensions and responses, facilitating cross-case pattern analysis (Corbin & Strauss, 1990; Eisenhardt, 1989; Yin, 2014). We focus on organizational designs applying distinct scaling agility principles, as outlined in Table 1.

Table 1. Design principles of scaling agility in organizations

Design principle	Description	Derived from
Decentralization	Decentralized teams with a high degree of autonomy and product responsibility for a dedicated digital product or product part.	Dikert et al. (2016), Paasivaara et al. (2018)
Interdisciplinarity	Interdisciplinary/cross-functional teams with product and IT experts, so-called BizDevOps teams.	Gervasi et al. (2020), Lohrasbinasab et al. (2020)
Application of agile concepts (e.g., principles and methods)	Routine application of agile working methods and consensus-based coordination mechanisms in and especially between teams and larger parts of the organization.	Gerster et al. (2020), Paasivaara et al. (2018)
Permanence	The previous three criteria apply permanently, i.e., the teams adopt a product focus by being responsible for development, (functional) operation, and further development (so-called BizDevOps teams).	Gerster et al. (2020)

3.1 DATA COLLECTION

Table 2. Data types

Data type	Details		Contribution to analysis
Interviews	63 Interviews • With various roles • Across six cases and 26 months Overall 50hrs+ of recorded and transcribed data	Participants included digital transformation roles, development team members, product owners (PO), scrum masters (SM), executive personnel, board members and further coordinating roles.	The objective was to gain a deeper comprehension of the digital transformation processes, how the implementation of scaling agility as a structural change is implemented, the impact of such a transformation on the structural composition of teams and units, the emergence of opposing phenomena (i.e., tensions) and the means of their resolution over time.
Documentation	Analysis of secondary public and internal data (such as company reports, internal presentations, magazine articles, databases).		This allowed us to triangulate the insights from the interviews with external data, thereby validating statements made by the interviewees.
Meeting observations	Two week-long on-site visits at TaxCo, including participation in over 20 internal meetings – from daily team meetings to more strategic meetings covering employee survey results and strategies for the further organizational development.		The in-depth immersion enabled us to gain a deeper understanding of the reality of digital transformation, including its structural changes, challenges, and effects on teams and individuals.

We employed three data collection methods (see Table 2): (1) three rounds of semi-structured interviews over 26 months, (2) analysis of secondary public and internal data, including company reports, presentations, and articles, and (3) on-site visits to a case company, involving immersive participation in 20 internal meetings.

A total of 63 semi-structured interviews were conducted across 6 organizations of different sizes and industry backgrounds that introduced scaling agility by implementing a SAO: MachineCo, BankCo, NationalCo, EuroCo, TaxCo and InsureCo (Table 3). We captured diverse perspectives from product owners, scrum masters, developers, analysts, release train engineers, transformation managers, and senior managers. Our interviews explored topics such as organizational design, scaling agility, stakeholder relationships, role changes, coordination, and impact on organizational goals. Structured questions helped compare cases (Table 2).

Table 3. Case study overview

Company	Company size (#FTEs)	Industry	Number of interviews (n = 63)	Roles of interviewees
MachineCo	~15,000	Manufacturing	7	TL, WSO, CPO, PO, AM, Dev
BankCo	~1,000	Financial services	6	CXO, PO, BA, AM, WFO
NationalCo	~150,000	Telecommunications	14	TL, CXO, WSO, CPO, PO, BA, AM, WFO, CR
EuroCo	~50,000	Financial services	13	TL, CPO, PO, AM, CR
TaxCo	~10,000	Software	16	TL, CXO, WSO, CPO, PO, Dev, BA, AM, WFO
InsureCo	~10,000	Insurance	8	TL, WSO, CPO, PO, AM
TL – Transformation Lead (person responsible for organizational transformation), WSO – Workstream Owner, CPO – Chief Product Owner, PO – Product Owner, AM – Agile Manager with disciplinary role (as chapter lead or agile manager) or with no disciplinary role (as agile coach), WFO – Workforce Owner, Dev – Developer (e.g., frontend, backend) BA – Business Analyst, CXO – Management Board member, CR – Coordination Role (such as architects, release train engineers, solution train engineers)				

We collected data in three phases: pilot, main, and confirmation (see Figure 1). The pilot phase at MachineCo and BankCo helped refine theoretical sampling, identify key roles, and determine relevant scaling agility contexts (e.g., company size, industry, agile frameworks, and transformation triggers). The main phase involved selecting four additional cases based on pilot findings, with all interviews conducted online, recorded, and transcribed. The confirmation phase, conducted twelve months later, revisited a subset of participants to validate findings and track changes in tensions and receptive responses over time.

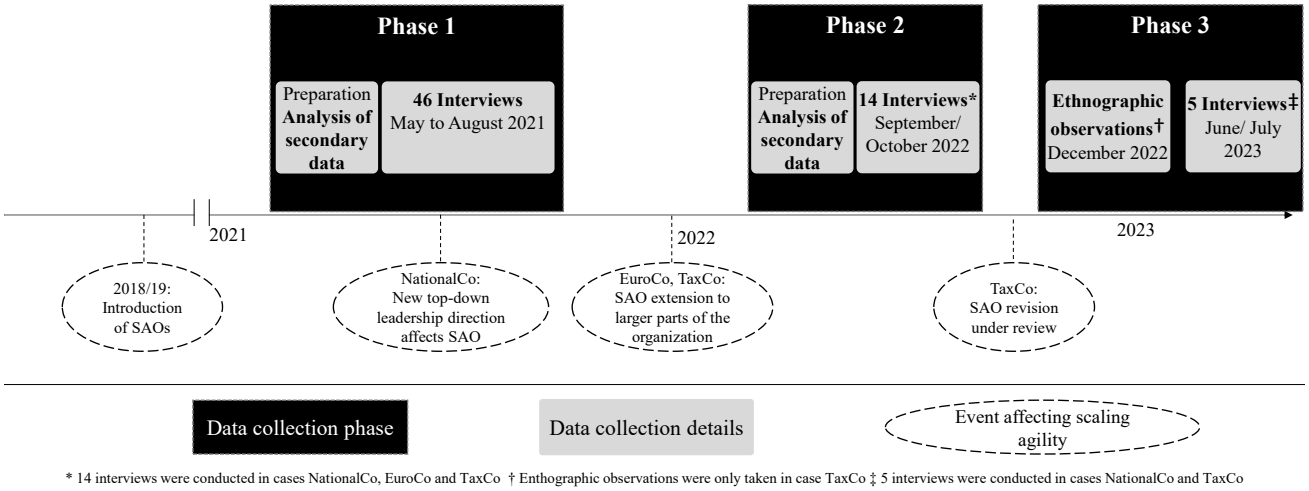


Figure 1. Data collection overview

3.2 Data Analysis

We applied deductive qualitative analysis (DQA) (Fife & Gossner, 2024; Gilgun, 2019) anchored in grounded theory, with purposive sampling, to analyze the tensions and refine the theoretical framework for DT pathways (cf. Soh et al., 2023). DQA combines deductive and inductive coding, following the inductive approach of grounded theory (Charmaz, 2014; Gilgun, 2019) and consists of three phases, which we applied as follows.

In the initial phase, we employed deductive coding to substantiate the organizing tensions and receptive responses model (Soh et al., 2023). We coded data based on predefined definitions of tensions and responses, confirming ample evidence of these tensions in scaling agility. In the middle phase, we expanded the evidence using inductive coding, focusing on how responses to tensions evolve over time. This process identified three organizing tensions and corresponding receptive responses, as described in the findings.

In the final phase, we analyzed connections between tensions and responses over time, leading to the *Pathways of organizing tensions and between-tensions in scaling agility* (Figure 2 in subsection 5.1). Using cross-case replication (Langley et al., 2013), we identified recurring temporal patterns, testing and refining theoretical insights across different contexts.

The coding process was iterative, evolving alongside data collection. As new interviews were added, core concepts and coding categories were continuously refined. Secondary data, including internal documents and presentations, were screened and integrated into the analysis. The multi-level coding system enhanced the structure of the data, enabling a precise identification of organizing tensions and receptive responses.

4 Findings

This section presents the study's findings, highlighting how organizing tensions emerge from competing designs and processes in complex systems (Soh et al., 2023). The fundamental competition between autonomy and alignment in scaling agility manifests in three key tensions: structural autonomy vs. strategic alignment, operational autonomy vs. process alignment, and decision-making autonomy vs. leadership alignment. Structural autonomy concerns who sets the overall direction at an organizational level, operational autonomy relates to how work is executed while maintaining efficiency, and decision-making autonomy focuses on who has the authority to make key decisions.

We first examine how these tensions create misalignment in scaling agility and show which receptive, both-and responses can be applied to balance them successfully. We then make use of our longitudinal data collection and develop a processual pathway perspective, comparing how organizations adapt to these tensions over time and how a ricochet effect influences tension management.

4.1 Structural Autonomy vs. Strategic Alignment

A first particularly pronounced tension on a structural level focusing on the juxtaposed phenomena of autonomy and alignment arises from *scaling* agility and manifests in four dimensions. The following sections outline these and how they challenge scaling agility.

4.1.1 Redundancies vs. Uniform Customer Experience

One dimension of this tension is the trade-off between accepting redundancies and ensuring a uniform customer experience. Structural autonomy allows teams to operate independently, often leading to overlapping efforts, which contradicts the goal of aligned, efficiently managed operations. An agile master from InsureCo describes this challenge:

> *Real agile work, autonomous teams, naturally thrives on the fact that you say you accept redundancies. You accept that certain things are done in different places. But of course, there is also a desire to say, for example, that we somehow want a uniform customer experience. And you also want to bundle and cross-sell and so on. (Agile master, InsureCo)*

Similarly, a chief product owner (CPO) from TaxCo explains that dependencies between services force collaboration, despite teams striving for independent operations:

> *So, we collaborate with other teams, and we have to, because the services have dependencies or interfaces with each other. At the same time, we try to be able to work as independently as possible. Every request to another team has again potential to develop layovers. Meaning we work together, yet we try to work with everyone as little as possible. (CPO, TaxCo)*

This tension is particularly evident in large-scale implementations, where structural autonomy increases coordination costs. A CPO from NationalCo highlights this in the context of a Salesforce integration:

> *We have an insane number of requirements for this application. We already have three teams. And we just say to the outside world that we don't have a budget problem at this point, because it's very easy to say: yes, do you need – what if you had a million more in budget? Then we just say: the coordination effort would increase so enormously among the teams, because we ultimately work on the same objects that it would eat up the added value again. (CPO, NationalCo)*

4.1.2 Structural Autonomy and its Impact on Innovation

Another dimension of this tension is the impact of structural autonomy on innovation. While agile structures aim to foster disruptive innovation, the focus often shifts toward incremental improvements of existing products rather than pursuing breakthrough innovations. A CPO from TaxCo explains how the current structure limits more radical innovation:

> *And real innovation happens more on a functional level in the existing products. We are the market leader in many areas, and that is actually our way of innovating. Of course, it would also be nice to have a completely new product and say: Hey, that was a great innovation. (CPO, TaxCo)*

At the same time, excessive autonomy within teams can lead to resistance to necessary changes. A CPO from EuroCo describes how some teams misuse autonomy to assert independence rather than embrace agility:

> *And what has happened here is that there's a big problem when you define the product owner role in this way. Such people [guiding a team] see it as being the CEO of their own company or department and then they try to find ways to assert their independence and autonomy. This can lead to conflicts and misunderstandings. (CPO, EuroCo)*

Instead of questioning and improving structures, the CPO of EuroCo finds that some teams use their autonomy to resist change:

> *So the freedom that now comes with the keyword agility. It will not be in the sense of: Let's question everything creatively, but to a considerable extent in a preservation of the status quo. And you have to discover and break this up. (CPO, EuroCo)*

Thus, while structural autonomy is meant to foster agility and innovation, it can also result in teams focusing more on maintaining control than on adapting to strategic shifts.

4.1.3 Dependency on Experts and Knowledge Silos

A further dimension of this tension is the reliance on specialized experts, which can create bottlenecks in scaling agility. Ideally, cross-functional teams would contain all necessary expertise, but in practice, scarcity of expert knowledge forces teams to depend on a few individuals. A CPO from TaxCo describes this challenge:

> *We do have a high level of expert knowhow in some cases, and that is perhaps another important point, including in the team, transferring more knowledge to the team. So we experience again and again that we are dependent on one or two colleagues. (CPO, TaxCo)*

Such dependencies lead to delivery delays, as teams must adjust their timelines to expert availability. The same CPO from TaxCo illustrates how this can delay projects:

> *We need to postpone delivery by another two or three weeks because this particular colleague is not available at the moment. That always makes things difficult at the moment. (CPO, TaxCo)*

The core challenge in this dimension is that teams must balance structural autonomy with the need to access expert knowledge, which is not always available when required. This creates systemic bottlenecks, as teams that lack in-house expertise are forced to rely on external experts whose availability is limited.

A related structural issue is the formation of knowledge silos within teams, where expertise is not shared across groups, leading to potential risks if key individuals leave. An agile master from DigiCo explains how teams become overly reliant on specialized knowledge:

> *But nonetheless, within the team we always have a bit of, I always call it, a bit of insular knowledge, because everyone has their own specialties. At the moment, one is more concerned with revenue-less accounts, for example, while the other is more concerned with unstructured data or legitimation, shared services. This is always a question of affinity. (Agile Master, DigiCo)*

Rather than fostering knowledge distribution, teams tend to reinforce specialization, limiting collaboration:

> *But the team also found this very disturbing at some point, because we were building up more and more insular knowledge and everyone either worked together in pairs or even alone on their own because the other couldn't help anyway because the expertise was lacking. (Agile Master, DigiCo)*

While cross-functional teams are meant to ensure flexibility and reduce dependencies, the reality is that expertise is often concentrated within specific individuals, reinforcing knowledge silos instead of promoting shared learning. This stands in contrast to more traditional structures, where a dedicated pool of experts could provide redundancy and ensure greater availability security.

4.1.4 Stability vs. Flexibility in Agile Team Structures

A final dimension of this tension is the conflict between maintaining stable agile teams and adapting to shifting business priorities. Agile teams function best when they remain stable over time, but large organizations often reallocate personnel as priorities change. A CPO from InsureCo describes how agile teams cannot simply scale down incrementally: “If you have financed an agile team, with certain people in it and roles and backlog, then you can’t just say, ‘Now do 20% less.’ Because 20% less means: Who will leave the team?”

Corporate cost-cutting decisions often lead to the removal of external freelancers, who are often critical in IT progress. A scrum master from InsureCo highlights leadership’s reluctance to relinquish resource control: “There’s still power and influence over available capacities, and to simply hand them over completely… I think that’s hard to think about.”

Similarly, NationalCo adapts team size dynamically by shifting developers between projects:

> *That means, we still need people to take care of it, but we no longer need so many developers. Then we take people out of there over time, because we can’t even realize that much new marginal value at that point anymore somehow, but we then prefer to take the people and put them to another unit, where we have other issues in front of us that generate much more value for the company. (CPO, NationalCo)*

While teams need stability to function effectively, they also require adaptability to meet shifting business demands. A chief agile master from TaxCo describes this ongoing balancing act:

> *A continuous challenge is this software product team staffing. A software product group should be composed in a way that it is as self-sufficient as possible and can be autonomously responsible for a part of the product, which of course leads to what is logical, moving forward and thinking in constantly changing ways. (Chief Agile Master, TaxCo)*

Although organizations "try to maintain the teams in their size as long as they generate value" (Co-tribe lead, NationalCo), this is often challenged as adjustments of the team assignments become necessary over time because of changes in the environment. This is also reiterated by one of InsureCo's scrum masters:

> *And although we actually believe in fixed teams and don't want to send people back and forth all the time, it can make sense in individual cases or especially now in the initial phase, when you're looking for and finding each other, to tune in again. That gives us room to manoeuvre and also to constantly look at: Where are we? How far along are we and how does that fit together and how do we prioritize each other? (Scrum Master, InsureCo)*

At the same time, leadership remains reluctant to dissolve teams entirely. A scrum master from InsureCo explains how capacity ownership remains a political issue:

> *Although we are all totally agile, and our board in particular is very agile, no one voluntarily gives up capacity. This simply means saying: Well, we're going to dissolve your department and distribute every task cheerfully into various tribes. You will then only be virtually responsible for keeping the machine running. Our IT board will probably find that unfunny. So there's still power and influence over available capacities, and to simply hand them over completely, to say they're no longer mine, I won't have access to them anymore – I think that's hard to think about. (Scrum Master, InsureCo)*

4.2 Responses to the Structural Autonomy Tension

Five key responses help mitigate the tension between structural autonomy and strategic alignment in SAOs.

4.2.1 Implementing Structured Roadmaps and Sprint Plans

One response is to implement structured roadmaps and sprint plans, ensuring that long-term strategic goals translate into actionable tasks. The challenge is to balance agile flexibility with avoiding excessive top-down control while still accommodating short-term changes. A product owner from NationalCo highlights the effectiveness of structured planning: "Overall, we do longer-term planning in form of a roadmap. […] Nonetheless, we conduct individual sprint plans on the team level, to track our short-term progress."

To maintain agility, organizations refine planning formats, shifting from lengthy discussions to more focused sessions. A product owner from BankCo describes this transition:

> *We have countermeasures to really find meaningful formats on a scaled level, how to do the planning and prioritization. […] In the meantime, it has become a two-hour event where you only discuss the absolutely biggest topics and for the rest you just trust that people will talk to each other briefly. (Product owner, BankCo)*

By structuring planning cycles while allowing for adaptability, organizations strike a balance between strategic direction and operational flexibility.

4.2.2 Institutionalizing Routine Mechanisms for Alignment

Another response is the introduction of routine mechanisms such as quarterly business reviews, SAFe-related frameworks (cascades of epics, features, and stories), and frequent alignment meetings.

A challenge in scaling agility is the risk of merging cross-functional teams without redundancy, where the failure of a single role can jeopardize delivery. To mitigate this, organizations increase communication frequency and introduce structured shadowing systems. A product owner from TaxCo explains how communication and pairing strategies reduce risks: “But all of my expectations were exceeded. By communicating so much, by pairing so much, actually many of the failures we’ve had can be resolved now.”

Additionally, voluntary communities of practice, such as guilds, facilitate knowledge sharing. A product owner from TaxCo highlights their impact: “Such a guild naturally helps stay up to date on these topics as well.” These mechanisms enhance coordination across teams, reduce dependencies, and reinforce agile principles without compromising strategic coherence.

4.2.3 Reducing Dependency Through Tandems and Knowledge Sharing

To prevent teams from becoming reliant on a single expert, organizations implement tandem strategies and formalized knowledge-sharing sessions. A CPO from TaxCo explains this approach: “We are also trying to drive a strategy that at least knowledge can no longer be dependent on one person, but that we always have tandems, up to and including distributed knowledge in the team.”

Similarly, formalized sharing sessions help prevent knowledge silos. A BankCo agile master describes their role in maintaining transparency: “We [have] now simply set up more frequent mediation meetings in the sense of a sprint review, for example, where we simply present what we have done.”

In addition to structured sharing, organizations emphasize interpersonal skills to strengthen team dynamics. A release train engineer from NationalCo describes the growing importance of emotional intelligence: “I started taking non-violent communication courses, empathy courses, learning conflict resolution methods, because the interpersonal relationship has become very important.”

4.2.4 Strengthening Value Streams for Better Alignment

Setting up autonomous value streams helps balance independence with organizational alignment. A CPO from TaxCo describes how this approach reduced management overhead:

> *We have totally emancipated our value streams over time. Each value stream now makes its own product increment planning. And that was good, and it was also important, because we used to have a lot of discussions about content in the overarching management team. At some point, we realized that we couldn't manage that anymore, because it was too much, and we had to emancipate ourselves. It was an important, right and good step. (CPO, TaxCo)*

To harmonize imbalances, some organizations coordinate rescaling resources at higher organizational levels. An agile manager from InsureCo explains:

> *Because many of the requirements that our IT teams get come from ourselves, come from our own tribe. Of course, we are more flexible to say that we prioritize internally, we discuss this internally in our leadership round. (Agile Manager, InsureCo)*

By strengthening value streams and higher-level coordination, organizations improve alignment without undermining autonomy.

4.2.5 Allowing Software Product Groups1 to Scale Teams Flexibly

Some companies allow tribes to implement additional teams at short notice without requiring approval, using an extra budget for flexible reprioritization (Cluster lead, NationalCo). This increases adaptability while preserving strategic direction. Organizations also observe that stable teams improve long-term success. A co-tribe lead from NationalCo emphasizes this: "Where we have stability in the teams, we also find that they really do get better successively over time. So there is already such an element of continuous improvement going on more clearly." Additionally, role specialization enhances efficiency, as a product owner from TaxCo notes: "The more focused a person is on a task, the better they will be at completing it."

These five responses illustrate how organizations maintain structural autonomy while ensuring strategic alignment, allowing agility to scale effectively. Table 4 summarizes the tension dimensions and respective receptive responses that are applied to manage the tension successfully.

Table 4. Structural autonomy tension dimensions and responses

Structural autonomy tension dimension	Structural autonomy tension receptive response
Redundancies vs. uniform customer experience.	Implementing structured roadmaps and sprint plans
Structural autonomy and its impact on innovation	Institutionalizing routine mechanisms for alignment
Dependency on experts and knowledge silos	Reducing dependency through tandems and knowledge sharing
Stability vs. flexibility in agile team structures	Strengthening value streams for better alignment
	Allowing tribes to scale teams flexibly

[1] For details about distinct terminology used in scaling agility cases and how we generalize terms used in practice, please refer to Appendix B.

4.3 Operational Autonomy vs. Process Alignment

The tension between processual autonomy and alignment in SAOs arises as teams seek operational flexibility while ensuring structured process coordination. The following five dimensions highlight key challenges organizations face when balancing these opposing needs.

4.3.1 Independent Workflows vs. Cross-Team Integration

One challenge is the difficulty of integrating independent teams into organization-wide processes, particularly when developing products across multiple workstreams. A scrum master from TaxCo describes this issue: “This process cross-section that we need contradicts the autonomous deliverability of products.”

While teams benefit from shaping their own workflows, customers and external partners expect standardized processes: “They do not consider which process step of which TaxCo product is represented.” This misalignment slows execution, as aligning processes takes additional coordination time, the scrum master continues that “we are not yet achieving the speed and consistency we envision.” This dimension highlights how decentralized work can accelerate product delivery but complicates cross-team integration.

4.3.2 Independent Deployment vs. Release Synchronization

Another challenge arises from balancing frequent independent deployments with synchronized release cycles. A release train engineer from NationalCo recounts her team’s struggle:

> *‘Dear colleagues, we are better off if we can deploy independently and deploy every day if we want to’. Yes, they look at me and say: ‘you are right’. But I’m stuck in a release container. I have to deliver that in three months first and then deliver the whole thing in sync with five other areas. So that’s a huge challenge. (Release train engineer, NationalCo)*

Although teams aim for continuous deployment, broader release coordination limits their ability to act independently:

> *Our teams are independent. First of all, that’s very important. That they can get out of a release container and then deploy when they want and even more frequently. But even there, after three years of being a release train engineer, I’m somewhere at the end where I say: Okay, I have to accept these release containers. There is no other way yet. (Release train engineer, NationalCo)*

This demonstrates how processual autonomy enables agility, but release constraints hinder deployment flexibility.

4.3.3 Application-Based Silos vs. Cross-Functional Collaboration

A further challenge is structuring teams around applications rather than broader business needs. A CPO from NationalCo describes how over-specialization limits collaboration: “We are making the mistake of structuring

teams too much around applications." Instead of aligning around business functions that span multiple applications, current structures create isolated silos: "For me, cross-functional teams mean that a team handles business-related content that needs to be implemented across multiple applications. We are not doing that at all." Merging teams based on technology similarities would improve alignment: "It would be really valuable to merge [teams] if the technology is similar." This suggests that expanding cross-functional teams beyond individual applications can balance specialization with broader process alignment.

4.3.4 Role Clarity vs. Cross-Functional Team Dynamics

The plurality of parallel processes in scaling agility creates challenges in role clarity. A release train engineer from EuroCo highlights the benefits of cross-functional collaboration, stating that "it is good that different competencies are bundled together and that there are different perspectives in the team because there are different people." However, in early stages, unclear roles lead to inefficiencies: "At the beginning, it was difficult to understand whether they should talk to the Scrum Master or the product owner."

4.3.5 Knowledge Transfer vs. Workflow Continuity

A final dimension is ensuring knowledge retention in dynamic, cross-functional teams. A CPO from TaxCo describes the issue of frequent personnel changes: "Colleagues leave their original organizational units (i.e., teams or departments), go to other areas, or retire, or new colleagues join them, and then you also have this constant transfer of knowledge."

While this flexibility enables collaboration, it disrupts workflow stability, requiring continuous knowledge transfer: "You have to make sure that the domain knowledge of one person is transferred to the next."

When knowledge retention is insufficient, operational efficiency suffers: "This, in turn, has a negative impact on throughput times." These findings show that scaling agility enhances flexibility but requires strong knowledge-sharing mechanisms to maintain efficiency. Knowledge retention mechanisms are insufficient, in particular as teams do not see themselves responsible to ensure knowledge retention although they would benefit from it once team members change teams or leave altogether.

4.4 Responses to the Processual Autonomy Tension

Organizations adopt several responses to balance processual autonomy with structured coordination in SAOs. The following strategies illustrate how companies mitigate these tensions while maintaining agility.

4.4.1 Structuring Agile Release Trains More Effectively

One response is to emphasize structured planning of Agile Release Trains (ARTs) before they start, ensuring all necessary steps are included from the beginning. A release train engineer from EuroCo highlights the importance of this approach:

> *Product A starts here, up to Product C, up to Product Step Z. Is all of this actually covered within one agile release train? And if not, a developer will surely speak up and say: 'No, you haven't considered this.' It would be very helpful for us if we took the time at the beginning – enough time – when we structure an ART. (Release train engineer, EuroCo)*

However, structuring ARTs effectively is difficult in practice, as the same interviewee explains:

> *How well can they be structured? Difficult. It is very difficult because there are different perspectives here and there. I have already tried this in two projects. In fact, the Release Train became larger. And then I tried to split it into two ARTs. (Release train engineer, EuroCo)*

This illustrates the trade-off between optimizing team autonomy and ensuring alignment across broader development processes.

4.4.2 Moving Beyond Application-Based Structures in Release Trains

A related response is to avoid structuring ARTs based solely on software applications, which can reinforce silos and fragmentation. As one CPO notes: “People often default to structuring based on applications. But we should move away from that way of thinking” (Co tribe lead, NationalCo).

When teams focus too narrowly on their own applications, they may overlook their role in the broader system: “People do not see themselves as responsible for ensuring what they built moves from one application to the next” (Co tribe lead, NationalCo). To address this, organizations must encourage accountability for cross-application integration, ensuring that autonomy does not undermine system-wide coherence.

4.4.3 Clarifying Roles and Implementing Structured Processes

Another response, especially to the fourth dimension, is to develop clearer role distinctions over time, improving coordination while maintaining team autonomy. A release train engineer from EuroCo describes this evolution: “Now I see progress, and it is much better. Responsibilities are now clearly separated, and that allows me to focus on the product rather than on methodological and organizational matters.”

Additionally, organizations introduce structured processes, such as risk and implementation workflows, to improve efficiency without restricting flexibility. The same interviewee explains: “Now there is an implementation process, there is a risk process. The scrum master introduced that, and now we all know how things are supposed to work.”

Table 5. Processual autonomy tension dimensions and responses

Processual autonomy tension dimension	Processual autonomy tension receptive response
Independent workflows vs. cross-team integration	Structuring agile release trains more effectively
Independent deployment vs. release synchronization	Moving beyond application-based structures in release trains
Application-based silos vs. cross-functional collaboration	Clarifying roles and implementing structured processes
Role clarity vs. cross-functional team dynamics	
Knowledge transfer vs. workflow continuity	

These findings show that clear role definitions and structured processes help resolve initial misalignments while preserving operational autonomy. Table 5 summarizes the tension dimensions and respective receptive responses that are applied to manage the tension successfully.

4.5 Decision-Making Autonomy vs. Leadership Alignment

A third tension we observe is that efforts to increase decision-making autonomy often meet resistance when leadership seeks to retain control over strategic oversight and resources. One interviewee noted that while agile structures aim to distribute decision-making, executives remain reluctant to give up influence, stating that "power and influence are tied to available capacities, and no one gives them up voluntarily" (CPO, NationalCo).

4.5.1 Balancing Strategic Priorities vs. Team-Level Autonomy

First, prioritizing decision options in favor of the organization's strategy over options more beneficial for the team is a dimension of how this tension manifests itself. For instance, a CPO from TaxCo says that "the challenge now is to say: Yes, I am responsible for a product, but in case of doubt I make decisions that may sometimes be disadvantageous for my product; I would have made these decisions differently, but they are more important from an overall portfolio perspective." The CPO explicitly mentions that this is "*now*" the challenge highlighting that he sees this tension as newly arisen from the new organizational structure.

In addition, changes often come from top management at short notice – a fact that seems to doom scaling-agile principles to failure. An example from EuroCo illustrates how, after the prioritization of the task backlog by the team, senior management steps in with a new task that gets put on top of the prioritization list, running counter to all previous agreements:

> *On the one hand, you've established a [structured] backlog process, and on the other hand, you shoot in across the board and don't realize it. Crap. So perhaps it was also the crux of the matter to say, and then of course it was a failure on the part of management, to say: well, why did I think of this so late? And why do I put something like this in so laterally? I have to know what it does. (Tribe lead, EuroCo)*

This demonstrates how agile principles are undermined when executive decisions override established workflows.

4.5.2 Short-Term Adaptability vs. Long-Term Planning

While agile methods enable short-term adaptability, external commitments often impose rigid planning constraints. A Co-Tribe Lead from NationalCo describes the conflict: “We have promises in the market, shareholders, and hard commitments that we have to keep. We have to bring these together, and that’s not a trivial task.” Teams struggle with balancing quarterly roadmaps with long-term goals, as many product groups limit planning to short-term cycles: “As a result [of scaling agility], many software product groups have given up on doing roadmaps that are longer than a quarter.”

External pressures further complicate adaptability, as a CPO from NationalCo highlights: “The short-termism together with external promises that are not relevant to the capital market, but are relevant in terms of hard delivery, that is more the problem here.” Thus, while agility requires flexibility, leadership often imposes rigid timelines, reducing teams’ ability to navigate change effectively.

4.5.3 Disconnect Between Leadership Priorities vs. Execution Feasibility

Another challenge is the gap between executive mandates and operational feasibility. A product owner from EuroCo explains: “The board of management issues priority lists and says what the important topics are, but this does not correspond to the reality of what can be implemented.”

This misalignment leads teams to adjust goals strategically to meet expectations, as a CPO from EuroCo provocatively states:

> *Scrum offers too many opportunities to keep the ambition level low. […] If you take a leading publicly-listed European company like this one, what do people in charge do first? They do reporting and governance, of course. So I have no freedom. (CPO, EuroCo)*

This demonstrates how excessive governance discourages innovation and prioritizes bureaucracy over agility.

4.5.4 Retaining Decision Power vs. Distributed Responsibility

Scaling agility requires leaders to let go of centralized decision-making, but concerns about losing influence prevent full delegation. A product owner from InsureCo captures this struggle: “If these are no longer my people, and I no longer have access to them, then I also have no influence.” Conflicts arise when leadership-driven initiatives clash with team priorities, as seen in IT transformation efforts: “We need to drive cloudification, but the tribe says: No, we need to focus on product innovation.”

This reluctance to let go of control results in an inconsistent balance between leadership oversight and team autonomy, requiring leaders to learn to step back “what theme do we give the team in the first place? And I think that’s also a bit of a learning process. It has a bit more to do with letting go” (TaxCo, Product owner). This ambivalence emphasizes the wicked nature of scaling agility and how this leads to tensions. A TaxCo agile master also observes this ambivalence: “All ‘agilists’ say it’s easy, we do it bottom-up. But there are certainly points where [the board member] says, but I have a veto. We don’t do it that way, but he also has the upper hand.”

Thus, while distributed decision-making is a goal, leadership often intervenes when strategic concerns arise, creating tension between autonomy and oversight.

4.5.5 Implementing OKRs Without Undermining Autonomy

One approach to balancing autonomy with alignment is introducing objectives and key results (OKRs). A CPO from TaxCo explains this as a way to connect strategic oversight with team-level autonomy: “We are currently introducing OKRs. Starting from the current product strategy, we have, for the first time, selected OKRs for specific topics at the strategic level.” However, this alignment has not yet fully reached the team level, where metrics like velocity still dominate decision-making: “It is not yet as deeply embedded at the team level as you might imagine. At the team level, we are still more on an operational level, measuring things like velocity.” OKRs present an opportunity to resolve tensions by aligning team autonomy with long-term company objectives, allowing teams to decide with freedom while ensuring strategic coherence.

4.5.6 Decision-Making Autonomy vs. ability to take on responsibility

Despite efforts to increase autonomy, some employees struggle with their freedom in decision-making. A CPO from NationalCo describes how some employees prefer clear directives: “Some people have a hard time with this because we expect a certain level of autonomy, but they don’t fulfill it. Deep down, they appreciated having someone tell them what to do.” This sentiment is echoed by a tribe lead from NationalCo:

> *What you can observe is that not all people are happy to have so much freedom. There are already quite a few employees who say, ‘What I’d like most of all is for you to tell me: Do this and that, and I’ll do that for you. But don’t bug me with this whole ‘is this more important or is that more important?’ (Tribe lead, NationalCo)*

4.5.7 Governance Constraints on Agile Frameworks

While agile frameworks promote flexibility, rigid governance structures often override team autonomy. A CPO from EuroCo describes how management enforces control: “Scrum offers too many opportunities to keep the ambition level low.” Leadership demands reports and certified roles, reinforcing hierarchy rather than agility: “Senior management cannot handle the agile transformation. They do not trust the team to work without their oversight. If there is no report, they force one.” Instead of driving innovation, teams manipulate goals to meet expectations: “I deliver a simple ‘hello world’. I’ll have that done in two days, the rest will be forwarded to the next sprint.” Beyond governance inefficiencies, leadership also introduces conflicting priorities without considering execution constraints. A CPO from EuroCo highlights this contradiction: “Management ignored that this costs implementation capacity and then, as always, was surprised when it didn’t work.” This reveals the need for leadership to shift from rigid control to trust-based oversight, ensuring teams operate efficiently without excessive reporting burdens.

4.6 Responses to the Decision-Making Autonomy Tension

One response to the decision-making tension is to implement dedicated gatekeeper roles. That is, a resolution strategy being discussed is gatekeeping by chief product owners to protect teams from too much

financial pressure: “Of course, the teams also have this goal from the objectives and key results (OKR), but we try not to bother them with it. Especially when it comes to financial matters, because that’s really not their job” (CPO, NationalCo).

Another receptive response applied in the observed cases is to put more emphasis on the prioritization preceding the central task coordination processes.

> *Speaking from the product owner’s point of view, if the ‘what’, i.e., the prioritization, is clear, we save so much work at the end, because we haven’t put 100 developers on something that nobody needs. So I’d rather invest the work at the outset. It required some time at the beginning, but by now it’s more than ingrained. (Product owner, TaxCo)*

A product owner from NationalCo makes a similar point, saying:

> *So, how do you address this issue? Currently, we are using a method called program increment planning, also known as road map in SAFe. This process helps to set the direction for our efforts. (Product owner, NationalCo)*

Moreover, to ensure that this system functions effectively, the organization regularly monitors employees’ perceptions of autonomy through surveys, showing that increased freedom requires continued support rather than complete detachment from leadership.

Another response is to emphasize communication even more. As previously mentioned by an agile master from TaxCo “communication is always the solution. Where is the communication a good fit, what do we have to work on, and what points would I not communicate about?“

Table 6. Decision-making autonomy tension dimensions and responses

Decision-making autonomy tension dimension	Decision-making autonomy tension receptive response
Balancing strategic priorities and team-level autonomy	Implement dedicated gatekeeper roles
Short-term adaptability vs. long-term planning	Prioritization preceding the central task coordination processes
The disconnect between leadership priorities and execution feasibility	Increased communication efforts
Retaining decision power vs. distributed responsibility	
Implementing OKRs without undermining autonomy	
Decision-making autonomy vs. ability to take on responsibility	
Governance constraints on agile frameworks	

5 DISCUSSION

In this chapter, we discuss our findings by leveraging the concepts of pathways and the ricochet effect.

Our argumentation follows a two-step logic. We first derive four propositions that describe the empirically observed **developmental pathways** of organizing tensions within scaling agility (so-called '*within*-tensions' that occur within a contingency from one pole to another). Moreover, we describe the dynamic interplay between different types of organizing tensions, so-called '*between*-tensions'. This perspective highlights how efforts to address one tension often inadvertently intensify or create new tensions elsewhere, thus producing recursive dynamics.

5.1 Pathways for Managing Organizing Tensions in Scaling Agility

By identifying three organizing tensions of scaling agility and their corresponding receptive responses that follow a both-and logic, our study extends and contextualizes existing DT pathways (Soh et al., 2023). These tensions hinder organizational transformation processes and thus require organizations to implement mitigation responses. Figure 2 illustrates these pathways, showing how tensions between autonomy and alignment evolve and shape DT outcomes. At its core, the framework shows the tensions and respective responses as a process and demonstrates a **ricochet effect**, where managing one tension alters the configuration and intensity of other interrelated tensions. The framework details two main pathways (Pw1, Pw2), showing how tensions either persist and block progress or are mitigated through both-and responses.

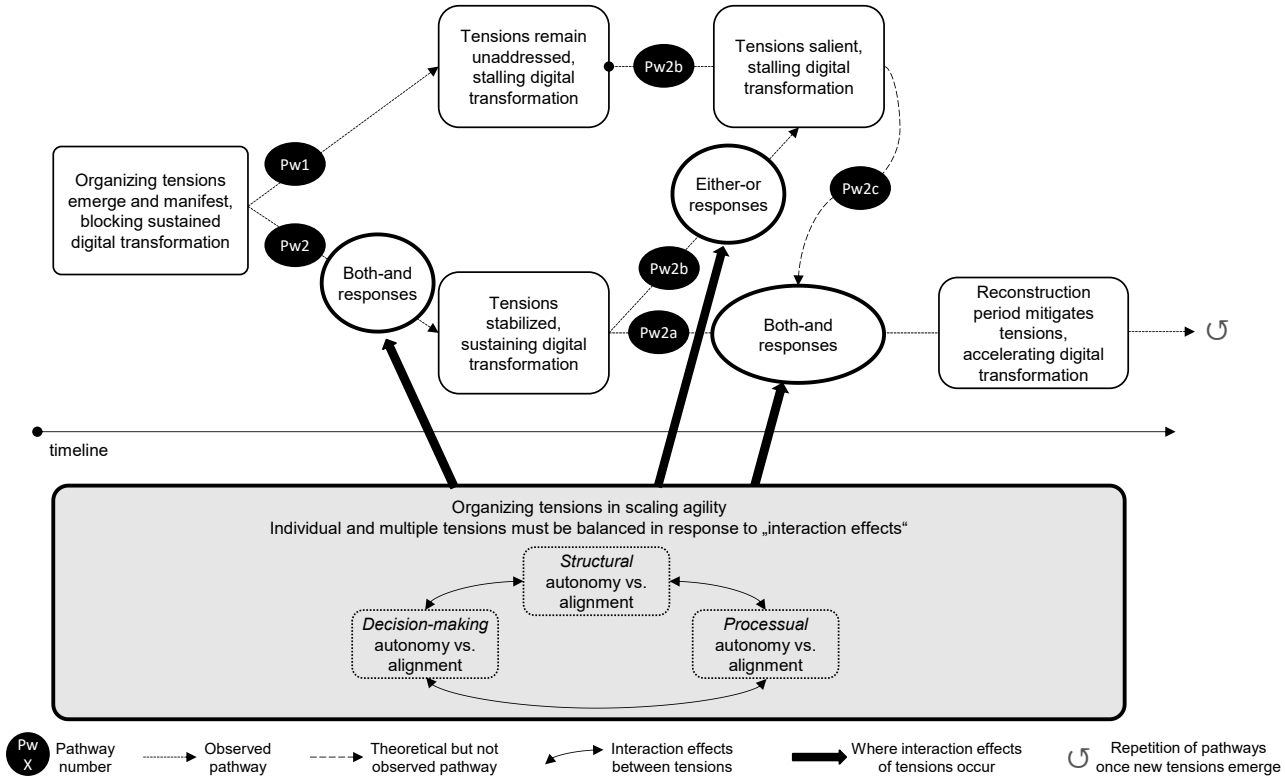


Figure 2. Pathways of organizing tensions and *between*-tensions in scaling agility

Along **Pathway Pw1**, tensions remain unresolved, ultimately stalling transformation efforts (see Appendix, quotation Q1)[2]. Here, rigid hierarchies and role conflicts impede agile collaboration. Likewise, tensions

[2] To keep the discussion as theory-oriented and lean as possible, we decided to remove all empirical evidence (i.e.,

appear at the boundaries between agile and non-agile parts of the organization (Q2).

Conversely, **Pathway Pw2** exemplifies how both-and responses balance autonomy and alignment to create a stable transformation path. Cases like EuroCo, TaxCo, InsureCo, and NationalCo show how the routinization of receptive, both-and responses improves outcomes (Q3).

However, even on Pathway Pw2, tensions re-emerged over time in of our cases. TaxCo managed to counteract setbacks with swift receptive responses (Q4), continuing on Pathway Pw2a, while NationalCo struggled to respond receptively because of rigid governance structures (Q5), turning onto Pathway Pw2b. At NationalCo, renewed emphasis on top-down alignment pushed the organization from P2a to P2b, intensifying frustrations (Q6). Continuous revisioning of scaling agility deepened mitigation of tensions and accelerated the transformation.

We extend the model by adding **Pathway Pw2c**, acknowledging that organizations deviating to Pw2b can return to Pw2a by re-engaging both-and responses. Reconstruction strategies redefine processes and structures, embedding agility principles more deeply.

We can therefore conclude that the observed *within*-tensions are within a certain tension type and can be successfully managed by both-and responses. The following propositions can be derived from this:

P1: *Organizations that follow an either-or logic are not able to resolve tensions, and it becomes increasingly difficult over time to return to a both-and logic.*

P2: *Organizations that follow a both-and logic resolve tensions but require continuous re-evaluation to avoid falling back into either-or logic.*

5.2 Interaction Effects *Between* Tensions: The Ricochet Effect

Beyond individual pathways, our study reveals substantial interaction effects between and among tensions, a phenomenon that we term the **ricochet effect**. This describes how resolving one tension often triggers or exacerbates others, necessitating constant organizational adaptation.

For example, structural autonomy through expert specialization results in process inefficiencies when dependencies arise (Q7, Q8). Organizations introduce guilds to address process misalignment, but this constrains team-level structural autonomy (Q9). Moreover, structural autonomy through the establishment of independent cross-functional teams often results in operational alignment problems when redundant processes and diverse practices emerge across teams, reducing consistency and customer experience (Q10, Q11). To address operational misalignment, companies attempt to standardize coordination between these teams; however, this reduces the structural autonomy originally intended, limiting teams' independent decision-making capabilities (Q12).

interview quotes) that supports the pathway development in this section of the paper. In the following, any "Q" reference refers to an interview quotation, which can be found in Appendix C.

Another ricochet emerges between decision-making autonomy and structural autonomy. Leaders hesitate to give up control (Q13), while teams resist top-down pressure (Q14). OKRs offer a balancing mechanism, but adoption struggles persist (Q15). Additionally, decision-making autonomy that allows team leaders substantial independence can inadvertently lead to fragmented strategic coherence and misunderstandings across the organization (Q16). Organizations try to mitigate this by establishing stricter top-down reporting structures, yet this approach reduces structural autonomy, constraining the decision-making freedom initially granted to the teams (Q17).

A third ricochet effect involves process alignment and decision-making autonomy. Structured planning is implemented (Q18), yet leadership interventions override team autonomy, frustrating team members (Q19). Teams respond by lowering ambition levels (Q20).

We thus see that management approaches to organizing tensions ricochet and adversely affect another organizing tension.

We can also observe examples where the management of one tension impacts the two other tensions, indicating varying complexity in how tensions influence each other dynamically. For instance, decision-making alignment can exacerbate the structural and operational tensions. Senior management might push aggressively for strict decision-making alignment through quarterly OKRs or centralized reporting structures. Though this alignment is intended to streamline strategy execution, it can quickly undermine both structural and operational autonomy. Teams now focus more on fulfilling prescribed metrics than on innovation, resulting in reduced creativity, passive team behaviour, and superficial compliance with prescribed reporting requirements, rather than genuine engagement with strategic goals.

Summarizing, the ricochet effect in scaling agility manifests either between two organizing tensions (one-to-one) or simultaneously among multiple organizing tensions (one-to-many). Overall, handling the above-described within-tensions is vital, yet it is not sufficient to be on the successful pathways. '*Between*-tensions' occur as intertemporal effects across different tension types (e.g., structural vs. processual tensions), leading to the described ricochet effects. Accordingly, continuous rebalancing *across* tension types is required in addition to the established "both-and" logic within tensions to avoid a continuous imbalance which could negatively affect organizational performance. For instance, prioritizing structural autonomy within teams may disrupt processes across teams. Conversely, effective rebalancing, such as maintaining structural autonomy through simultaneously standardizing cross-team interactions (e.g., guild formats), mitigates these negative effects. However, such rebalancing may at the same time reduce autonomy, potentially causing resistance among team members. We thus develop the following propositions:

P3a: *Successfully managing between-tensions requires – in addition to following the both-and logic – continuous rebalancing across the different types of tensions (e.g., structural, processual, decision-making).*

P3b: *Without continuous rebalancing, the prioritization of one tension dimension will negatively impact others, whereas continuous rebalancing through standardized mechanisms ensures balanced organizational performance, though possibly at the expense of individual autonomy.*

6 CONCLUSION

6.1 THEORETICAL IMPLICATIONS

Our study offers three core theoretical contributions to the understanding of scaling agility in DT. An overview can be found in Table 7. First, we identify distinct tensions between autonomy and alignment in scaling agility, emphasizing their critical role in implementation success. While prior research (Gerster et al., 2020) focused on implementation frameworks, we show that execution is deeply shaped by persistent tensions between autonomy and alignment. Our findings empirically extend conceptual work (Iivari, 2021), moving beyond theoretical reasoning to expose how organizations struggle to maintain autonomy without jeopardizing efficiency and strategic alignment.

Table 7. Findings and contribution to research.

Findings	Theoretical contributions	Implications
Distinct organizing tensions between autonomy and alignment exist in scaling agility that require attention	• Tensions in scaling agility contest previous research on the implementation of scaling agility (Gerster et al, 2020)	➢ Achieving intended benefits is more difficult than previously thought
	• Tensions in scaling agility confirm the complex nature of digital transformation initiatives (Toutaoui et al., 2022)	
Identification of resolution strategies that focus on receptive responses	• Resolution strategies demonstrate how different contradictory views can be reconciled (Hanelt et al., 2020)	➢ Analysis of concrete digital transformation activity reveals how contradictory views can be addressed through receptive, both-and responses
	• Receptive, both-and responses enable digital transformation and mitigate salient tensions (Soh et al., 2019; Viljoen et al., 2022)	
Pathways of organizing tensions in scaling agility	• Extend pathway observations in digital transformation (Soh et al., 2023) by adding a longitudinal view with own case material, and • by showing how both-and responses lead to digital transformation progress.	➢ Pathways demonstrate how different cases oscillate within tensions over time
Ricochet effect '*between*-tensions'	• Substantial interaction effects between tensions require continuous rebalancing	➢ Continuous rebalancing through standardized mechanisms and cross-tension management ensure balanced organizational performance

While approaches such as encapsulating value streams and installing gatekeepers (e.g., CPOs) can temporarily balance tensions, these roles quickly become overburdened. Moreover, our analysis reveals that actively managing one tension (e.g., structural autonomy) often intensifies others (e.g., identity conflicts of gatekeeper roles), highlighting a paradoxical dynamic overlooked in previous studies (Poole & van de Ven, 1989; Smith & Lewis, 2011). Thus, we advance the view that balancing tensions is not a static achievement but a continuous, dynamic challenge.

Our study also contributes to the literature by addressing the "digital undertow" articulated by Orlikowski and Scott (2023). Similar to how DTs create indirect institutional displacements beneath visible change waves, we show how the hidden, reciprocal effects between organizing tensions in scaling agility undermine organizational coherence. Our concept of the "ricochet effect" illustrates how addressing one tension (e.g., decision-making autonomy) can inadvertently exacerbate others (e.g., process alignment), echoing the socio-material dynamics of exclusion and inclusion that Orlikowski and Scott describe. Thus, our study operationalizes the abstract notion of the digital undertow in the concrete context of scaling agility, extending their socio-material lens to the microdynamics of agile transformation.

Second, we shed light on the effectiveness of receptive responses to mitigate tensions. Rather than rigid frameworks, adaptive strategies such as shadowing systems, tandems, and formalized rituals enable organizations to balance autonomy and alignment flexibly (Hanelt et al., 2020; Soh et al., 2019). Our findings extend insights from Mikalsen et al. (2021) and Shastri et al. (2021) by showing that these responses work not only within IT departments but also across organizational boundaries (Dikert et al., 2016). Additionally, applying an IT strategy lens, we show how tensions shape organizational performance (Schad et al., 2016). Using Stohl and Cheney's (2001) notion of "clashes of actions", we demonstrate how friction between top-down and bottom-up processes influences design choices and transformation trajectories.

Third, our research expands the pathways perspective of DT (Soh et al., 2023) by adding a longitudinal lens. We demonstrate that organizations do not follow linear transformation paths, but rather oscillate between states as tensions recur. Our pathways (Pw1, Pw2a, Pw2b, Pw2c) align with Soh et al.'s classification of vicious, moderately virtuous, and virtuous cycles, but we extend their model by showing how past responses accumulate effects over time, for instance reinforcing inertia or fostering learning effects. Specifically, we propose that the longer tensions are addressed with either-or logic, the greater the qualitative relapse and effort required for recovery. Conversely, repetitive receptive responses can either increase inertia or facilitate learning, influencing the organizational capacity to re-enter successful paths. Importantly, our study surfaces the ricochet effect of tensions, resulting from the emergence of '*between*-tensions' next to the identified '*within*-tensions'. Resolving one tension activates others, reinforcing the need for continuous, cross-tension management rather than isolated fixes.

6.2 Managerial Implications

Practically, our findings equip managers with a diagnostic lens to identify and monitor tensions throughout the scaling agility process. Managers should expect and plan for cyclical tension recurrence rather than a smooth linear progression. Concrete practices such as shadowing systems and gatekeeping roles offer actionable ways to balance competing demands but must be revisited regularly to prevent role overload and tension drift. Furthermore, scaling agility must be treated as an iterative process where responses to tensions are continuously adapted and refined, not as a one-time structural change.

6.3 Limitations and Future Research

While our multi-case study provides rich insights, further immersive studies (e.g., ethnographies or longitudinal focus groups) could deepen understanding of how tensions evolve in daily practices. Measuring scal-

ing agility success also remains problematic. While software release speed is tracked, dimensions like innovation quality, cost-efficiency, and customer satisfaction remain elusive, as noted by a CPO at EuroCo. Additionally, our findings highlight IT architecture as a critical antecedent of agility tensions. The move to decentralized microservices, as seen at BankCo, creates new architecture-related tensions that future research should explore further (Ross et al., 2019). Lastly, extended ethnographic research could illuminate how accumulated micro-practices shape long-term agility trajectories and offer further refinement of our framework.

In conclusion, this study examines the challenges that arise when incumbent, born-traditional organizations scale agility for DT. Our findings allow us to make two key contributions to the field: (1) We identify three tensions in the context of scaling agility and provide rich insights into how they arise. (2) We show how different organizations address these tensions and uncover specific receptive responses for each tension. (3) We propose ricochet effects explaining the difficulty of managing several tensions holistically and over time. Thereby, our results are a first step towards understanding how digital organizational forms, such as SAOs, create new challenges and require us to rethink well-established theories and organizational practices.

REFERENCES

Aghina, W., Handscomb, C., Salo, O., & Thaker, S. 2021. The impact of agility: How to shape your organization to compete. Downloaded on August 15, 2022, from: https://www.mckinsey.com/business-functions/people-and-organizational-performance/our-insights/the-impact-of-agility-how-to-shape-your-organization-to-compete.

Alvesson, M., & Sandberg, J. 2011. Generating research questions through problematization. *Academy of Management Review*, 36(2), 247–271.

Avison, D., Cuthbertson, C., & Powell, P. 1999. The paradox of information systems: strategic value and low status. *The Journal of Strategic Information Systems*, 8(4), 419–445.

Awad, & Krishnan. 2006. The Personalization Privacy Paradox: An Empirical Evaluation of Information Transparency and the Willingness to Be Profiled Online for Personalization. *MIS Quarterly*, 30(1), 13.

Baham, C., & Hirschheim, R. (2022). Issues, challenges, and a proposed theoretical core of agile software development research. *Information Systems Journal*, *32*(1), 103-129.

Barrett, M., & Orlikowski, W. 2021. Scale Matters: Doing Practice-Based Studies of Contemporary Digital Phenomena. *MIS Quarterly*, 45(1), 467–472.

Bick, S., Spohrer, K., Hoda, R., Scheerer, A., & Heinzl, A. 2018. Coordination Challenges in Large-Scale Software Development: A Case Study of Planning Misalignment in Hybrid Settings. *IEEE T SOFTWARE ENG*, 44(10), 932–950.

Bishop, D., Rowland, P., & Noteboom, C. B. 2020. Antecedents of Product Owner Preference for Agile Software Development. In Proceedings of the *Americas Conference on Information Systems*, Salt Lake City.

Bucy, M., Finlayson, A., Kelly, G., & Moye, C. 2016. The 'how' of transformation, Downloaded on 01/12/2025, from: https://www.mckinsey.com/industries/retail/our-insights/the-how-of-transformation.

Carroll, N., Hassan, N. R., Junglas, I., Hess, T., & Morgan, L. 2022. Call for Papers: European Journal of Information Systems: Managing and Sustaining Digital Transformations. Downloaded on January 15, 2022, from: https://www.callforpapers.co.uk/managing-sustaining-digital-transformations.

Ciriello, R. F., Richter, A., & Schwabe, G. 2019. The paradoxical effects of digital artefacts on innovation practices. *European Journal of Information Systems*, 28(2), 149–172.

Corbin, J. M., & Strauss, A. 1990. Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology*, 13(1), 3–21.

Dikert, K., Paasivaara, M., & Lassenius, C. 2016. Challenges and success factors for large-scale agile transformations: A systematic literature review. *Journal of Systems and Software*, 119, 87–108.

Drechsler, K., Gregory, R., Wagner, H. T., & Tumbas, S. 2020. At the Crossroads between Digital Innovation and Digital Transformation. *Communications of the Association for Information Systems*, 47(1), 123–140.

Eisenhardt, K. M. 1989. Building Theories from Case Study Research. *Academy of Management Review*, 14(4), 532.

Eisenhardt, K. M. 2021. What is the Eisenhardt Method, really? *Strategic Organization*, 19(1), 147–160.

Frey, J. (2023). Scaling Agility in Incumbent Firms: A Literature Review. In *Proceedings of the 44th International Conference on Information Systems*, 2023, Hyderabad, India.

Fuchs, C., & Hess, T. 2018. Becoming agile in the digital transformation: the process of a large-scale agile transformation. In *Proceedings of the 39th International Conference on Information Systems*, 2018, San Francisco.

Gandomani, T. J., & Nafchi, M. Z. 2015. An empirically-developed framework for Agile transition and adoption: A Grounded Theory approach. *Journal of Systems and Software*, 107, 204–219.

Gerster, D., Dremel, C., Brenner, W., & Kelker, P. 2020. How Enterprises Adopt Agile Forms of Organizational Design. *The DATABASE for Advances in Information Systems*, 51(1), 84–103.

Gerster, D., Dremel, C., & Kelker, P. 2018 "Agile Meets Non-Agile": Implications of Adopting Agile Practices at Enterprises. In Proceedings of the *24th Americas Conference on Information Systems*, New Orleans.

Gervasi O., Murgante B., Misra S., Garau C., Blečić I., Taniar D., Apduhan B. O., Rocha A. M. A. C., Tarantino E., Torre C. M., & Karaca Y. (Eds.). 2020. Computational Science and Its Applications – ICCSA 2020. *Lecture Notes in Computer Science*. Cham: Springer International Publishing.

Gioia, D. 2021. A Systematic Methodology for Doing Qualitative Research. *The Journal of Applied Behavioral Science*, 57(1), 20–29.

Gioia, D., Corley, K. G., & Hamilton, A. L. 2013. Seeking Qualitative Rigor in Inductive Research. *Organizational Research Methods*, 16(1), 15–31.

Gregory, R. W., Keil, M., Muntermann, J., & Mähring, M. 2015. Paradoxes and the Nature of Ambidexterity in IT Transformation Programs. *Information Systems Research*, 26(1), 57–80.

Handy, C. 1994. The age of paradox. Boston: Harvard Business School Press.

Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of Management Studies*, 58(5), 1159-1197.

Heikkila, V. T., Paasivaara, M., Rautiainen, K., Lassenius, C., Toivola, T., & Jarvinen, J. 2015. Operational release planning in large-scale Scrum with multiple stakeholders - A longitudinal case study at F-Secure Corporation. *Information and Software Technology*, 57, 116–140.

Hund, A., Wagner, H.-T., Beimborn, D., & Weitzel, T. 2021. Digital innovation: Review and novel perspective. *The Journal of Strategic Information Systems*, 30(4), 101695.

Iivari, J. 2021. A Paradox Lens to Systems Development Projects: The Case of the Agile Software Development. *Communications of the Association for Information Systems*, 49(1), 1–37.

Kalenda, M., Hyna, P., & Rossi, B. 2018. Scaling agile in large organizations: Practices, challenges, and success factors. *Journal of Software: Evolution and Process*, 30(10), e1954.

Kasauli, R., Knauss, E., Horkoff, J., Liebel, G., & Neto, F. G. 2021. Requirements engineering challenges and practices in large-scale agile system development. *Journal of Systems and Software*, 172.

Kiely, G., Kiely, J., & Nolan, C. 2017. Scaling Agile Methods to Process Improvement Projects: A Global Virtual Team Case Study. In *Proceedings of the 23rd Americas Conference on Information Systems*, Boston, 2017.

La Rojas, & Macias, J. A. 2019. Toward collisions produced in requirements rankings: A qualitative approach and experimental study. *Journal of Systems and Software*, 158.

Levina, N. 2021. All information systems theory is grounded theory, 45(1), 489–494.

Limaj, E., & Bernroider, E. W. 2022. A taxonomy of scaling agility. *The Journal of Strategic Information Systems*, 31(3), 101721.

Lindskog, C., & Magnusson, M. 2021. Ambidexterity in Agile software development: a conceptual paper. *Journal of Organizational Effectiveness: People and Performance*, 8(1), 16–43.

Lohrasbinasab, I., Acharya, P. B., & Colomo-Palacios, R. 2020. BizDevOps: A Multivocal Literature Review. In O. Gervasi, B. Murgante, S. Misra, C. Garau, I. Blečić, D. Taniar, B. O. Apduhan, A. M. A. C. Rocha, E. Tarantino, C. M. Torre & Y. Karaca (Eds.), *Computational Science and Its Applications – ICCSA 2020*, 698–713. Cham: Springer International Publishing.

Mahringer, C. A., & Danner-Schröder, A. (2025). Autonomous, Yet Interdependent: Designing Interfaces across Routine Clusters. *Academy of Management Journal*, In-Press.

Mikalsen, M., Moe, N. B., Wong, S. I., & Stray Viktoria. 2021. Agile Information System Development Organizations Transforming to Large-Scale Collaboration. In *Proceedings of the 42nd International Conference on Information Systems*, Austin 2021.

Monteiro, E., Constantinides, P., Scott, S., Shaikh, M., & and Burton-Jones, A. 2022. Qualitative research methods in information systems: a call for phenomenon-focused problematization. *MIS Quarterly*, 46(4), iii–xix.

Myers, M. D., & Newman, M. 2007. The qualitative interview in IS research: Examining the craft. *Information and Organization*, 17(1), 2–26.

Paasivaara, M., Behm, B., Lassenius, C., & Hallikainen, M. 2018. Large-scale agile transformation at Ericsson: a case study. *Empirical Software Engineering*, 23(5), 2550–2596.

Pernstal, J., Gorschek, T., Feldt, R., & Floren, D. 2015. Requirements communication and balancing in large-scale software-intensive product development. *Information and Software Technology*, 67, 44–64.

Pisano, G. P. 2019. The Hard Truth About Innovative Cultures. *Harvard Business Review*, 97(1), 62–71.

Poole, M. S., & van de Ven, A. H. 1989. Using Paradox to Build Management and Organization Theories. *Academy of Management Review*, 14(4), 562.

Putnam, L. L., Fairhurst, G. T., & Banghart, S. 2016. Contradictions, Dialectics, and Paradoxes in Organizations: A Constitutive Approach. *The Academy of Management Annals,* 10(1), 65–171.

Rigby, D. K., Sutherland, J., & Noble, A. 2018. Agile at scale: How to go from a few teams to hundreds. *Harvard Business Review*, 96(3), 88–96.

Rigby, D. K., Sutherland, J., & Takeuchi, H. 2016. Embracing agile. *Harvard Business Review*, 94(5), 40–50.

Robey, D., & Boudreau, M.-C. 1999. Accounting for the Contradictory Organizational Consequences of Information Technology: Theoretical Directions and Methodological Implications. *Information Systems Research*, 10(2), 167–185.

Roschnik, A. & Missonier, S. 2024. Conceptualising Scaling Agile as a Wicked Problem. In *Proceedings of the 32nd European Conference on Information Systems*, Paphos.

Ross, J. W., Beath, C. M., & Mocker, M. 2019. Designed for Digital. The MIT Press.

Schad, J., Lewis, M. W., Raisch, S., & Smith, W. K. 2016. Paradox Research in Management Science: Looking Back to Move Forward. *The Academy of Management Annals*, 10(1), 5–64.

Seidel, S., & Urquhart, C. 2016. On Emergence and Forcing in Information Systems Grounded Theory Studies: The Case of Strauss and Corbin. In L. P. Willcocks, C. Sauer & M. C. Lacity (Eds.), *Enacting Research Methods in Information Systems*, 1, 157–209. Cham: Springer International Publishing.

Shastri, Y., Hoda, R., & Amor, R. 2021. The role of the project manager in agile software development projects. *Journal of Systems and Software*, 173.

Smith, W. K., & Lewis, M. W. 2011. Toward a Theory of Paradox: A Dynamic Equilibrium Model of Organizing. *Academy of Management Review*, 36(2), 381–403.

Soh, C., Yeow, A., Goh, Q., & Hansen, R. (2019). Digital Transformation: Of Paradoxical Tensions and Managerial Responses. In *Proceedings of the 40th International Conference on Information Systems*, Munich, Germany.

Soh, C., Yeow, A., & Goh, Q. W. (2023). Shaping digital transformation pathways: Dynamics of paradoxical tensions and responses. *Journal of the Association for Information Systems*, 24(6), 1594-1617.

Stohl, C., & Cheney, G. 2001. Participatory Processes/Paradoxical Practices. *Management Communication Quarterly*, 14(3), 349–407.

Toutaoui, J., Benlian, A., & Hess, T. 2022. Managing paradoxes in bi-modal information technology functions: A multi-case study. *Information Systems Journal*, 32(6), 1177–1202.

Trippensee, L., & Remané, G. 2021. Practices for Large-Scale Agile Transformations: A Systematic Literature Review. In *Proceedings of the 2021 Americas Conference on Information Systems*, Virtual Conference.

Tumbas, S., Berente, N., & vom Brocke, J. Born Digital: Growth Trajectories of Entrepreneurial Organizations Spanning Institutional Fields. In *Proceedings of the 38th International Conference on Information Systems*, Seoul, Korea.

Uludag, Ö., & Matthes, F. 2020. Investigating the Role of Enterprise Architects in Supporting Large-Scale Agile Transformations: A Multiple-Case Study. In *Proceedings of the Americas Conference on Information Systems*, Salt Lake City.

Viljoen, A., Hein, A., Przybilla, L., Soto Setzke, D., & Krcmar, H. (2022). Striving for Global Optima in Digital Transformation: A Paradox Theory Approach. In *Proceedings of the 42nd International Conference on Information Systems*, Austin, Texas.

Weber, Y., & Tarba, S. Y. 2014. Strategic Agility: A State of the Art Introduction to the Special Section on Strategic Agility. *California Management Review*, 56(3), 5–12.

Wessel, L., Baiyere, A., Ologeanu-Taddei, R., Cha, J., & Blegind Jensen, T. 2021. Unpacking the Difference Between Digital Transformation and IT-Enabled Organizational Transformation. *Journal of the Association for Information Systems*, 22(1), 102–129.

Wimelius, H., Mathiassen, L., Holmström, J., & Keil, M. 2021. A paradoxical perspective on technology renewal in digital transformation. *Information Systems Journal*, 31(1), 198–225.

Yin, R. K. 2014. Case study research: Design and methods (5th ed.). *Applied Social Research Methods*. Thousand Oaks, Sage.

Paper V

EASIER SAID THAN DONE: IMPLEMENTING TEAM AUTONOMY IN SCALING AGILITY

Julian Frey

University of Bamberg

Axel Hund

Neu-Ulm University of Applied Sciences

Daniel Beimborn

University of Bamberg

Submitted version

1 INTRODUCTION

Scaling agility refers to the process of extending the application of agile concepts (i.e. principles, methods, practices) to other domains of an organization beyond software development and operations (Limaj & Bernroider, 2022) with the goal of increasing the overall organizational agility (Gerster et al., 2020). Practitioner literature (Aghina et al., 2018) and research (Gerster et al., 2020; Limaj & Bernroider, 2022; Mikalsen et al., 2018) suggest that this process requires organizations to structure their workforce (i.e., teams and departments) differently. This includes a novel organizational structure, called agile forms of organizational design (Gerster et al., 2020) or scaled-agile organizations (Frey et al., 2021), intended to support scaling agility. These new organizational structures result in significant newly created autonomy, which is an underlying key pillar of these structures (Gerster et al., 2020; Limaj and Bernroider, 2022), which clashes with the deeply-ingrained hierarchical structure of incumbent organizations (e.g., clear departmental boundaries, defined lines of authority and formal decision making procedures) (Drechsler et al., 2020). Therefore, it is important to understand team autonomy in more detail.

Moreover, on an individual level, we can observe that employees are asked to solve tasks in novel ways as productivity needs to be improved, and a focus on value streams is reinforced (Pries-Heje and Krohn, 2017). These behavioral changes (i.e., expressed in new structures, processes, and behaviors) suggest interacting with team autonomy as one underlying fundamental component (Gerster et al., 2020). At the same time, "the agile literature […] views agility to be universally desirable and does not recognize differential effects of agility on different aspects of development performance" (Lee and Xia, 2010, p. 104). Prior research and practitioner literature consider the highest possible autonomy to be desirable for incumbent firms. This assumption seems to be problematic as firms struggle to find the right degree of team autonomy and in contrast to technology companies, have legacy infrastructures they need to consider (Tumbas et al, 2018). Also, previous works admit that their analyses are only based on "snapshots" (Gerster et al., 2020; Limaj & Bernroider, 2022). Existing literature either views autonomy in the context of scaling agility from a positive perspective (Gerster et al., 2020; Limaj & Bernroider, 2022), treats the potential challenges only marginally (Carroll et al., 2023) or highlights the essential antecedent role of team autonomy without being able to draw clear conclusions (Krancher et al., 2023). Moreover, as agile concepts are increasingly ingrained in physical product firms, they should be further studied in these contexts to improve our understanding how team agility is achieved (Werder and Maedche, 2018). At the same time, autonomy has already been identified as a reason for tensions in agile organizations (Frey et al., 2021).

In analysing team autonomy, we can focus on how exactly individual aspects of team autonomy play not only a facilitating role in incumbent organizations but also an obstructive role. Without this analysis, we would lack a more nuanced understanding of the right degree of team autonomy incumbent firms should aim for in their quest towards extended agility. Hence, observing team autonomy in scaling agility more in-depth over a more extended period seems promising and we pose the following research question:

How do organizations implement team autonomy when they pursue scaling agility?

We conduct a qualitative case study series with three organizations for 22 months to answer this question and use established team autonomy characteristics to analyze how exactly team autonomy manifests itself in scaling agility (Gerwin & Moffat, 1997). We show that a balanced facilitation of team autonomy seems

helpful and extend established team autonomy mechanisms. At the same time, we focus on a concrete, topical issue of incumbent firms' IT organizations (i.e., scaling agility). We derive four propositions that can be usefully applied to further research and show how previous team autonomy characteristics play out in scaling agility. In the following, we go into the background of scaling agility and team autonomy, followed by the methodology, and present our results before concluding with the discussion.

2 BACKGROUND

Our examination of related literature reveals a paucity of research addressing the underlying autonomy characteristics within scaling agility. This deficiency of attention not only constrains our understanding of how team autonomy is expressed but also hinders our ability to discern potential mechanisms that can address the issues related to team autonomy within scaling agility. In the following, we take a closer look at the current state of research on scaling agility before moving on to the state of knowledge on team autonomy.

2.1 SCALING AGILITY

Scaling agility refers to expanding the implementation of agile concepts (i.e., principles, methods, practices) to other areas of an organization beyond just software development and operations (Limaj & Bernroider, 2022). Agile concepts have significantly impacted the software development industry and were designed to increase delivery speed and maximize business value (Austin & Devin, 2009). Organizations are now looking to implement agile at a larger scale within software development units and across other parts of the organization, such as product development and marketing. These organizational designs are called scaled-agile organizations (Frey et al., 2021; Gerster et al., 2020) – a phenomenon that Gerster et al. have described as "agile forms of organizational design are adopted not only by IT, but successively also by business units and in contexts outside information systems development" (Gerster et al., 2020, p.1). Often, implementing scaled-agile organizations involves combining a more comprehensive range of previously less connected roles, merging business and IT departments, and forming cross-functional teams from product development to sales (Paasivara et al., 2018). These cross-functional teams, known as BizDevOps teams, bring together individuals with diverse educational backgrounds and work cultures, including developers, marketing, and salespeople (Lohrasbinasab et al., 2019).

While this structure has benefits, it can also present challenges for individual team members or teams. Previous research has highlighted these challenges, with studies such as Gandomani and Nafchi (2016) examining people- and role-induced challenges in this context, including coordination and communication issues. Other studies have found challenges concerning coordination and the consequences of misalignment (Bick et al., 2018), outcome quality (Alsaqaf et al., 2016), the temporality of the processes (Chen & Lee, 2023) or various time complexities (Gerster et al., 2021). Lastly, Gregory et al. (2016) address ways to overcome reservations about scaling agility. In the context of most of these works about scaling agility, research hints at team autonomy as a crucial underlying factor. For instance, Chen and Lee (2023) see team autonomy as an origin for the temporality of the processes, making it a promising angle to look at scaling agility.

2.2 TEAM AUTONOMY

Team autonomy, the discretion in making job-related decisions (Hackman & Oldham, 1980; Klein, 1991), is critical in all agile concepts (Stray et al., 2019). A high team autonomy distinguishes agile concepts from

the traditional waterfall models of digital product development. Implementing a high team autonomy has been generally linked to a “clear well-communicated model of the development process, a freezing of design revisions, and policies that encourage managers to support the team rather than interfere in its decision making” (Gerwin & Moffat, 1997, p. 1275). In scaling agility, a cross-functional team coordinates its activities autonomously (Gerster et al., 2020). Given the constant flow of information among team members regarding the evolving product, they can decide what and how to develop from the backlog. Current research on team autonomy suggests that team autonomy positively affects team performance (Ramasubbu & Bardhan, 2021) and satisfaction (Robert & You, 2018). These studies have found that when teams are given greater autonomy in decision-making and task execution, they are more likely to be engaged, motivated, and committed to achieving the organization's goals. Moreover, a study by de Dreu and Weingart (2003) found that team autonomy positively affected creativity and innovation. Another study found that team autonomy increased job satisfaction and reduced turnover intentions (Huang, 2011). Similar results have also been identified for general agile methods (Laanti et al., 2011).

One reason for these positive effects can be explained by the teams’ higher psychological safety due to the increased autonomy (Krancher et al., 2023). Autonomy is achieved through an informal contract between management and teams. This contract is expressed through trust by management on the one hand and the meeting expectations by the teams on the other hand. At the same time, it can be seen that although teams have psychological safety, they do not have a high level of team autonomy. This indicates that a better understanding of team autonomy seems all the more relevant in scaling agility.

At the same time, while team autonomy has been found to have positive effects, it is essential to note that it also has potential drawbacks. For instance, excessive autonomy can lead to decreased accountability, reduced collaboration, and suboptimal decision-making (Langfred, 2007). Therefore, organizations must balance providing teams with sufficient autonomy and maintaining necessary levels of control and oversight. In the context of scaling agility, team autonomy is generally strongly encouraged in practice by the teams themselves and management. However, Carroll et al. (2023) also point out potential difficulties about team autonomy in their study. They call it a "double-edged sword"(p. 282), as it often goes hand in hand with micromanagement in large organizations by implementing numerous metrics. This observation suggests the difficulties with team autonomy, but the specific triggers for the negative role of team autonomy are not specifically addressed. Other studies show that the context is also relevant to whether team autonomy works well. For instance, in new product development, technological turbulence mediates the relationship between team autonomy and performance (Chen et al., 2015).

Adjusting for the right degree of team autonomy is vital for successful teams. Research suggests that flexible and adaptive teams can help organizations respond to changing business needs and compete in dynamic environments (Lee & Xia, 2005). Studies have found that team flexibility and reorganization ability can improve productivity, performance, and innovation. For instance, a study by Argote and McGrath (1993) found that flexible and adaptive teams were more likely to be successful in complex and rapidly changing environments. Other studies find that team flexibility improves problem-solving capabilities and innovation (Li et al., 2011; West, 2002). However, it is also important to note that flexibility can have ambiguous outcomes. For instance, the same study that found “teams experienced and responded more extensively to business changes than technology changes” also found that “they were much less efficient in dealing with business

changes than technology changes" (Lee & Xia, 2005). Therefore, organizations must carefully consider the trade-offs and implement measures to manage the potential downsides of team autonomy expressed through autonomous and flexible teams in scaling agility.

3 METHODOLOGY

Organizational structures emerging during digital transformations (such as scaling agility) are characterized by adaptability and constant changes, thus making it a challenging study area. A qualitative analysis approach can be employed to investigate the issues at hand to gain a more comprehensive understanding of the potential drawbacks of these increasingly popular digital structures (Levina, 2021; Monteiro et al., 2022).

Case	Setting	Industry	Interviewees
Alpha	Alpha is active in telecommunications and has implemented scaling agility to secure its competitive advantage in a liberalizing market environment. Thus, products were to be thought of more from the customer's point of view, and new requirements were to be responded to more quickly. Stringent internal challenges concerning employee protection and hierarchical thinking were particularly pronounced.	Telecommunications	1 senior manager 2 product owners 1 regular team member 1 coordinating role
Beta	Beta is a semi-monopolistic software provider in highly regulated contexts, focusing on tax and accounting solutions. They started their novel way of organizing four years ago.	Information services	2 senior manager 2 product owners 1 regular team member 1 coordinating role
Gamma	Gamma is active in the financial industry and has implemented scaling agility to counter increasing competitive pressure created by customer demand for omnichannel service and the emergence of new purely digital competitors.	Financial services	2 senior manager 2 product owners 2 regular team member 1 coordinating role

Table 1: Case descriptions

In this research, we have adopted a common process design that involves selecting cases from various settings related to the central phenomenon being studied (Eisenhardt, 2021). This approach allows for selecting theoretically relevant cases where scaling agility is implemented, providing a deeper understanding of the phenomenon (Eisenhardt, 1989). Table 1 provides an overview about the three cases, names their industries and the roles that were interviewed during the case study series. The following sections outline our data collection and our data analysis approach.

3.1 DATA COLLECTION

In order to gain a comprehensive understanding of the perspectives of the teams and individual roles involved in scaling agility, we primarily conducted semi-structured interviews to collect first-hand accounts of the implementation of scaling agility (Yin, 2014). The interviews focused on the general benefits and challenges of scaling agility, the particular changes in terms of collaboration, and how autonomy and coordination are changing compared to how companies were previously structured. We divided our data collection process into three phases: the exploratory phase, the confirmatory phase, and the update phase. In the exploratory phase (Phase 1 in Figure 1), we first conducted some interviews, which informed our theoretical

sampling and allowed us to identify relevant roles and contexts to analyze. With the insights gained from these first interviews, we were able to select a total of three cases (overall 23 interviews) for further study. In the confirmatory phase (Phase 2 in Figure 1), we conducted interviews 12 months after the first phase to validate our findings and track changes over time. Shortly after, we closed our data collection with the an update phase (Phase 3 in Figure 1) where we conducted additional interviews in case Gamma and on-site observations in case Beta.

Overall, we talked to 23 individual interviewees, to 14 of them twice (one time in Phase 1, and one time either in Phases 2 or 3). To understand the changes concerning team autonomy in scaling agility more comprehensively, we interviewed persons with various roles (e.g., development team members, product owners (PO), scrum masters (SM), managers, and further coordinating roles). The interviews in the Phase 1 were thematically broad, aiming to understand the process of scaling agility, its challenges and the structural changes underlying scaling agility. In contrast, the interviews in Phases 2 and 3 were more focused on changes between the phases and distinct features of scaling agility as a process hand in hand with structural changes.

We supplemented our data with on-site visits at Beta, including participation in 15 internal meetings – from daily team meetings to strategic meetings covering employee survey results and strategies for the further organizational development of scaling agility. These immersive endeavors helped us to get an improved and refined picture of scaling agility, its challenges, and its effects on teams and individuals firsthand. The observational data was initially captured in field notes and subsequently transcribed.

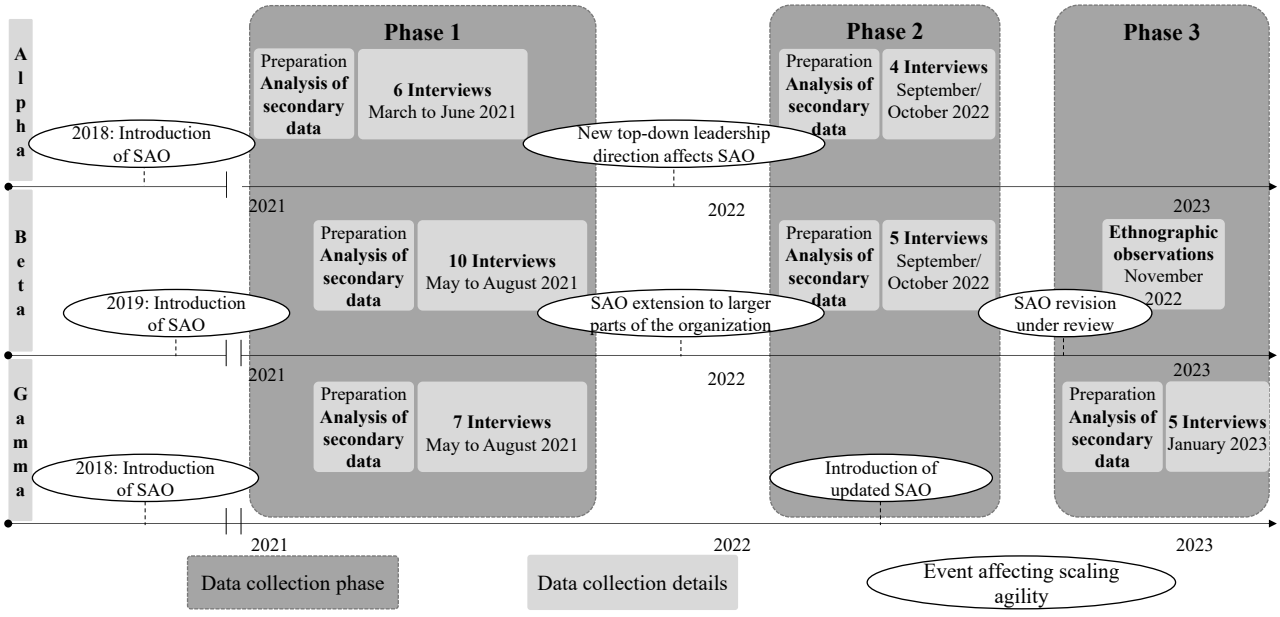


Figure 1. Data collection.

We used additional data sources such as organizational charts, company descriptions, and white papers were to supplement our observations. These sources helped us to prepare for the interviews, to confirm time-related information regarding different cases and assisted in cross-checking our research findings.

3.2 DATA ANALYSIS

Following the transcription of interviews, a systematic coding process was employed using MaxQDA. We engaged in a mixed iterative coding process, using a typical pragmatist approach for the *themes* and a constructivist grounded theory approach for the *mechanisms* to address the themes: deductive qualitative analysis (Charmaz, 2017; Gilgun, 2019). Our method involved iterative analysis and data collection. We developed a preliminary research question and theoretical ideas at the beginning of our project but remained open to the emergence of other significant research themes (Charmaz, 2014; Corbin & Strauss, 2015). For the first part of the analysis, initially, the coding process for the themes was relatively disorganized. However, by abstracting codes and forming a multi-level coding system, we achieved increased structure and more unambiguous identification of specific manifestations of team autonomy themes. After the coding of relevant passages to team autonomy was completed, all codes were merged into higher-level themes that connected the codes. A second, independent round of sorting of the codes was confirmed by the second author.

For the analysis of the mechanisms, we use Gerwin and Moffat's characteristics as a basis. They helped us to show precisely how the team autonomy mechanism plays a role in successfully implementing scaling agility in scaled-agile organizations. The mechanisms are

- a well-communicated model of the development process,
- freezing of design revisions and
- policies that encourage managers to support the team rather than interfere in its decision-making.

This conceptual framework underpins a nuanced exploration of the mechanisms underlying team autonomy in scaling agility. Each transcribed interview underwent meticulous scrutiny, with pertinent statements first summarized into abstracted codes and then categorized into either of the three mechanisms. For the categorization of *a well-communicated model of the development process*, we have followed the rule of putting all statements that revolve around the shared understanding or lack thereof and communication and cooperation topics into this category (Gerwin & Moffat, 1997; Wheelwright & Clark, 1992). For *freezing of design revisions*, we have put all statements that deal with the frequency and importance of foreseen and unforeseen changes in the product development and operations process into this category (Gerwin & Moffat, 1997). Lastly, for *policies that encourage managers to support the team rather than interfere in its decision-making*, we have put all statements concerned with managers' interactions with their teams, how they come up with decision-making, and manager interventions into this category (Gerwin & Moffat, 1997). We present the main findings of our research in the following section.

4 FINDINGS

We identify three themes of team autonomy effects in scaling agility, namely

1. Design of team cross-functionality along the value stream,
2. Dependency orchestration while sustaining autonomy and
3. Balancing stability and flexibility as a consequence of autonomy.

For each theme, we show how these themes play out and afterward demonstrate how these are addressed within the mechanisms derived from Gerwin and Moffat (see Figure 2 for an overview). We will present these findings, structured along the three themes.

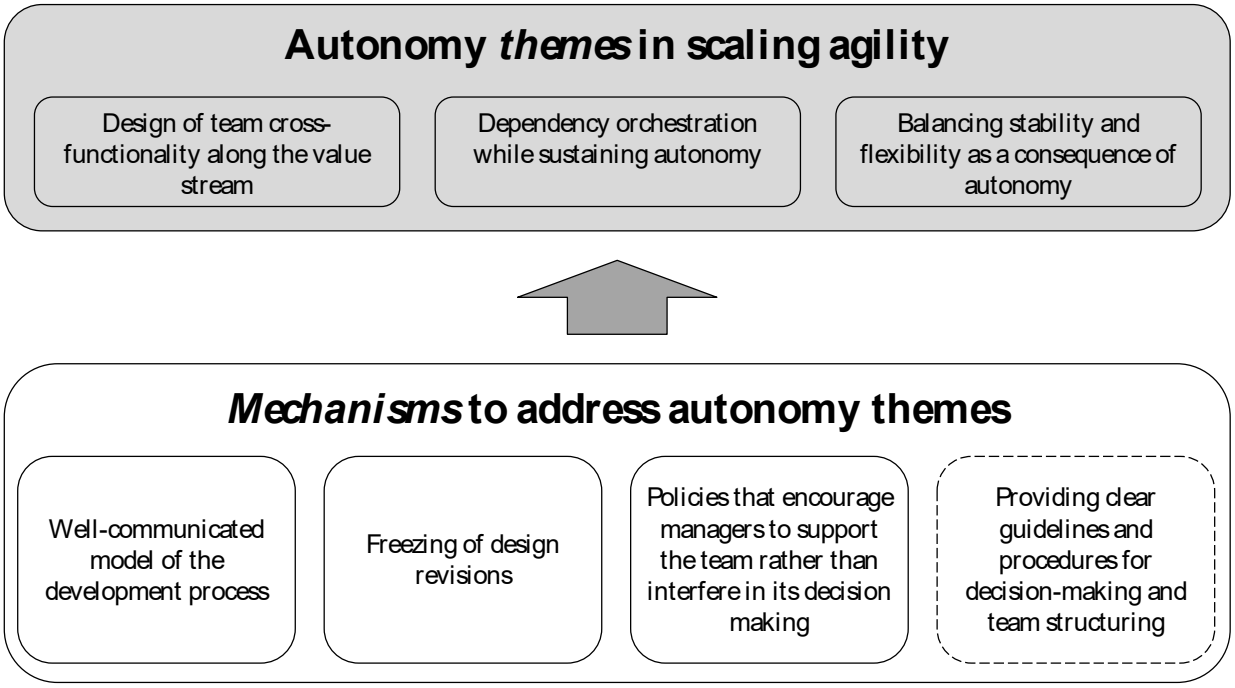


Figure 2. Autonomy themes and mechanisms in scaling agility

4.1 DESIGN OF TEAM CROSS-FUNCTIONALITY ALONG THE VALUE STREAM

Design of team cross-functionality along the value stream refers to organizing teams in a way that enables them to work together seamlessly across different functions and stages of the value stream. This approach aims to improve communication, collaboration, and efficiency, ultimately leading to better outcomes for the organization and its customers.

The design of team cross-functionality along the value stream is crucial for improving communication, collaboration, and efficiency. As one interviewee pointed out,

"it also depends very much on the willingness of the employees in a particular team to take on responsibility. One thing is that they are allowed to do so, in the sense that: I can take responsibility for things autonomously, make decisions and work on them. But of course, it is also necessary to want to do this." (Beta, senior manager)

To achieve this, a well-communicated model of the development process is essential, as another interviewee noted: "If you look at it procedurally, it must be clear in which cases what happens, how the teams have to structure themselves. Who has to be informed, and who can be asked? Such things have to be clarified."(Alpha, senior manager). However, policies that encourage managers to support the team rather than interfere in its decision-making are also necessary, as

"Not all people are happy to have so much freedom. There are quite a few employees who say, 'Watch this. Most of all, I'd like you to tell me now: Yes, do this, this, and this, and I'll knock that off for you. Nevertheless, don't bug me with this whole: Is this more important, or is that more important? My job is not to judge what is more important.'" (Beta, product owner)

A key challenge is striking a balance between autonomy and the pressure of delivering desired functionality, as one interviewee noted: “And that is an element you have to keep in mind so that autonomy does not go down the tubes under a load of desired functionality.”(Beta, team member)

In practice, teams working together for longer tend to develop greater autonomy and self-sufficiency. New teams or teams undergoing significant changes require more reassurance, control, and governance to develop the courage to make decisions for themselves. To maintain agility in the face of enormous demands, it is recommended that agile teams are burdened with no more than half of the pre-prioritization, leaving the rest free to enable decentralized decision-making and promote the desired dynamic.

The impact of designing teams for cross-functionality along the value stream on team autonomy is contingent upon the organizational context, with the potential for both positive and negative effects. On the one hand, team members may experience reduced autonomy as they collaborate more closely with other teams and stakeholders, requiring greater coordination and alignment. On the other hand, cross-functional teams may enhance team autonomy by enabling members to operate more independently with a broader scope of responsibilities and understanding of the value stream.

4.2 Dependency orchestration while sustaining autonomy

Dependency orchestration while sustaining autonomy refers to managing interdependent tasks across different teams while preserving the decision-making authority of each team. It involves identifying and managing dependencies, ensuring alignment, and fostering team collaboration, communication, and trust. Managing team dependency orchestration while sustaining autonomy can be challenging, especially when external dependencies become too complex. As one interviewee noted,

“So autonomy always works well when the level of dependencies you have to manage externally is manageable. If these dependencies become too complex, then autonomy works less well. Then you need some structural framework, for instance the Solution Train, which helps to structure the sorting of these functions.” (Alpha, senior manager)

In Case Gamma, the importance of roles orchestrating the various teams was emphasized as the overarching view suffers a shortage when scaling agility. This underscores the need for people with an sound overview to ensure that the orchestration of the teams works well. As one team member put it,

“For this, there will still have to be people with an infinite overview. […] That's why I don't think it's so much this translation problem from before as it is this: I have a huge orchestration now with 500 instruments, and are they all going to sound together the way I anticipate?” (Beta, senior manager)

Keeping the orchestration of the teams going is a significant challenge, and it is where people who know better what fits together and what doesn't fit together can help. However, our observations demonstrate that there are always too few of such people in each company. As one senior manager noted, “In every company, I've been in, [there are] people who know better what fits together and what doesn't fit together [and] there are always too few of them.” (Gamma, product owner)

One solution to address this shortage of experienced people who can manage team dependency orchestration is establishing a well-communicated development process model. This model should help teams understand their dependencies on other teams and ensure everyone is working towards a common goal. Additionally, policies that encourage managers to support the team rather than interfere in its decision-making can help ensure that the team can work autonomously while still having the support they need from management.

Another solution to this challenge is to implement a structural framework like the solution train – a construct within the SAFe framework that provides a way to coordinate the work of multiple Agile Release Trains (ARTs) toward a shared business and technology mission. This framework can help ensure that the orchestration of the teams works well and that the company can scale agility without suffering from a shortage of an overarching view. The solution train can take over sorting functions when autonomy is less effective, especially when external dependencies become too complex. Therefore, by implementing a well-communicated model of the development process and policies that encourage managers to support the team and by establishing a structural framework like the Solution Train, companies can better manage team dependency orchestration while sustaining autonomy.

4.3 BALANCING STABILITY AND FLEXIBILITY AS A CONSEQUENCE OF AUTONOMY

Balancing stability and flexibility as a consequence of autonomy refers to the challenge of maintaining stability and flexibility in an organization while granting autonomy to its teams. This observation involves striking a balance between allowing teams to innovate and adapt to change while maintaining a stable foundation for the organization's core processes and operations to reap the benefits of a value stream orientation.

The findings suggest that balancing stability and flexibility is a crucial aspect of autonomy in an organization. As one interviewee stated, “developing this kind of team maturity takes three, four, or five years.” Therefore, organizations should implement changes infrequently to allow teams to coordinate blindly and reach full performance. However, the tension arises when activities are highly complex, as people are interested in looking beyond their horizons and may lose motivation over time. In this respect, it is essential to balance having team members work together for an extended period and keeping them motivated. The core of a team must be reasonably stable, with only a 10-15% fluctuation.

The increase in size of an organization can lead to a loss of flexibility and necessitate the implementation of structures that may limit the agility of the organization. As one interviewee noted, “We are now at several hundred, and that then leads to the fact that - yes, that we now also need structures that paralyze us again” (Alpha, coordinating role). Organizations must remain agile, but it is equally essential to have structures that provide stability and ensure that the organization can continue to function effectively.

With the rise of flexibility, team identity may be lost, and team members may feel disconnected from one another. As one interviewee said, “Where is home? In the team, the value stream, or the tribe?” (Alpha, senior manager). It is crucial to establish a sense of identity and belonging for team members, and this can be achieved by having regular meetings to discuss the strategic direction and vision of the organization.

Two possible solutions to balancing stability and flexibility are a well-communicated model of the development process and freezing of design revisions. Having a clear understanding of the development process and the roles and responsibilities of team members can provide stability and ensure that everyone is working toward the same goals. Freezing of design revisions can also provide stability by preventing changes from being made after a certain point in the development process, ensuring that everyone is working with the same design.

One example of how these solutions work well is the following: “We discuss many target pictures and business cases. What is in 5 years, so approximately, which takes us much more flexibility than in the end. Will drift here again than by the necessary structures.” (Gamma, senior manager)

This quote highlights the tension between flexibility and stability organizations face when planning for the future. It suggests that while flexibility is vital for adapting to changing circumstances, too much flexibility can lead to drift and a lack of clear direction. To address this tension, organizations can benefit from a well-communicated model of the development process, which can provide a shared understanding of how design decisions are made and how changes are implemented.

Another solution to address the challenges described could be providing clear guidelines and procedures for decision-making and team structuring. As stated by one of the interviewees, “If you look at it procedurally, it must be clear in which cases what happens, how the teams have to structure themselves. Who has to be informed, and who can be asked? Such things have to be clarified.” (Alpha, senior manager)

Providing clear guidelines can help ensure that teams understand their roles and responsibilities, which can increase their confidence in making decisions autonomously. Additionally, this can help prevent interference from managers who may not fully understand the team's decision-making process. As one of the quotes suggests, “My job is not to judge what is more important” (Gamma, product owner), implying that some employees may prefer to have clear guidelines to follow rather than having to make subjective judgments.

5 DISCUSSION AND CONCLUSION

Our analysis shows how autonomy is expressed in scaling agility and where it has limits. Using the themes of (1) design of team cross-functionality along the value stream, (2) dependency orchestration while sustaining autonomy, and (3) balancing stability and flexibility as a consequence of autonomy, we show how team autonomy can be characterized in scaling agility. Moreover, we show how a (1) well-communicated model of the development process, (2) freezing of design revisions, (3) policies that encourage managers to support the team rather than interfere in its decision-making, and (4) providing clear guidelines and procedures for decision-making and team structuring can be mechanisms to address these themes. Based on these findings, we consolidate three propositions that set the ground for further research (see Table 2 for details).

5.1 PROPOSITION DEVELOPMENT

Previous research has emphasized the advantages of establishing cross-functional teams in scaling agility (Gerster et al., 2020). Teams are supposed to be more self-autonomous and thus faster and more flexible in product delivery across functions (Limaj & Bernroider, 2022). Team autonomy in this context is perceived to be an enabling prerequisite to achieve cross-functionality. Based on our analysis, we recognize that cross-

functionality has its limits when it serves customer orientation. For instance, many companies that scale agility often closely align their sales and marketing departments with the cross-functional teams but still need to dissolve them into them (i.e., from an organizational structure point of view, they keep these teams in separate departments). The main reason is that customers still prefer having the same contact person across several products. This observation hints that team autonomy is limited in incumbent organizations that scale agility, and thus, we propose the following:

P1. The degree of cross-functionality confines the markedness of team autonomy in scaling agility.

Research has identified and partly addressed the challenges associated with orchestrating the scaled-agile organization to other parts of the organization (Dikert et al., 2016) and other organizations (Gerster et al., 2020). These findings help us explain how organizational structures can overcome orchestration challenges by allowing for close collaboration and communication and partly abolishing core agile principles altogether (i.e., by separating development and operations again to orchestrate with other organizations). However, our analysis reveals that challenges regarding orchestration even persist within the scaled-agile organization. For instance, we show that while having a sound understanding of the overall organization and its dependencies appears to be a prerequisite in scaling agility, having this overview in practice is nearly impossible because the dependencies are too much and too complex to be understood by single roles. Our observation shows that while established mechanisms seek to mitigate this challenge, this only works at the cost of team autonomy. Hence, we propose:

P2. Depending on the size and complexity of the organization, dependency orchestration inhibits team autonomy in scaling agility.

Research in scaling agility has described team autonomy as a "double-edged sword" (Carroll et al., 2023, p. 282) because it often comes hand in hand with micro-management and hierarchical backlash. While this observation has been characterized as a challenge, our analysis shows that it is an indicator of how organizations balance flexibility and stability. This observation indicates the tension between autonomy and stability in scaling agility (Frey et al., 2021). Our analysis helps to understand how this tension While autonomy can be an essential driver of agility, it can also create tension with the need for stability and predictability in the development process. We suggest that balancing these competing goals requires careful consideration of the trade-offs involved and may require different approaches depending on the organization's specific context

P3. The degree of team autonomy in scaling agility relates to how organizations balance flexibility and stability.

Proposition	Description	Further research
P1: Design of team cross-functionality along the value stream	Designing teams for cross-functionality along the value stream is crucial for improving communication, collaboration, and efficiency. However, balancing autonomy and the pressure to deliver the desired functionality that the customers demand takes time and effort. Teams should not be burdened with more than half of the pre-prioritization, and policies that encourage managers to support the team rather than interfere in decision-making are necessary to maintain agility. The impact of designing teams for cross-functionality along the value stream on team autonomy is contingent upon the organizational context, with potential positive and negative effects.	• Examining the relationship between team autonomy and outcomes such as innovation, product quality, and customer satisfaction in scaling agility. • Comparing the effectiveness of different approaches to managing cross-functional teams, such as top-down governance versus bottom-up empowerment. • Exploring the role of technology in supporting cross-functional teams and enabling team autonomy.
P2: Dependency orchestration while sustaining autonomy	Managing interdependent tasks across different teams while preserving the decision-making authority of each team is challenging, especially when external dependencies become too complex. To address this challenge, companies can establish a well-communicated development process model, implement policies encouraging managers to support the team, and establish a structural framework like the solution train. These measures ensure that the orchestration of the teams works well and that the company can scale agility without suffering from a shortage of an overarching view.	• Conducting case studies of organizations that have successfully implemented these solutions and comparing their approaches to those that have struggled. • Surveys or interviews with employees could provide insight into their perceptions of how well their organization manages team dependency orchestration and what factors contribute to their perception.
P3: Balancing stability and flexibility as a consequence of autonomy	Balancing stability and flexibility is critical for achieving autonomy in an organization. Organizations must strike a balance between allowing teams to innovate and adapt to change while maintaining a stable foundation for the organization's core processes and operations. This necessity can be achieved by implementing changes as infrequently as possible, having a reasonably stable core team, and establishing a sense of identity and belonging for team members. Additionally, a well-communicated model of the development process and freezing design revisions can provide stability and shared goal orientation.	• Research can explore strategies for balancing stability and flexibility in autonomous teams. • Case studies can compare successful and struggling organizations' approaches. • Surveys or interviews with employees can provide insight into their perception.
P4. Established and new mechanisms enable organizations to address team autonomy	Next to the three first propositions that relate primarily to the team autonomy themes, this proposition focuses on the role of the mechanisms and how they can potentially help address these established team autonomy themes.	• Qualitative and quantitative analysis of the effectiveness of these mechanisms. • The validation of these mechanisms in different case settings and organizational designs.

Table 2. Propositions and further research

Previous research has established that in scaling agility team autonomy plays a vital, yet challenging role (Krancher et al., 2023; Carroll et al., 2023). With our findings, we show how precise mechanisms can be helpful to addressing the ambivalent consequences for team autonomy in agile contexts. More precisely, we show how a well-communicated model of the development process, freezing of design revisions, and policies that encourage managers to support the team rather than interfere in its decision-making as well as providing

clear guidelines and procedures for decision-making and team structuring can be helpful to mitigate the negative sides of team autonomy. We propose:

P4. Besides established mechanisms, providing clear guidelines and procedures for decision-making and team structuring as a new mechanism enables organizations to address team autonomy themes in scaling agility.

Based on the proposition development, further research that investigates these propositions in more detail seems fruitful. In addition to the concrete verification and validation of the propositions derived from this explorative study, further interesting research based on the results can be derived, which we list in the last column of Table 2. Concerning our first proposition, for instance, exploring the effects of different cross-functional team set-ups can be a fruitful endeavor. Based on our second proposition, further research that incorporates other parts of the organization or even other organizations into the data analysis seems valuable because it enables us to better understand how dependency orchestration is managed in scaling agility. Regarding the third proposition, further analysis of the balancing of flexibility and stability can provide novel insights into the role of team autonomy. Lastly, the fourth proposition invites further research into the application of the identified mechanisms in various case settings and organizational designs that aim for scaling agility.

5.2 CONTRIBUTIONS

The paper offers theoretical contributions to the ongoing research debate on scaling agility and team autonomy. The analysis presented in this paper sheds light on how organizations manifest team autonomy in scaling agility. Specifically, we identify three themes - design of team cross-functionality along the value stream, dependency orchestration while sustaining autonomy, and balancing stability and flexibility - central to how team autonomy is expressed in scaling agility. Our findings suggest that team autonomy is a multi-dimensional construct that involves careful coordination across different parts of the organization, extending prior research on the specifics of agile forms of organizational design (Gerster et al., 2020; Limaj & Bernroider, 2022) and team autonomy in agile contexts (Werder & Maedche, 2018). Compared to previous studies, by deriving propositions on the role of team autonomy we provide a more nuanced understanding of the underlying themes and mechanisms characterizing team autonomy in scaling agility.

Moreover, our analysis highlights the importance of distinct mechanisms to address the challenges related to the team autonomy themes. We argue that a well-communicated model of the development process, freezing of design revisions, policies that encourage managers to support the team rather than interfere in its decision-making, and providing clear guidelines and procedures for decision-making and team structuring can be mechanisms to address the underlying themes of autonomy and henceforth help to solve tensions that autonomy causes in scaling agility extending prior research (Dikert et al., 2016; Frey et al., 2021).

In identifying a fourth mechanism, we also extend the mechanisms to address team autonomy that Gerwin & Moffat (1997) identified. With this fourth mechanism we can explain better, because more complete and nuanced, what team autonomy Themes can support in scaling agility. Specifically, we show that *providing clear guidelines and procedures for decision-making and team structuring* in scaling agility balances stability and flexibility – a key issue for incumbent firms in scaling agility (Frey et al., 2021). This mechanism can also

be effective in other digital transformation phenomena. Further research could investigate this potential effectiveness in other contexts.

Our research also has valuable practical implications. By identifying concrete, applicable mechanisms, managers can specifically address the challenges of team autonomy. For instance, clear communication channels and decision-making processes in enabling teams to maintain autonomy while coordinating with other parts of the organization seem to be vital elements. These insights enable managers to better confront the diverse challenges that IT organizations of incumbent firms face on their journey to greater agility.

5.3 LIMITATIONS

This work has limitations. Our results provide only an exploratory picture of the ambivalent role of team autonomy in scaling agility. Although this already advances the discourse in this topic area, further research should validate our findings. Likewise, the chosen approach of taking the team autonomy mechanisms of Gerwin and Moffat limits our perspective. Although - as mentioned in the methodology - we always tried to consider other, possibly more appropriate lenses during our data analysis, this is a limitation. Especially for analyzing this second part of the paper, other theoretical lenses are helpful to complement our findings.

Moreover, while a case study design can explore themes and mechanisms regarding team autonomy, a deeper analysis to confirm the findings seems appropriate. For instance, a more extended observation of the underlying mechanisms addressing team autonomy seems rewarding to fully understand the underlying assumptions that influence team autonomy. Accordingly, future work could conduct ethnographic studies to gain an even deeper understanding of team autonomy. Another sensible addition would be to add other contexts to the data set. Although we have chosen specific cases that complement the diversity of other work, a further expansion of the case base is helpful to increase the validity of the results. Likewise, a quantitative study based on these results must confirm the findings. For this purpose, individual cases could be surveyed and examined holistically, or team members from various organizations could be interviewed.

Nonetheless, with the insights gained in this paper, we hope for further fruitful research at the intersection of team autonomy and scaling agility. We look forward to research that builds upon our findings.

References

Aghina, W., de Smet, A., Lackley, G., Lurie, M., Murarka, M., and Handscomb, C. (2018). “The five trademarks of agile organizations,” Retrieved from https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/the-five-trademarks-of-agile-organizations.

Alsaqaf, W., Daneva, M., and Wieringa, R. (2019). “Quality requirements challenges in the context of large-scale distributed agile: An empirical study.” *Information and Software Technology*, 110, 39–55. DOI: https://doi.org/10.1016/j.infsof.2019.01.009.

Argote, L., and McGrath, J. E. (1993). “Group processes in organizations: Continuity and change,” *International Review of Industrial and Organizational Psychology*, 8(1), 333–389.

Austin, R. D., and Devin, L. (2009). “Weighing the Benefits and Costs of Flexibility in Making Software: Toward a Contingency Theory of the Determinants of Development Process Design,” *Information Systems Research*, 20(3), 462–477. DOI: https://doi.org/10.1287/isre.1090.0242.

Bick, S., Spohrer, K., Hoda, R., Scheerer, A., and Heinzl, A. (2018). “Coordination Challenges in Large-Scale Software Development: A Case Study of Planning Misalignment in Hybrid Settings,” *IEEE Transactions on Software Engineering*, 44(10), 932–950. DOI: https://doi.org/10.1109/TSE.2017.2730870.

Charmaz, K. (2014). Constructing grounded theory (2nd ed.). Sage.

Charmaz, K. (2017). “The Power of Constructivist Grounded Theory for Critical Inquiry,” *Qualitative Inquiry*, 23 (1), 34–45. DOI: https://doi.org/10.1177/1077800416657105.

Chen, C.-Y., and Lee, J.-C. (2023). “Exploring Teams' Temporal Factors for Determining Process Tailoring that Promotes the Evolution of Agile-based Software Development,” *ACM SIGMIS Database*, 54(1), 46–65. DOI: https://doi.org/10.1145/3583581.3583585.

Chen, J., Neubaum, D. O., Reilly, R. R., and Lynn, G. S. (2015). “The relationship between team autonomy and new product development performance under different levels of technological turbulence,” *Journal of Operations Management*, 33-34 (1), 83–96. DOI: https://doi.org/10.1016/j.jom.2014. 10.001.

Corbin, J. M., and Strauss, A. L. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory*, Sage.

Dikert, K., Paasivaara, M., and Lassenius, C. (2016). “Challenges and success factors for large-scale agile transformations: A systematic literature review,” *Journal of Systems and Software*, 119, 87–108. DOI: https://doi.org/10.1016/j.jss.2016.06.013.

Drechsler, K., Gregory, R., Wagner, H. T., and Tumbas, S. (2020). “At the crossroads between digital innovation and digital transformation,” *Communications of the Association for Information Systems*, *47*(1), 23.

de Dreu, C. K. W., and Weingart, L. R. (2003). “Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis,” *The Journal of Applied Psychology*, 88 (4), 741–749. DOI: https://doi.org/10.1037/0021-9010.88.4.741.

Eisenhardt, K. M. (1989). “Building Theories from Case Study Research,” *Academy of Management Review*, 14 (4), 532. DOI: https://doi.org/10.2307/258557.

Eisenhardt, K. M. (2021). “What is the Eisenhardt Method, really?,” *Strategic Organization*, 19 (1), 147–160. DOI: https://doi.org/10.1177/1476127020982866.

Frey, J., Hund, A., and Beimborn, D. (2021). “Scaling Agility: How Organizations Balance Tensions in Scaled-agile Organizations,” In: *Proceedings of the 42th International Conference on Information Systems,* Austin, Texas.

Gandornani, T. J., and Nafchi, M. Z. (2016). “Agile transition and adoption human-related challenges and issues: A Grounded Theory approach,” *Computers in Human Behavior*, 62, 257–266. DOI: https://doi.org/10.1016/j.chb.2016.04.009.

Gerster, D., Dremel, C., Brenner, W., and Kelker, P. (2020). “How Enterprises Adopt Agile Forms of Organizational Desig,”. *The DATABASE for Advances in Information Systems*, 51(1), 84–103. DOI: https://doi.org/10.1145/3380799.3380807.

Gerster, D., Dremel, C., Conboy, K., Mayer, R., and vom Brocke, J. (2021). “How Fujitsu and Four Fortune 500 Companies Managed Time Complexities Using Organizational Agility,” *MIS Quarterly Executive*, 127–150. DOI: https://doi.org/10.17705/2msqe.00045.

Gerwin, D., and Moffat, L. (1997). “Withdrawal of Team Autonomy during Concurrent Engineering,” *Management Science*, 43(9), 1275–1287.

Gilgun, J. F. (2019). “Deductive qualitative analysis and grounded theory: Sensitizing concepts and hypothesis-testing,” *In The SAGE handbook of current developments in grounded theory*, 107–122.

Gregory, P., Barroca, L., Sharp, H., Deshpande, A., and Taylor, K. (2016). “The challenges that challenge: Engaging with agile practitioners' concerns,” *Information and Software Technology*, 77, 92–104. DOI: https://doi.org/10.1016/j.infsof.2016.04.006.

Hackman, J. R., and Oldham, G. R. (1980). *Work redesign*. Addison-Wesley.

Huang, T.-P. (2011). “Comparing motivating work characteristics, job satisfaction, and turnover intention of knowledge workers and blue-collar workers, and testing a structural model of the variables' relationships in China and Japan,” *The International Journal of Human Resource Management*, 22(4), 924–944. DOI: https://doi.org/10.1080/09585192.2011.555134.

Klein, J. A. (1991). “A Reexamination of Autonomy in Light of New Manufacturing Practices,” *Human Relations*, 44 (1), 21–38.

Laanti, M., Salo, O., and Abrahamsson, P. (2011). “Agile methods rapidly replacing traditional methods at Nokia: A survey of opinions on agile transformation,” *Information and Software Technology*, 53 (3), 276–290. DOI: https://doi.org/10.1016/j.infsof.2010.11.010.

Langfred, C. W. (2007). “The Downside of Self-Management: A Longitudinal Study of the Effects of Conflict on Trust, Autonomy, and Task Interdependence in Self-Managing Teams.” *The Academy of Management Journal*, 50 (4), 885–900.

Lee, G., and Xia, W. (2010). “Toward Agile: An Integrated Analysis of Quantitative and Qualitative Field Data on Software Development Agility,” *MIS Quarterly,* 34 (1), 87. DOI: https://doi.org/10.2307/20721416.

Lee, G., and Xia, W. (2005). “The ability of information systems development project teams to respond to business and technology changes: a study of flexibility measures,” *European Journal of Information Systems*, 14 (1), 75–92. DOI: https://doi.org/10.1057/palgrave.ejis.3000523.

Levina, N. (2021). “All information systems theory is grounded theory,” *MIS Quarterly*, 45 (1), 489–494.

Li, Y., Yang, M.-H., Klein, G., and Chen, H.-G. (2011). “The role of team problem solving competency in information system development projects,” *International Journal of Project Management*, 29 (7), 911–922. DOI: https://doi.org/10.1016/j.ijproman.2010.09.004.

Limaj, E., and Bernroider, E. W. (2022). “A taxonomy of scaling agility,” *The Journal of Strategic Information Systems*, 31 (3), 101721. DOI: https://doi.org/10.1016/j.jsis.2022.101721.

Lohrasbinasab, I., Acharya, P. B., and Colomo-Palacios, R. (2020). “BizDevOps: a multivocal literature review,” In *Computational Science and Its Applications–ICCSA 2020: 20th International Conference, Cagliari, Italy, July 1–4, 2020, Proceedings, Part VI 20* (pp. 698-713). Springer International Publishing.

Mikalsen, M., Moe, N. B., Stray, V., and Nyrud, H. (2018). “Agile Digital Transformation: A Case Study of Interdependencies,” In: *Proceedings of the 39th International Conference on Information Systems 2018*.

Monteiro, E., Constantinides, P., Scott, S., Shaikh, M., and Burton-Jones, A. (2022). “Qualitative research methods in information systems: a call for phenomenon-focused problematization,” *MIS Quarterly*, 46 (4), iii–xix.

Paasivaara, M., Behm, B., Lassenius, C., and Hallikainen, M. (2018). “Large-scale agile transformation at Ericsson: a case study,” *Empirical Software Engineering*, 23 (5), 2550–2596. DOI: https://doi.org/10.1007/s10664-017-9555-8.

Pries-Heje, J., and Krohn, M. M. (2017). “The SAFe way to the agile organization,” In: *Proceedings of the*

XP2017 Scientific Workshops. ACM. DOI: https://doi.org/10.1145/3120459.3120478.

Ramasubbu, N., and Bardhan, I. R. (2021). "Reconfiguring for Agility: Examining the Performance Implications of Project Team Autonomy through an Organizational Policy Experiment;" *MIS Quarterly*, 45 (4), 2261–2280. DOI: https://doi.org/10.25300/MISQ/2021/14997.

Robert, L. P., and You, S. (2018). "Are you satisfied yet? Shared leadership, individual trust, autonomy, and satisfaction in virtual teams," *Journal of the Association for Information Science and Technology*, 69 (4), 503–513. DOI: https://doi.org/10.1002/asi.23983.

Stray, V., Moe, N. B., and Hoda, R. (2018). "Autonomous agile teams: challenges and future directions for research," In: *Proceedings of the 19th international conference on agile software development: companion* (pp. 1-5).

Tumbas, S., Berente, N., and Vom Brocke, J. (2018). "Digital innovation and institutional entrepreneurship: Chief Digital Officer perspectives of their emerging role," *Journal of Information Technology*, *33*, 188-202.

Werder, K., and Maedche, A. (2018). "Explaining the emergence of team agility: a complex adaptive systems perspective," *Information Technology and People*, 31 (3), 819–844. DOI: https://doi.org/10.1108/ITP-04-2017-0125.

West, M. A. (2002). "Sparkling Fountains or Stagnant Ponds: An Integrative Model of Creativity and Innovation Implementation in Work Groups," *Applied Psychology: An International Review*, 51 (3), 355–424.

Wheelwright, S. C. and K. B. Clark (1992). "Revolutionizing Product Development, Quantum Leaps in Speed, Efficiency and Quality," *The Free Press*, New York, 1992.

Paper VI

WHEN AGILE SCALES: THE INTERPLAY BETWEEN ROLE IDENTITY AND SCALED-AGILE ORGANIZATIONS

Nikola Finze

Neu-Ulm University of Applied Sciences

Julian Frey

University of Bamberg

Axel Hund

University of Bamberg

Daniel Beimborn

University of Bamberg

Heinz-Theo Wagner

Neu-Ulm University of Applied Sciences

Finze, N., Frey, J., Hund, A., Beimborn, D. & Wagner, H.-T. When Agile Scales: The Interplay between Role Identity and Scaled-agile Organizations. In: Proceedings of the 44th International Conference on Information Systems, Hyderabad, India (2023). https://aisel.aisnet.org/icis2023/diginnoventren/diginnoventren/5

Paper VII

WE ARE THE CHANGE: HOW WORK-RELATED IDENTITIES INFLUENCE INERTIA DURING DIGITAL TRANSFORMATION

Nikola Finze

Neu-Ulm University of Applied Sciences

Julian Frey

University of Bamberg

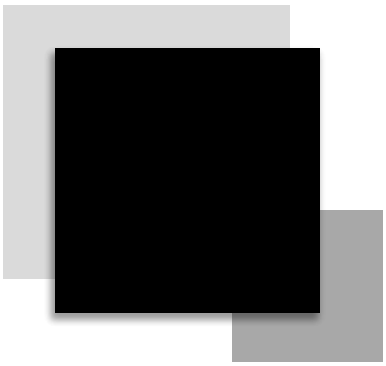
Daniel Beimborn

University of Bamberg

Heinz-Theo Wagner

Neu-Ulm University of Applied Sciences

Finze, N., Frey, J., Beimborn, D. & Wagner, H.-T. (2024). We Are the Change: How Work-related Identities Influence Inertia during Digital Transformation. *Proceedings of the 45th International Conference on Information Systems (2024), Bangkok, Thailand.* https://aisel.aisnet.org/icis2024/isdesign/isdesign/10



Chapter III:
Scaling Agility Effects

Paper VIII

DIGITAL TRANSFORMATION: HOW SCALING AGILITY AFFECTS VALUE CREATION PATHS

Julian Frey

University of Bamberg

Ferdinand Mittermeier

University of Bamberg

Daniel Beimborn

University of Bamberg

Frey, J., Mittermeier, F. & Beimborn, D. (2023). Digital Transformation: How Scaling Agility Affects Value Creation Paths. *Proceedings of the 2023 Americas Conference on Information Systems, Panama City, Panama.* https://aisel.aisnet.org/amcis2023/sig_dite/sig_dite/11

Paper IX

FROM COMMUNICATION TO MOTIVATION:

LEVERAGING SCALING AGILITY FOR IT-BUSINESS ALIGNMENT

Julian Frey

University of Bamberg

Nikola Finze

Neu-Ulm University of Applied Sciences

Axel Hund

Neu-Ulm University of Applied Sciences

Daniel Beimborn

University of Bamberg

Frey, J., Finze, N., Hund, A. & Beimborn, D. (2024). From Communication to Motivation: Leveraging Scaling Agility for IT-Business Alignment. *Proceedings of the 2024 Pacific-Asia Conference on Information Systems, Ho-Chi Minh City, Vietnam.* https://aisel.aisnet.org/pacis2024/track15_govce/track15_govce/6

Appendix

PUBLICATIONS

Peer reviewed Conference Articles

Finze, N., Frey, J., Wagner, H.-T., & Beimborn, D. (2023). *"Who am I when everything has changed?" The impact of scaled-agile organizations on professional role identity*. In *Proceedings of the 44th International Conference on Information Systems*, Hyderabad, India.

Finze, N., Frey, J., Gewald, H., & Wagner, H.-T. (2024). *We are the change: How work-related identities influence inertia during digital transformation*. In *Proceedings of the 45th International Conference on Information Systems*, Bangkok, Thailand.

Frey, J. (2023). *Scaling agility in incumbent firms: A literature review*. In *Proceedings of the 44th International Conference on Information Systems*, Hyderabad, India.

Frey, J. and Beimborn, D. (2023). *Coordination and Identity in Digital Transformation Organizing*. In: *Proceedings of the 39th EGOS Colloquium*, Cagliari, Italy

Frey, J., Finze, N., Hund, A., & Beimborn, D. (2024). *From communication to motivation: Leveraging scaling agility for IT-business alignment*. In *Proceedings of the 2024 Pacific-Asia Conference on Information Systems*, Ho Chi Minh City, Vietnam. (Best Paper in Track Award)

Frey, J., Holotiuk, F., & Beimborn, D. (2020). *Debating digital innovation: A literature review*. In *Proceedings of the 15th International Conference on Wirtschaftsinformatik*, Potsdam, Germany.

Frey, J., Hund, A., & Beimborn, D. (2022). *Designing scaled-agile organizations: A taxonomy of design criteria*. In *Proceedings of the 17th International Conference on Wirtschaftsinformatik*, Nuremberg, Germany.

Frey, J., Hund, A., & Beimborn, D. (2023). *Scaling Agility for Digital Transformation: How Organizations Manage Arising Tensions.* In *Academy of Management Proceedings* (Vol. 2023, No. 1, p. 18334). Briarcliff Manor, NY 10510: Academy of Management.

Frey, J., Mittermeier, F., & Beimborn, D. (2023). *Digital transformation: How scaling agility affects value creation paths*. In *Proceedings of the 2023 Americas Conference on Information Systems*, Panama City, Panama.

Mittermeier, F., Hund, A., Beimborn, D., Frey, J., & Hildebrandt, Y. (2024). Externalizing Digital Options Thinking: How Corporate Venture Builders Generate Opportunities to Invest in Digital Innovation. In *Proceedings of the 2024 European Conference on Information Systems*, Paphos, Cyprus.-

Research Reports

Hund, A., Holotiuk, F., Beimborn, D., Wagner, H.-T., Frey, J., and Moormann, J. (2022). Digital Innovation Labs Report 2.0: Developing Digital Innovation to Accelerate Digital Transformation.

Holotiuk, F., Beimborn, D., Hund, A., Wagner, H.-T., Frey, J., and Moormann, J. (2020). Abschlussbericht: Digital Innovation Labs.