THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

Connected change initiatives in business networks: A case of packaging in retail distribution

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Abstract

Organisations across industries face increasing pressures to reduce their environmental impact and improve operational efficiency while adopting new technologies and responding to regulatory change. Since resources - such as products, packaging, and logistics facilities - are interdependently shared across organisations, change initiatives by one business actor can affect what others can and will do. Identifying and analysing these connections is therefore essential for ensuring that change initiatives are efficient, effective, and sustainable.

This doctoral dissertation explores connected change initiatives in business networks - how they can be conceptualised, analysed, and managed when firms attempt to change resources.

Theoretically, the thesis is grounded in the Industrial Network Approach and the Actors–Resources–Activities (ARA) model, taking its starting point in changes of key resources and their ramifications, in terms of connected change initiatives in business networks. In doing so, the thesis conceptualises connectedness among change initiatives as interdependencies among resource interfaces within the activated resource structure, and shows how these interdependencies can be observed across different network settings.

Empirically, the thesis examines efforts to develop packaging in retail distribution, where the development of packaging involves considering product protection, transport efficiency, material use, and customer expectations. These efforts are also connected to developments of automation solutions, logistics facilities and packaging materials across firm boundaries.

Methodologically, the research began as a single case study and evolved into a casing process: starting from a focal change initiative and expanding the case boundary as further connected changes were uncovered, thereby enabling analysis of multiple, interrelated change initiatives across organisations.

The findings show how: (i) connected change initiatives influence one another through the activated resource structure; (ii) the notion of network settings provides an analytical tool through which feasibility (what can be done) and friction (what creates resistance to change) can be identified and explained; and (iii) mobilisation of resources across business relationships is a managerial mechanism for aligning and reconfiguring critical resource interfaces.

The thesis contributes theoretically by conceptualising connected change initiatives in relation to resource interfaces, activated resource structures, and network settings; methodologically by introducing a casing approach to uncover and analyse such

connected changes; and practically by offering guidance for managers seeking to coordinate change initiatives across firm boundaries through the mobilisation of resources and counterparts.

Keywords: connectedness, connected change initiatives, resource interfaces, activated resource structure, network settings, mobilisation of resources, business networks, retail distribution, develop packaging

List of appended papers

Paper 1: Brüel Grönberg, S., and Hulthén, K. (2022), "E-commerce packaging as an embedded resource in three network settings". *The International Review of Retail, Distribution and Consumer Research*, 32(4), 450-467.
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Author contributions: The authors collaborated on the study planning and data collection. The data collection and transcription process was led by Brüel Grönberg, while both authors were involved in data analysis. Both authors contributed to the writing, although Hulthén took the lead. The authors jointly conducted the rewriting and editing. Brüel Grönberg was the corresponding author.

Paper 2: Brüel Grönberg, S., and Hulthén, K. (2022), "Disembedding air from e-commerce parcels: A joint challenge for supply chain actors". *Industrial Marketing Management*, 107, 396-406.
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Author contributions: The planning of the study and data collection were a collaborative effort among the authors. Brüel Grönberg led the data collection and transcription process while data analysis involved both authors. In the writing process, Hulthén took a leading role, with both authors contributing to writing. Rewriting and editing were jointly performed by the authors. Hulthén was corresponding author.

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Author contributions: All authors contributed to the development of the paper, including its planning, analysis, and writing. Data collection was carried out by Sandra Brüel Grönberg and Kajsa Hulthén, with Sandra also drafting the initial description of the casing process. The work was iterative, encompassing all stages - from the initial idea and three major revisions.

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Gothenburg, January 2026
Sandra Brüel Grönberg

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1 Introduction

Firms face growing pressure to reduce their environmental impact and improve operational efficiency while adopting new technologies and complying with new regulations (Meixell & Luoma, 2015). In response, firms launch a range of change initiatives – such as introducing automation, reconfiguring logistics, revising sourcing and compliance practices, and redesigning packaging (Hellström, 2007; Cozzolino & De Giovanni, 2023). Since resources - such as products, automation solutions, logistics facilities, and packaging - are inter-organisationally interdependent, a change introduced by one actor can enable, constrain, or redirect changes by others. In other words, intentional ongoing changes - change initiatives - rarely stop at the boundary of a single firm; they are connected through business relationships within business networks (Håkansson & Snehota, 1995). Recognising and accounting for these connections are therefore crucial for firms seeking to achieve more effective, efficient, and sustainable practices.

Coordinating change initiatives across firm boundaries is essential, yet outcomes are influenced not only by business actors' goals and ongoing activities, but also by the existing resource structure, which may be costly or difficult to modify (Harrison et al., 2023; Mugoni et al., 2024). As a result, a change initiative that appears advantageous in one part of the business network may prove ineffective, inefficient, or unsustainable elsewhere, creating friction and imposing constraints, depending on how different business actors perceive and prioritise the change initiative in relation to their own and others' ongoing change initiatives. This is partly because different parts of the business network operate with distinct operational needs, dependencies, and objectives; consequently, change initiatives are not always aligned (Gadde & Håkansson, 1992).

This thesis takes its starting point in the notion that resources are not developed in isolation, but are deeply intertwined with other resources distributed across multiple firms (Jahre & Hatteland, 2004; Jahre et al., 2006). Consequently, developing a new resource solution often requires changes of other interdependent resources, just as initiatives targeting a focal resource can have consequences for those resources in return. This mutual influence reflects the phenomenon focused on in this thesis - ***connectedness among change initiatives in business networks.***

Empirically, this thesis focuses on packaging in retail distribution, where packaging is central to the tensions between product protection, transport efficiency, material use, and customer expectations (Silva & Pålsson, 2022; Mudgal et al., 2024). Developing packaging therefore means balancing these tensions while fitting into existing distribution structures and relating to ongoing changes within them (Jahre & Hatteland,

2004). Packaging requirements vary depending on the delivery context; for instance, e-commerce deliveries often require different solutions compared to deliveries to physical stores. As a result, products are frequently packed, unpacked, and repacked to meet differing needs and requirements, which increases packaging waste and demands time-consuming work for various actors involved in preparing and moving products from production to use.

During the empirical study on which this thesis relies, one observation repeatedly illustrated how a seemingly local change initiative can become connected with other ongoing changes across a business network. For example, a major omnichannel retailer received store-packed products from suppliers and repacked them for delivery to both online customers and physical stores. After investing in a high-capacity automated warehouse for e-commerce picking and packing, the retailer planned to receive single-packed products from suppliers and deliver them to its customers in e-commerce parcel format. The intention was to replace traditional store packaging (e.g., packs of three to six products for store replenishment) with individually packed products, thereby reducing manual handling and waste, while aligning operations with the new warehouse automation. The retailer expected this would benefit all involved business actors, such as suppliers, logistics service providers, and store customers. However, it soon became evident that the change initiative was more complex and affected partners in ways not first anticipated. One of the retailer's product suppliers, initially positive to single-packing on pallet-sized cardboard racks, had invested in automation for store packaging, making exceptions towards a specific customer inefficient and costly. Meanwhile, one of the retailer's logistics service providers aimed to improve unloading through increased automation, which required protective, standardised parcels – a requirement that conflicted with the retailer's e-commerce parcels for physical store deliveries. Some of the retailer's customers, after experiencing product damage in parcel deliveries handled by the logistics service provider, preferred the traditional store packaging. Hence, what initially seemed like a logical improvement for the retailer clashed with their partners' ongoing change initiatives and established distribution structures. Each actor was simultaneously managing its own change initiatives, such as investments in automation, which influenced both its capacity and willingness to adapt. While some partners were open to change in line with the retailer's ambitions, others faced constraints that made the retailer's initiative difficult to implement.

This example illustrates that change initiatives are connected and cannot be managed in isolation. In business networks, interaction between business actors affects how resources are combined, re-combined, and co-developed (Baraldi et al., 2012). Firms continually manage their own change initiatives while responding to others through their business relationships. Understanding how change initiatives unfold therefore requires

looking beyond the boundaries of a single firm, as well as beyond evaluating individual change initiatives solely in terms of success or failure.

With that backdrop, the aim of this thesis is ***to explore how connected change initiatives can be conceptualised, analysed and managed in business networks*** - with particular attention to how interdependencies among resources stretch across firm boundaries.

1.1 Theoretical relevance

This research addresses the challenge of conceptualising and analysing how change initiatives are connected across firm boundaries, and how this connectedness influences their outcomes in business networks. Business markets are complex and dynamic, with firms embedded in networks of business relationships that both constrain and enable their actions (Håkansson & Snehota, 1995). Yet much of the existing research has focused on change initiatives within organisations - such as the leadership and management of organisational change (Peus et al., 2009; Naslund & Norrman, 2019; Errida & Lotfi, 2021; Naslund & Norrman, 2022), how organisational silos emerge and persist during periods of change (Jeske & Olson, 2025), and how individuals react to change initiatives (Borges & Quintas, 2020; Yin et al., 2024). Moreover, Dolgui et al. (2018) explicitly note that the ways resource-related change initiatives connect and interact across firms and relationships have been relatively overlooked in both supply chain and business network research, and call for studies that address this gap.

As companies engage in change initiatives, understanding how these initiatives are influenced by their inter-organisational context becomes increasingly important. This thesis responds to this need by adopting the Industrial Network Approach, which views business networks as connected business relationships in which interaction and resource adaptation are central (Håkansson & Snehota, 1995; Ford et al., 2008).

A key focus of this research is business actors' interactions with resources - how resources are combined, re-combined, and co-developed across firm boundaries (Baraldi et al., 2012). Changes in one resource often affect other resources, both within the firm and beyond its boundaries (Håkansson et al., 2009). Past adaptations and future expectations influence current possibilities, as the existing resource structure reflects accumulated changes over time (Törnroos et al., 2017). At the same time, resources are distributed across different firms, meaning that change initiatives often require alignment across organisational boundaries. Accordingly, connectedness among change initiatives can both enable and constrain the development of new resource combinations, depending on how resource interfaces are configured.

While prior research within the Industrial Network Approach offers a rich understanding of resource interaction in business networks (Baraldi et al., 2012; Bocconcelli et al.,

2020; Prenkert et al., 2022; Baraldi et al., 2024), less attention has been paid to the consequences of how resource-related change initiatives – i.e. intentional efforts by business actors to modify resource features or resource interfaces - connect across firms and business relationships. Such a focus helps explain why change initiatives often become more challenging than expected. The thesis explores why and how such resource-related change initiatives – whether initiated within a single firm or jointly with partners, create frictions and prompt adaptations elsewhere in the business network.

Although sustainable packaging has attracted greater attention in recent years, the operational management of how such solutions function in practice has received comparatively less focus (Morashti et al., 2022). To address this, the thesis shows how the Industrial Network Approach can complement socio-technical systems research in packaging logistics. While socio-technical systems typically define system scope ex ante and foregrounds socio-technical configurations, the Industrial Network Approach treats business networks as open and boundary-emergent, and takes business relationships and resource interfaces as the central units of analysis. Together, these perspectives offer different but complementary ways of understanding how sustainability-oriented change initiatives unfold in practice. In particular, the Industrial Network Approach is well suited to conceptualise and analyse connectedness among change initiatives across resource interfaces and business relationships.

1.2 Societal relevance

Understanding how different change initiatives are connected is essential for developing effective policy, fostering coordination across industries, and guiding practical decision-making, especially given growing societal and environmental challenges (UNDP, 2025; Patterson et al., 2017). Issues such as climate change, resource scarcity, and social resilience require coordinated action across firms, sectors, and regions, rather than isolated organisational responses (ibid.).

Furthermore, prior research indicates that sustainable development - understood as achieving environmental, social, and economic goals through system-wide, long-term coordination across technologies, organisations, and institutions - requires systems thinking approaches (Williams et al., 2017; Burleson et al., 2023). Such approaches account for the dynamic and interconnected nature of technical, social, economic, and environmental factors (ibid.).

This need becomes even more pressing during times of global disruptions. Events such as the COVID-19 pandemic and the Russian invasion of Ukraine have demonstrated how industrial systems are deeply affected by geopolitical instability, price volatility, and shifting resource dependencies (Wadström, 2023). These developments increase pressure on firms to reorganise their own operations and to press their suppliers to adapt,

in pursuit of improved environmental, social, and economic outcomes (Koberg & Longoni, 2019). Such responses often involve multiple, simultaneous change initiatives that extend across organisational and national boundaries.

As the European Environment Agency notes (2023): "The world is becoming increasingly interconnected through flows of information, resources, goods and services, people and ideas, and this implies that changes occurring in one part of the world are likely to have a ripple effect on others. This means that production and consumption systems in Europe are not isolated from one another or the rest of the world. Instead, they are influenced by multiple 'drivers of change'." Accordingly, firm-level change initiatives are better understood in relation to connected change initiatives that span organisational boundaries, particularly in sustainability transitions where environmental, social, and economic changes interact. Leading intergovernmental organisations such as the Intergovernmental Panel on Climate Change (IPCC) and the European Environment Agency (EEA) have repeatedly emphasised the need for integrated, cross-sectoral approaches that go beyond isolated interventions (European Environment Agency, 2023; Babiker et al., 2022). For firms, this implies that achieving such coordination requires aligning not only strategies but also resources and operational practices across business relationships, so that societal goals can be translated into workable solutions in business networks. This argument is also in line with Derks et al. (2022, p. 3) who highlight: "…due to the complex and multi-faceted nature of sustainability transitions, which involve many concurrent parties, each with different motivations, (such) long-term benefits can generally only be attained if all relevant actors commit resources toward developing and adopting initiatives."

Against this backdrop, the empirical focus of the thesis - packaging in retail distribution - illustrates the societal relevance of the research. The rapid expansion of e-commerce presents both sustainability challenges, such as packaging waste and emissions, and opportunities to reconfigure logistics, product design, and customer engagement toward more sustainable practices (Oláh et al., 2018). Investigating how change initiatives in retail distribution are connected, and how firms manage those connections, offers insights for advancing societal goals such as reducing waste, lowering emissions, and building more resilient and equitable distribution systems.

In sum, the societal relevance of this research lies in its potential to help policymakers and practitioners to recognise, anticipate, and manage the interconnected nature of change initiatives, thereby supporting more coordinated transitions across firms and sectors within business networks.

1.3 Practical relevance

In today's business environment, managers face growing pressure to implement change initiatives that improve operational efficiency while meeting sustainability targets (Deloitte, 2023). Yet the outcomes of such initiatives rarely depend on internal capabilities alone. Instead, they hinge on the ability to coordinate resources and change initiatives within the firm and across firm boundaries. Moreover, as noted in Networks Leadership Summit IV (2009, p. 10) "Networks are critical in times of change. Organizations that are part of the network will be seeking new answers and networks can facilitate that exchange of information so organizations can learn to adapt"
In line with this, in business networks, resilience- and sustainability-oriented initiatives are often interconnected through shared resource interfaces, meaning that improvements in one area can enable - or undermine - efforts elsewhere.

Similarly, Sandberg and Stahre (2025, p. 32) emphasise that "As resilience plays an increasingly important role in the design of our logistics systems, the need for a holistic approach becomes ever more critical. Concrete resilience strategies aimed at addressing a specific type of disruption or covering a certain part of the supply chain must be compiled and discussed jointly in order to avoid an unmanageable patchwork of measures and plans that do not function together." However, what constitutes a holistic approach is less clear in open systems such as business networks, where change initiatives are interconnected through shared resources and business relationships. In such contexts, resilience strategies developed for one part of the business network may influence other actors' change initiatives through resource interfaces, producing unintended effects.

As stated by Cross et al. (2013, p. 82) "Leading change is hard work, and it isn't getting any easier in an increasingly complex and interdependent world, where continuous, simultaneous change is the norm." When firms act too independently - overlooking interdependencies and focusing narrowly on internal goals - they risk disrupting established relationships, misaligning with partners' adaptations, and causing inefficiencies, resistance, and stalled implementation (Gadde et al., 2003). According to the Sustainability directory (2025): "Stakeholder resistance, at its core, is a manifestation of the inherent tensions between the status quo and the transformative changes demanded by sustainability imperatives." In business networks, however, no fixed 'status quo' exists; instead, actors continuously reproduce temporary stability through resource interfaces and relationship-specific routines that make coordination workable (Gadde & Håkansson, 1992; Håkansson & Snehota, 1995). Resistance can therefore reflect efforts to protect these currently stabilised arrangements when a change initiative threatens to disrupt coordination across actors (Halinen et al., 1999).

Understanding the connectedness among change initiatives is of practical relevance, as it allows managers to identify interdependencies, anticipate partner responses, and influence actions across functional and organisational boundaries (Cross et al., 2013). This is especially important when changes involve interdependent resources, such as packaging and logistics facilities, where uncoordinated adjustments can hinder implementation (Pålsson, 2018). For instance, a shift to more sustainable packaging may disrupt logistics partners' handling routines or conflict with suppliers' automation investments if such changes are not jointly coordinated.

Prior research has emphasised that in retail and logistics - especially when the aim is to align operational efficiency with sustainability - insights into inter-organisational coordination are particularly relevant. As McKinsey & Company (2021, p. 165) notes: "Retailers with the most robust growth over the past decade have often done so by prioritizing supply chain optimization. That makes sense, because a supply-chain strategy focuses on the sustainable creation of value for the retailer, the customer, and the broader community." A business network perspective foregrounds how value is created through interconnected business relationships rather than within isolated supply chains. With this view, supply chains are not stand-alone structures but networked configurations embedded in business networks (Lambert & Cooper, 2000; Carter et al., 2015). Within these business networks, change initiatives in one part can affect, constrain, or enable changes in others. Managing such complexity requires more than supply-chain planning; it demands a network-level perspective that considers resource interdependencies, historically developed resource structures, and the coordination of connected change initiatives across firm boundaries.

In sum, the practical relevance of this research lies in its potential to help firms understand and manage connected change initiatives in business networks. Rather than focusing solely on internal change or isolated initiatives, it equips practitioners to manage the complexity of connected change initiatives across the business network, where results depend on collective – rather than individual - action.

2 Theoretical framework

To study the phenomenon of ***connectedness among change initiatives in business networks,*** an analytical framework is required that uncover both (i) the relational complexity arising from interactions among business actors across business relationships and (ii) the structural complexity arising from interdependencies among resources and their interfaces across the business network. Change initiatives are complex in themselves, and become even more so when they are connected across multiple business relationships and influenced by interdependencies within and between those business relationships. This research is theoretically grounded in the Industrial Network Approach (see e.g. Håkansson & Snehota, 1995), which emphasises that business markets are characterised by connected business relationships. Within this framework, the concept of connectedness is central - not only as a structural condition, but also as an outcome of, and foundation for, interaction.

In this thesis particular attention is given to resource structures and how current configurations of resource interfaces - i.e. the point where resources meet and interact - affect how resources are combined, re-combined and co-developed through interaction between business actors (Baraldi et al., 2012). Following Easton (2010), resource structures in business networks can be seen as contextual platforms within which causal mechanisms - that is, generative processes through which actors' actions, under particular structural conditions, produce observed outcomes in open systems - operate. These structures do not cause change themselves but affect how actors activate mechanisms (ibid.). In this sense, resource structures act as an 'organising substance' through which many causal mechanisms - such as mobilisation and resistance - in business networks operate. As Baraldi et al. (2012, p. 272) state, "The existing activated structure of resources shapes how ideas can change existing resource combinations in an interacting network."

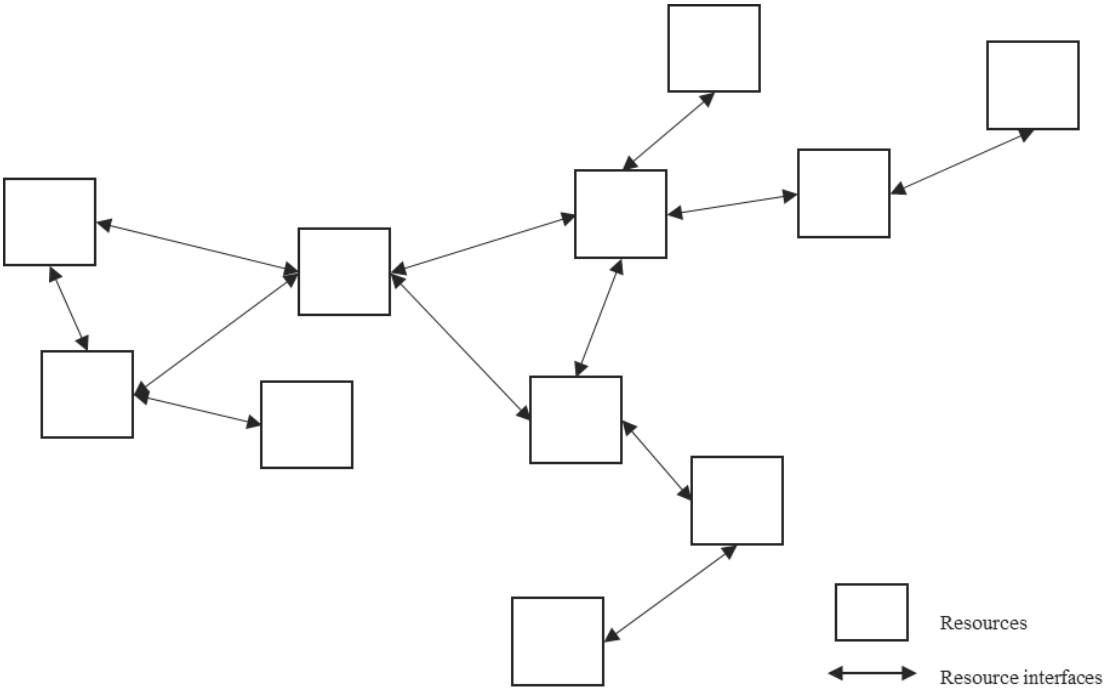

Figure 1 The activated resource structure

When business actors introduce change initiatives - such as developing more sustainable solutions - these efforts are rarely isolated (Harrison et al., 2023). They unfold through existing resource interfaces, which affect how adaptations are coordinated and negotiated across business relationships (Gadde et al., 2012). As Araujo et al. (1999, p. 506) note, "an interface is always the outcome of decisions made on both sides of a dyad and always related to the other interfaces that each of the parties develops with third parties". Recurrent interactions at these interfaces shape the resource structure - i.e., the activated resource structure, defined as the current configuration of resource interfaces (Håkansson & Waluszewski, 2002a) (see Figure 1 for an illustration of the activated resource structure and how resource interfaces connect across the business network). Consequently, the resource structure provides an analytical tool for tracing how change in one business relationship influences others across the business network, explaining why certain initiatives align while others encounter resistance, friction, or unintended consequences.

Additionally, the concept of network mobilisation (Mouzas & Naudé, 2007) is used to explore how actors can mobilise resources within firms and across firm boundaries to engage others in relation to their ongoing or planned change initiatives. This highlights that connectedness is not only a basic theoretical assumption but also a practical challenge and opportunity that actors actively engage with when managing change initiatives.

Accordingly, the following areas are elaborated in this chapter. Section 2.1 introduces the Industrial Network Approach as the overarching theoretical framework and outlines the ARA model's three analytical layers - actors, resources, and activities - and elaborates on how connectedness and embeddedness influence stability and change across business relationships. Building on this foundation, Section 2.2 focuses on resource structures and resource interaction in business networks, including how resources gain value through resource combinations at resource interfaces, how actors' positions and perceptions are intertwined with these combinations, and how temporal and spatial resource embeddedness conditions what change becomes feasible. Section 2.2 also explains why new solutions must become embedded across different settings to gain traction, and introduces network mobilisation as a mechanism through which actors engage counterparts and (re)configure resource interfaces in relation to change initiatives.

2.1 The Industrial Network Approach

This section introduces the Industrial Network Approach as a theoretical approach developed to understand business markets as networks of connected business relationships (Håkansson & Snehota, 1995). These business relationships evolve through interactions over time, influencing business actors' strategies, behaviour, and development (ibid.).

The section begins by presenting the ARA-model, which structures business networks into interlinked layers of actors, resources, and activities. Building on this, two central concepts are emphasised. Connectedness captures how changes of resource in one business relationship spread via resource interfaces to affect other business relationships and changes. Embeddedness highlights that every change of resources is situated within existing resource combinations and ongoing business relationships, which both enable and constrain what can be changed, at what cost, and with whom. Together, these concepts explain why a seemingly local change initiative often triggers adaptations elsewhere. Finally, the section examines the temporal and spatial dimensions of stability and change to understand how actors navigate past dependencies and spatial configurations in their efforts to drive or respond to parallel change initiatives.

Three analytical layers of business networks

Business networks can be analysed in three interrelated layers. This is formalised through the Actors-Resources-Activities (ARA) model (Håkansson, 1987), which provides a structured way of analysing how business networks function and evolve. According to this model:

- **Actors** are those who control resources and perform activities, and who have the capacity to act and make decisions. They operate at multiple levels, including individuals, functions, departments, and firms. Through both directly and indirectly

connected business relationships, actors influence and are influenced by other actors in the business network.

- **Resources** can be tangible, such as equipment and infrastructure, or intangible, such as knowledge and relationships. While some resources are controlled internally by individual actors, others are accessed and combined through business relationships with external counterparts. Resources gain their value through how they are combined and used in interaction with other resources.
- **Activities** are performed by actors and involve the activation, transformation and coordination of resources. Activities need to be aligned both within firms and across business relationships in the business network. Examples include production, transport, sorting, planning and collaboration. Which activities are emphasised depend on the analytical focus of the analysis.

As firms establish and maintain relationships with suppliers, customers, and other business actors, they become connected through the substance of business relationships, conceptualised in the Industrial Network Approach as activity links, resource ties, and actor bonds (Håkansson & Snehota, 1995). Business networks are thus influenced by the ways in which business actors interact, how resources are combined and adapted, and how activities are coordinated and linked. The interplay among the layers of substance (activity links, actor bonds, and resource ties) across business relationships influences dynamics at the firm, relationship, and network levels. While tightly interconnected, each layer can be analysed separately.

Connectedness and embeddedness in business networks

Business networks are sets of connected business relationships among business actors (Blankenburg & Johanson, 1992; Håkansson & Snehota, 1995). The concept of connectedness, understood as connected business relationships, was originally inspired by Social Exchange Theory, where Cook and Emerson (1978) define exchange networks as sets of two or more connected exchange relations. Ritter (2000) addresses interconnections between relationships and elaborates on how such interconnectedness can be structured and analysed. He argues that "most companies operate in a changing environment and there is a need to manage change within and through relationships" (Ritter, 2000, p. 326). Within the Industrial Network Approach, connectedness among business relationships underpins business network dynamics, because changes are mediated through these relationships (Harrison et al., 2023). Accordingly, a change in one business relationship can trigger changes in others, directly or indirectly. When analysing change initiatives in terms of connectedness (i.e. connected business relationships), it can be challenging to track and analyse how changes unfold and influence one another across the business network. Yet exploring these connections offers valuable insights into the network-wide effects that indirect business relationships have on individual relationships, and vice versa (Gulati, 1998).

This understanding of connectedness is closely related to the understanding of embeddedness. Within the Industrial Network Approach, embeddedness captures how business actors are situated in networks of interdependent business relationships, such that change in one part of the business network may influence other parts. As Halinen et al. (1999, p. 780) note, "It [the Industrial Network Approach] pays particular attention to the connectedness of business relationships and the borderless nature of the network in which each company is embedded. As different parts of a network are linked, change may emerge and shift from any part to another – an occurrence that the network view can reveal better than traditional organization theory and marketing approaches." Within a business networks, actors are embedded in a complex network of business relationships that influence strategic and operational behaviour (Håkansson & Snehota, 1995). Embeddedness refers to firms' dependence on these networks for access to resources, activities, and counterparts, thereby influencing what actions are possible and how change can be pursued (Halinen & Törnroos, 1998). As Granovetter (1992, p. 33) emphasises, "embeddedness refers to the fact that economic actions and outcomes, like all social action and outcomes, are affected by actors' dyadic (pairwise) relations and by the structure of the overall network of relations." Accordingly, firm behaviour and performance are influenced not only by individual relationships but also by their positioning within the wider business network (Halinen & Törnroos, 1998). Embeddedness is therefore a dynamic condition, reflecting both past interactions and current interdependencies associated with a business actor's position in the business network. Such embeddedness both constrains autonomous actions and enables coordinated responses, as actors rely on established relationships for access to resources such as knowledge and facilities (ibid.).

Importantly, embeddedness is not only structural but also temporal and spatial. Following Halinen and Törnroos (1998), temporal embeddedness highlights how firms are shaped by their histories, present conditions, and future expectations. Hence, change is not only forward-looking but conditioned by how past experiences and anticipated futures are interpreted and acted upon by business actors. Similarly, spatial embeddedness emphasises how business relationships are situated and understood across geographical and organisational spaces. Spatial dimensions - physical, relational, and cognitive - influence how actors navigate change, negotiate coordination, and interpret interdependencies (ibid.).

Thus, change initiatives in business networks are both connected and embedded. They are influenced by temporally and spatially embedded resource interfaces and connected through interaction within the activated resource structure across business relationships. To understand both change and stability in individual business relationships, these should be analysed within the structural context of the business network (Gadde &

Mattsson, 1987). Since each relationship is influenced by developments in other relationships, any change may have effects across the network.

2.2 Resource structures in business networks

This section explores how resource structures influence, and are influenced by, change in business networks. It begins by outlining how resource structures - comprising interconnected technical and organisational resources - form resource ties that influence how firms interact, coordinate, and adapt (Håkansson & Snehota, 1995).

The section then addresses how resources derive value from how they are combined and used, and how change initiatives become connected across the business network through the activated resource structure spanning multiple firms. Moreover, attention is given to how business actors act and influence the resource structure differently, depending on their positions and roles in the business network.

Subsequently, the temporal and spatial dimensions of resource structures are introduced to explain how resource combinations are both historically shaped and geographically dispersed - helping to understand the tension between stability and change. In addition, earlier research on how new initiatives and innovations must be embedded within and across various settings to become effective is discussed. Finally, network mobilisation is introduced as a key mechanism by which actors engage others, align interests, and reconfigure resource interfaces to implement change.

Understanding resource structures

According to the Industrial Network Approach, resource structures are formed through combinations of interdependent technical and organisational resources and their interfaces across firms (Baraldi et al., 2012). These structures are not static; they evolve as actors adapt resources over time. Change initiatives unfold within the resource structure and may also reconfigure it through adaptations of resources and resource interfaces. Thus, resource structures act as a latent infrastructure that both enables and constrains change (Håkansson & Waluszewski, 2002a). The patterns of resource interaction across firms and settings constitute the broader resource structure. Resource structures embody both stability and change: they stabilise business actors' interactions through lock-ins and routines, yet they are also the medium through which change unfolds (Håkansson & Snehota, 1995).

The Resource Interaction Approach (RIA) (Håkansson & Waluszewski, 2002a, 2002b) is a subset of the Industrial Network Approach and provides a framework for analysing resource interaction in inter-organisational networks. RIA foregrounds the resource layer by treating resources and resource interfaces as the primary analytical entry point (Baraldi et al., 2012), rather than approaching resources as part of three interrelated

layers of actors, resources, activities. Furthermore, the 4R-model within RIA categorises resources into four resource types – products, facilities, organisational units, and business relationships – often grouped as technical resources (products and facilities) and organisational resources (organisational units and business relationships). Similarly, the ARA-model distinguishes between technical and organisational resources. A key difference, however, concerns the concept of business relationships: in the 4R-model business relationships are conceptualised as a type of resource (i.e. something that can be developed and combined with other resources), whereas in the ARA-model, business relationships are the relational context through which interdependence is formed, constituting the foundation for cross-organisational activity links, resource ties, and actor bonds.

The value of resources

Resources are defined as entities that are considered valuable by actors (Håkansson & Snehota, 1995), but they lack a fixed, predefined value and are inherently heterogeneous (Penrose, 1959). Consequently, the value of a resource is determined by how it is combined with other resources and how it is utilised (Håkansson & Waluszewski, 2007). Therefore, analysing resource structures and combinations - rather than individual resources - is essential to understanding and managing resource development in business networks (Håkansson & Snehota, 1995).

The value of a resource is thus relative and context-dependent, shaped through ongoing interaction among interdependent and heterogeneous resources (Penrose, 1959; Håkansson et al., 2009). Resources are linked directly or indirectly across a business network, forming complex resource structures and interaction patterns (Håkansson & Snehota, 1995). Consequently, a change in one resource can spread across the resource structure – via resource interfaces - and influence other resources. Furthermore, resource interaction is dynamic and collaborative, involving continuous adaptation and recombination through inter-organisational engagement (Baraldi et al., 2012).

Understanding business actors' resource interactions in business networks requires attention to resource interfaces (Baraldi et al., 2012). These resource interfaces influence both resource value and efficiency. The current configuration of resource interfaces constitutes the activated resource structure, which affects how new resource combinations can emerge over time. For instance, the resource interfaces between packaging materials and logistics systems impact transportation efficiency (Jahre et al., 2006). Over time, recurring interactions at these interfaces shape the resource structure and actors' cognitive perceptions of how resources relate (Håkansson & Waluszewski, 2002a)

The role of actors' perceptions and actions in affecting resource structures

Actors influence resources either through ownership or through business relationships that provide access to resources of others (Håkansson & Snehota, 1995). Which actors influence which resources - and how they perceive those resources in relation to other actors and resources - determines what can be changed, with whom, and at what cost. Each actor may view the resource structure, or parts of the resource structure (i.e. a resource combination), differently, depending on their position within the business network and the problems they aim to solve. What seems like a solution to one actor may appear irrelevant or partial to another (Cantù et al., 2012).

Resources are central to the analysis of business relationships and business networks (Prenkert et al., 2022). Changes of the features and interfaces of resources do not occur spontaneously; they require actions undertaken by actors. Interaction contributes to both stability and change, and seemingly minor changes can have major long-term impacts and it is often unclear whether a change is merely incremental or the beginning of a larger transformation (Gadde & Mattsson, 1987; Håkansson & Waluszewski, 2013). Gadde and Håkansson (1992) note that some changes will have a stabilising effect, drawing on Weick (1979) who argues that stability should not be regarded as the normal state, but as something actively created and maintained by actors.

Temporal and spatial dimensions of stability and change of resources

In business networks, stability and change are not opposites but coexist in dynamic tension (Halinen et al., 1999). Stability arises from established interdependencies - such as resource combinations, routines, and long-term business relationships - that enable coordination and continuity over time (Håkansson & Snehota, 1995; Håkansson & Waluszewski, 2013). At the same time, these structures are continuously subject to various pressures.

Time and space are fundamental dimensions for analysing dynamics in business networks (Ford et al., 2008). Time refers to the temporal dimension of business networks, encompassing both the historical development of resources and the ongoing evolution of the resource structure. As Håkansson and Waluszewski (2002b, p. 561) put it, "The moving of a certain resource in relation to other resources meant struggling with a lot of adaptation, including considering how these affected other resources" (Håkansson & Waluszewski, 2002b, p. 561). According to the authors, resource combinations are not static; they evolve over time. This highlights temporal resource embeddedness: resource combinations become stabilised through recurrent interaction, yet they can also be reconfigured as actors adapt resource features and resource interfaces. This is in line with Prenkert et al. (2022, p. 51) stating that "Embeddedness

describes a resource or resource constellation, as set against a specific and distinct backdrop–or context–in which it becomes integrated"

An activated resource structure (Håkansson & Waluszewski, 2002a; Baraldi et al., 2012) is a snapshot in time of how resources are combined, and it is inherently shaped by historical investments, adaptations and future expectations. This aligns with Prenkert et al. (2022, p. 54) who state: "Activated resource structures are temporal in nature because they are based on a particular set of resource combinations at a point in time." Moreover, Baraldi et al. (2012, p. 272) note that "The existing activated structure of resources shapes how ideas can change existing resource combinations in an interacting network."

Resource structures thus embody both stability and change: on the one hand, they reflect accumulated adaptations and investments, which stabilise interaction patterns; on the other hand, they are continuously challenged and reshaped through new initiatives (Håkansson & Snehota, 1995). Moreover, "Change in one dimension of a relationship can be a prerequisite for stability in another, and vice versa" (Håkansson & Snehota, 1995, p. 273). Stability arises when resource interfaces become 'locked-in' through repeated use and alignment with established business logics. Change occurs when actors recombine resources - either through deliberate initiatives or through emergent adjustments of resources and resource interfaces across the business network.

Space refers to the spatial configuration of resources within and across organisations. It illustrates how resources are interdependent within a business network. Baraldi et al. (2012) highlight that resource interaction spans across space via resource interfaces. In resource interaction analysis, space refers to how resources are positioned and connected across firms and settings, and how these configurations enable or constrain change. Spatial embeddedness refers to how resources are integrated within a particular resource structure and bound by interdependencies, contributing to both coordination and inertia (ibid.).

Together, the temporal and spatial dimensions of resource structures offer a framework for understanding how change is embedded within historically stabilised yet spatially distributed combinations of resources, and how actors navigate the resource structure in their efforts to mobilise, adapt, and innovate.

Embedding new solutions within and across various settings

Building on the Industrial Network Approach, previous research emphasises that any new solution will have to relate to three different settings: develop, produce, and use (Håkansson & Waluszewski, 2007; Ingemansson, 2010). These settings reflect different configurations of the actor, resource, and activity layers, and each setting involves

distinct perspectives, logics, and challenges. Baraldi and Strömsten (2009) complement this view by identifying successive 'science', 'development', and 'commercial' settings, each governed by distinct logics and dominant actors. Consequently, a new solution must be embedded in existing structures across all relevant settings to reach market success. The more distant it is from what is already established - technically, organisationally, or economically - the more difficult and costly its implementation is likely to be.

Embedding new knowledge into resources and resource combinations, as Håkansson and Waluszewski (2007) show, requires that such knowledge is reshaped and related to other resources before it can be effectively activated in a business network. This embedding generates complex interdependencies, as stated by Håkansson and Waluszewski (2007, p. 13) "Some of these created interdependencies are handled within organisations and some across the borders of organisations; they are recognised and handled in visible relationships. But many are not recognised at all, at least not until any major changes come about."

The challenge of aligning knowledge across diverse settings explains why large-scale production and widespread use often demand coordination among actors with different priorities and interests (Landqvist & Lind, 2019). Chou and Zolkiewski (2012) extend this perspective with the concept of a focal net - a setting in which value results from the collective actions of interdependent actors, grounded in a shared industry logic that emphasises interaction and complementarity.

Mobilising in relation to resources

For any business actor, it is essential to mobilise firm-internally and across firm boundaries to engage others in ongoing or planned change initiatives. In a constantly changing environment, change initiatives - such as improving efficiency, cutting costs, or enhancing sustainability – do not only involve gaining access to external resources but also require influencing how these resources are used and combined through business relationships. Thus, mobilisation concerns both access to and the reconfiguration of external resources, such as knowledge and technology. Consequently, change initiatives require managing not just internal capabilities but also interactions with external partners (Håkansson & Ford, 2002; Gadde et al., 2003).

As Mouzas and Naudé (2007, p. 62) state, "From a company's perspective, network mobilization is the outcome of utilizing their relationships to move other organizations such as customers, suppliers, agencies, partners or even competitors to work within their own plans." Network mobilisation, therefore, refers to the engagement of actors, resources, and activities toward a shared change initiative (Mouzas & Naudé, 2007;

Ritvala & Salmi, 2010). In line with that Chou and Zolkiewski (2012, p. 193) argues that "Mobilization of resources refers to the importance of relationships in connecting physical and organizational resources." Importantly, such mobilisation also entails influencing how connected actors adapt their resource use and resource combinations in relation to others' change initiatives. As Kragh et al. (2022) demonstrate, even resource-constrained actors can mobilise change by signalling value through specific resource configurations - showcasing competence, offering learning, and building long-term relevance.

As introduced earlier in this chapter, the value of resources depends on how they are combined and utilised through interaction across business relationships (Håkansson & Waluszewski, 2002b, 2007). Mobilisation takes concrete form when resources are combined, recombined, or co-created at resource interfaces (Baraldi et al., 2012). Thus, mobilisation involves managing not only which resources are involved in specific change initiatives, but also how their interfaces are configured and reconfigured. A substantial body of work shows how such interfaces are configured and reconfigured to support change and value creation (Baraldi & Strömsten, 2009; Cantù et al., 2012; Gadde et al., 2012). In line with this, mobilisation is both relational and resource-related: it depends on how firms are positioned in the business network, and how they configure or reconfigure resource interfaces to attract and align with others. This requires a detailed understanding of actors' existing resource combinations, business logics, and the constraints they face due to ongoing or past change initiatives (Van Bockhaven & Matthyssens, 2017). Mobilisation thus involves navigating structural resistance, identifying alignment opportunities, and bridging divergent interests or practices (ibid.).

Overall, mobilising in business networks is not just about getting others to comply - it involves deliberate actions to build attractiveness, align interdependencies, and influence how resources are used and combined across firms to enable coordinated change. Moreover, to understand when to make use of other actors' mobilisation efforts, as stated by Chou and Zolkiewski (2012, p. 194): "Managers also need to understand that mobilization of resources does not have to be self-initiated, sometimes mobilization directed by others favors the firm's network position." Such efforts are both enabled and constrained by the network's existing configuration of relationships, and resource interfaces.

In this thesis, mobilisation of resources is treated as a mechanism through which actors manage resource-related change initiatives across the business network. It refers not only to gaining access to others' resources, but also to mobilising actors to adapt the use and combination of resources beyond the boundaries of the focal firm across the

business network. It links the spatial and temporal embeddedness of resource interfaces with the perceptions and actions of actors attempting to influence them.

3 Problem discussion, aim and research questions

As previously introduced, the aim of this thesis is ***to explore how connected change initiatives can be conceptualised, analysed and managed in business networks***.

Any new initiative to change a resource or resource interface in a business network is introduced into an already activated resource structure influenced by past adaptations, its current configuration, and business actors' future expectations. Change in business networks is therefore rarely isolated within a single firm. Since resources and their interfaces are distributed and historically adapted, any new initiative to change a resource meets a resource structure that both enables and restricts adaptation. What appears promising in one part of the business network may create frictions in another, as actors with different positions in the network may be guided by different logics and constraints and therefore interpret and respond to proposed changes in different ways. This creates a fundamental analytical and managerial problem: change initiatives are often designed and evaluated as if they were isolated, while in practice they are connected within a network of interdependencies that extend across firms and business relationships. As a result, change initiatives may generate unintended consequences, trigger resistance, or require adaptations elsewhere in the business network. Understanding change initiatives therefore requires moving beyond single initiatives and towards analysing how multiple, parallel change initiatives become connected through business relationships in which resource interfaces are interdependent within an activated resource structure. Figure 2 provides a simplified illustration of this problem, showing how a focal change initiative is embedded in an activated resource structure and becomes connected to other ongoing initiatives through shared resource interfaces. Methodologically, this implies that researchers need to trace these connections as they become causally relevant and allow the case boundary to expand accordingly, rather than assuming that the initiative can be analysed in isolation.

This means that:

- Individual change initiatives are conditioned by connectedness, as adaptations in one business relationship can trigger adjustments, frictions, or opportunities in others.
- Resource interfaces constitute critical points where effects arise and propagate, as actors coordinate and negotiate adaptations.
- The outcome of change initiatives depends on actors' mobilisation of resources and counterparts - aligning others and reconfiguring resource interfaces across firm boundaries - yet how, where, and with whom to mobilise is often unclear *ex ante*.

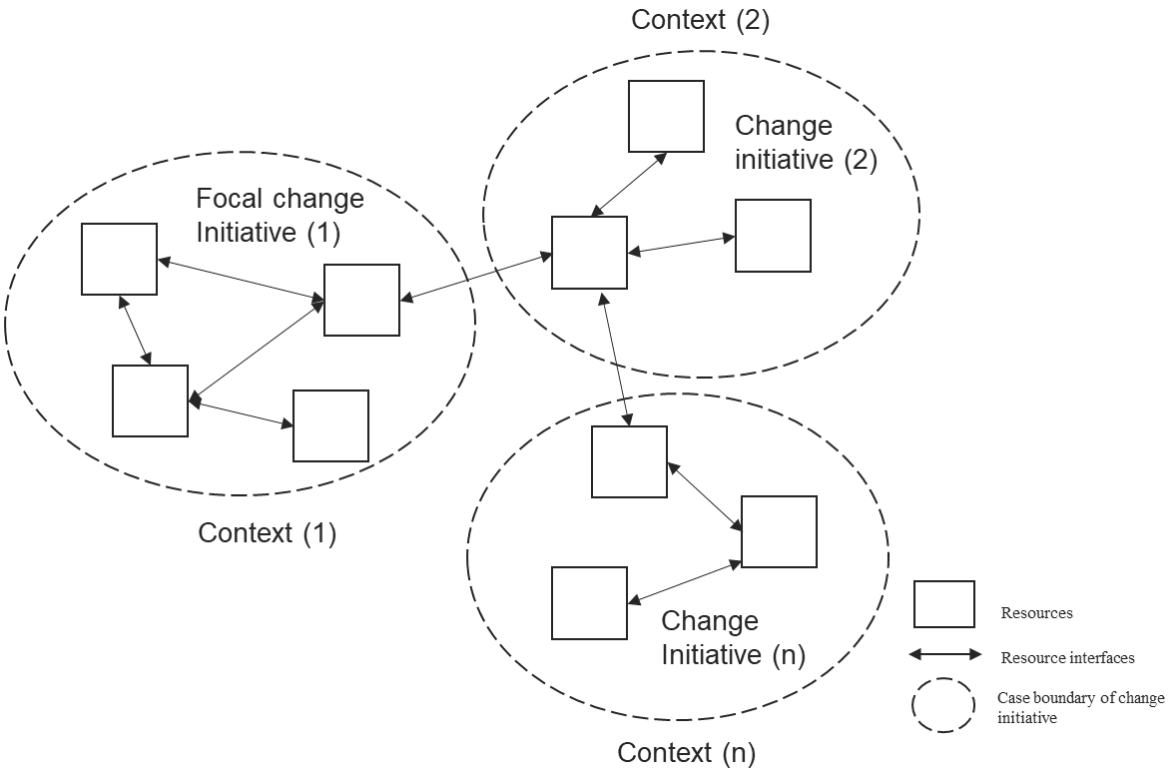

Figure 2 Connected change initiatives in an activated resource structure

The figure illustrates how a focal change initiative (1) is embedded within an activated resource structure and becomes connected to other ongoing change initiatives (2–n) across business relationships. Resources are linked through resource interfaces, forming interdependent resource combinations within and across the business network. Changes introduced in one context may therefore propagate through these resource interfaces, triggering adaptations, frictions, or adjustments elsewhere. Although change initiatives may initially appear bounded, their connections often run through interdependent resource interfaces. Methodologically, this makes it difficult to fix case boundaries ex ante. Each change initiative therefore needs to be understood in its context - within the activated resource structure and in relation to other past, ongoing, and anticipated change initiatives. Researchers need to trace connections as they become causally relevant and expand the case boundary accordingly. This reflects that change initiatives are not isolated projects, but interdependent adaptations that unfold across business relationships and organisational boundaries.

From this, three research questions are identified:
Research Question 1: How can connectedness among change initiatives be conceptualised in business networks?
Research Question 2: How can connected change initiatives be uncovered and analysed in business networks?

Research Question 3: How can connected change initiatives be managed by actors in business networks?

By fulfilling the aim and answering these questions, this thesis addresses the analytical and managerial challenge of understanding change initiatives as a networked phenomenon, in which outcomes emerge through actors' interactions with resources within an activated resource structure.

4 Conceptualising in the Industrial Network Approach

The development of this research has involved engaging with a range of concepts in relation to the theoretical framework outlined above. Within the Industrial Network Approach, there are established concepts selected for their relevance and coherence in understanding how resources are combined, adapted, and interdependent through actors' interactions (Bocconcelli et al., 2020; Prenkert et al., 2022). Working with these concepts involves balancing respect for existing definitions, awareness of possible misalignments between researchers' definitions, and the alignment with the empirical phenomenon under study. As Prenkert et al. (2022, p. 49) emphasise, "…partial overlap of concepts creates possibilities for misunderstandings and limits development". Hence, advancing or expanding concepts requires careful theoretical motivation and a thorough evaluation of existing literature. In other words, a theoretical approach rests on a coherent conceptual framework that offers reliability and internal consistency, and thereby provides a foundation for shared theoretical understanding (Prenkert et al., 2022).

Conceptualising is a vital part of research (Dubois et al., 2023) and is defined as "forming a concept or idea of (something)" (Oxford Dictionary, 2025). Conceptualising involves developing mental representations that structure how phenomena are understood (Margolis & Laurence, 2007). "Conceptualising can be seen as a process wherein meaning is given to theoretical concepts as part of an evolving framework for analysis of an empirical phenomenon" (Dubois et al., 2023, p. 212). It is through this process that theoretical concepts gain clarity and utility in empirical research.

In addition, within the Industrial Network Approach tradition, there is an open and interactive way of conceptualising (Dubois et al., 2023). Empirical and theoretical grounding is achieved by combining concepts in individual empirical studies, which in turn interplays with conceptual development in the broader research community over time. In this context, conceptual relatedness can both restrain and inspire new conceptual meaning (Dubois et al., 2023, p. 215). This dynamic view of conceptual development reinforces the need for cumulative and reflexive theorising in network research.

From an epistemological perspective, conceptualisation is closely linked to the researcher's epistemological standpoint (Easton, 1995). Critical realism, a common stance within the Industrial Network Approach, posits that an objective reality exists, but our understanding of it is inevitably influenced by theoretical perspectives and is only partially knowable (Easton, 2010). In critical realist terms, explanation and generalisation rest on identifying underlying mechanisms that operate under contingent conditions and generate observed outcomes. Accordingly, theory development depends

on constructing causal explanations that are both consistent with the empirical material and grounded in a coherent theoretical framework (ibid.)

This epistemological stance presents challenges in terms of how and what data is gathered when attempting to causally explain "contingent conditions via particular mechanisms" (Easton, 2010, p. 126). In this thesis, the focus lies on change initiatives of resource features and resource interfaces that are connected through the activated resource structure across business relationships. This highlights the analytical challenge of conceptualising how multiple, interdependent change initiatives constrain and enable one another over time and across the business network.

In this thesis, conceptualising is particularly concerned with clarifying how concepts such as connectedness, activated resource structure, and network settings can be used to explain how change initiatives are connected across business relationships.

5 Methodological considerations

This chapter presents the empirical context, as well as the research projects and individual studies, the research design, and the methodological choices made during the research process. Section 5.1 introduces the empirical context of the thesis. Section 5.2 summarises the research projects and studies – including their aims, participating partners, and how the studies relate to one another. Section 5.3 details the research design: qualitative case studies with iterative casing. Section 5.4 traces the research process for each study, highlighting the abductive movement between data and theory.

5.1 Empirical context

This section introduces the empirical context of the research: retail distribution and the role of packaging.

Changing distribution strategies and sustainability challenges in retail

Retail plays a crucial role in consumers' daily lives and represents a significant share of national GDP. In Sweden, trade (wholesale and retail) is one of the largest employers - about one out of ten people works in the sector (Svensk Handel, 2025). In 2024 the sector contributed roughly to 11% of GDP and generated about 14% of total tax revenues, including VAT, social charges and income tax (Svensk Handel, 2025). At the same time, e-commerce has become an increasingly important force in retailing, driving growing demand for faster and cheaper deliveries while also accelerating the integration of omnichannel and multichannel strategies (Nguyen et al., 2018). While the majority of transactions still occurs offline, online retail continues to expand and now accounts for a growing share of retail revenue in Europe (Statista, 2025a). In Sweden, e-commerce represented about 14% of total retail turnover in 2023 (Svensk Handel, 2025).

This growth of e-commerce also amplifies sustainability concerns. Research highlights that the growth of e-commerce brings a multitude of sustainability challenges - higher last-mile emissions and urban congestion, more packaging waste and return flows, rising energy use in fulfilment and IT infrastructure, and rebound effects as convenience boosts demand - alongside opportunities for society as a whole (Oláh et al., 2018). The environmental impact of e-commerce logistics is projected to increase in the coming years, particularly in urban areas. Vehicle fleets are expected to grow in both number and distance travelled; unless low-emission modes replace current fleets, parcel and freight movements will generate higher CO_2 emissions (Statista, 2025b). Packaging waste has also increased, as the growth of e-commerce has led to higher consumption of packaging materials (Escursell et al., 2021). Additionally, e-commerce operations, such as warehousing and data management, are contributing to rising energy use (Zangana et al., 2024). To meet sustainability goals, such as reducing carbon emissions,

improving working environments, and increasing circularity, there is a need to develop solutions that support more sustainable retail distribution (Vadakkepatt et al., 2021).

5.2 Packaging in retail distribution

Packaging is central to both the functionality and sustainability of retail distribution (Coelho et al., 2020; Morashti et al., 2022; Silva & Nilsson, 2025). Traditionally, a 'three-level' packaging system (i.e. product, store, and transport packaging) has dominated retail distribution (Hellström & Saghir, 2007; Pålsson, 2018). This system is designed for deliveries to physical stores, which, despite the rise of e-commerce, continue to be the primary retail sales channel. While this system facilitates product protection, handling convenience, and cost-effective distribution to physical stores, it is less suitable for e-commerce. A recent report by the United Nations Conference on Trade and Development (UNCTAD, 2024) notes that e-commerce can generate more packaging waste than traditional retail. Excessive packaging - especially when made from low-quality, non-recyclable materials - contributes to both increased waste and a higher carbon footprint. The report also notes that overpackaging in e-commerce can raise CO_2 emissions, with certain packaging types having a far greater environmental impact per item than those used in physical retail (ibid.). Moreover, e-commerce often requires individual product storage and specialised packaging for shipments to consumers. This coexistence of traditional store-oriented packaging systems and e-commerce packaging requirements highlights the need for adaptations across distribution channels.

Methodologically, retail distribution constitutes a relevant empirical context because packaging as a resource interacts with a wide range of resources across business relationships, each controlled by actors with their own business logics and packaging requirements. As shown in previous research, these divergent requirements create potential tensions and trade-offs (Lai et al., 2008). In this context, connected change initiatives can be made observable through changing requirements at multiple resource interfaces, making it possible to analyse how change unfolds across organisational boundaries.

5.3 Research projects and studies

Two research projects form the basis for this doctoral thesis. Within the scope of these projects, two studies have been conducted. These studies are closely related as both explore change initiatives related to packaging in the Swedish retail sector, and they partly involve the same firms. Empirically, they reflect a shared overarching aim: to support the development of more sustainable packaging solutions in retail distribution. The two studies are introduced below.

Making packaging more sustainable: Effects of resource embeddedness

The first study was carried out within a research project titled "The role of packaging towards more sustainable and efficient retail distribution in Sweden", financed by the Swedish Wholesale Council. The project group included researchers from Chalmers, industry experts from a major Swedish logistics service provider, and representatives from a major packaging supplier. A reference group consisting of both academic and industry perspectives provided additional support and insight.

To uncover how to make packaging more sustainable, a qualitative case study approach was adopted. The case study analysed e-commerce packaging as a focal resource in its context of direct and indirect resource interfaces. Data was primarily collected through semi-structured interviews and site visits at facilities such as warehouses and sorting centres.

The study resulted in three academic papers (see papers 1–3 in the list of appended papers), a licentiate thesis, and a popular science report.

Making packaging more sustainable: The role of business relationships

The second study was conducted within a research project titled "The role of business relationships and networks in the development and implementation of sustainable packaging solutions in retail", financed by the Hakon Swenson Foundation.

This project involved collaboration between researchers from Chalmers and industry experts from a major retailer in the beauty sector. The retailer was selected for its proactive and ongoing sustainability work related to packaging. A steering group provided regular oversight, and a reference group of academic and industry experts provided feedback at key stages throughout the project.

The study examined which types of business relationships are involved in packaging-related change initiatives, as well as the directly or indirectly interfacing resources affected by these initiatives. Moreover, the study explored how the activated resource structure connects change initiatives initiated by different actors with diverse perspectives.

Unlike the first study, which concentrated on e-commerce packaging, this study had a broader scope, considering the packaging system from production to consumption across multiple retail distribution channels (that is, within a business network).

A case study approach was again employed to uncover different change initiatives connected through the activated resource structure, where changes of resources and

resource interfaces influenced the feasibility and outcomes of each change initiative. The focal company was the major retailer in the beauty sector, with several of its business partners participating. The study examined how the retailer's packaging initiative connected to partners' upstream and downstream initiatives and analysed why some connections enabled alignment and adaptation while others generated resistance. Data collection included semi-structured interviews, site visits, and direct observations at the retailer's central warehouse and at partner locations.

Two academic papers resulted from this study; see papers 4-5 in the list of appended papers.

5.4 Research design

As hinted to above, this research adopts a case study approach, a suitable method for exploring business networks because it uncovers the complexity, richness, and interconnectedness of network interactions (Dubois & Araujo, 2004). The method was chosen due to its ability to explore a "phenomenon, which is difficult to separate from its context, but necessary to study within it to understand the dynamics involved in the setting" (Halinen & Törnroos, 2005, p. 1286).

The Industrial Network Approach enables analysis of resource interdependencies and the associated business relationships from a business network perspective. From a critical realist standpoint, Easton (2010) argues that case studies are particularly well suited for analysing bounded yet complex phenomena, because they allow researchers to identify generative mechanisms and examine how causal influences operate within specific contexts, rather than treating context as mere background.

As the phenomenon of connectedness among change initiatives is mediated through resource interfaces and distributed across business relationships, the empirical 'object' cannot be assumed to be bounded. The research design therefore prioritises following connected resource interfaces as the primary principle for case delimitation.

Moreover, case research is an emergent and flexible process, where the focus of the case may evolve during the study. As Ragin and Becker (1992) highlight, 'casing' involves discovering what the case is a case of. As business networks have no fixed boundaries, studying change in business networks requires defining a 'change boundary' to arrive at the scope of the analysis (Holmen, 2001). This involves identifying which actors and resources are affected, although such boundaries emerge during the research process rather than being predefined.

When studying change in business networks, it is crucial to distinguish between context - relevant surrounding circumstances - and contingency - the specific ways external

elements influence outcomes (Easton, 2010). This distinction guides decisions about which connected changes to include and how their interrelations should be analysed. These decisions, shaped by both theoretical and empirical considerations, ultimately influence the quality of the case study (Dubois & Gadde, 2002). Case expansion followed three inclusion criteria: (i) a change initiative was included when respondents linked it to altered requirements at a focal resource interface; (ii) when observational or documentary material indicated that interface adaptations redirected feasibility or created friction; and (iii) when multiple actor perspectives confirmed that the connection had consequences beyond a single firm.

Finally, the iterative approach to delimitation and analysis also informed the development of theory across the studies. In line with Dubois and Gadde (2002), the studies follow a logic of 'systematic combining', in which the cases are characterised by continuous interplay between empirical observations and theoretical concepts – an abductive process that is elaborated further in section 5.4.

Data collection

Data collection primarily consisted of semi-structured interviews, with interviewees identified iteratively as the case boundaries evolved throughout the studies. Several site visits at key facilities were conducted, such as central warehouses, stores, distribution centres, and suppliers' facilities. Furthermore, data collection included direct participation in, and observations of, various activities spanning different parts of the business network, including material handling, transport, packing, and sorting. This combination of interviews and observations is well suited to probing participants' perspectives, because it elicits the meanings individuals and groups attach to practices and issues within their specific contexts (Cresswell, 2013).

A significant part of the data collection took place during the COVID-19 pandemic, which had a notable impact on how the research could be conducted. When the project started in 2020, travel restrictions and safety measures made physical access to facilities and in-person interactions challenging. Initial plans for site visits and direct observations had to be revised, and many interviews were conducted via digital platforms, such as Zoom and Teams. This limited the possibility of interacting informally and observe operational contexts first-hand. However, the use of digital tools also opened new opportunities, such as video recordings. Online interviews allowed for more flexible scheduling and broader access to respondents across different locations. Over time, as restrictions eased, it became possible to complement the earlier digital interactions with on-site visits. This gradual shift enabled a contextual understanding and helped validate earlier findings.

Remote interviews were conducted with a conscious effort to build trust and openness in digital conversations. In most interviews, two researchers participated, and any ambiguities were carefully followed up with the interviewees. Reflecting on this period, it became clear that the hybrid approach - combining digital and physical data collection - strengthened the research by allowing flexibility while still ensuring depth in the empirical material.

In total, the data collection includes 76 interviews, 10 study visits, and 2 workshops. Of these**,** 44 interviews were conducted in the first study and 32 in the second study**.**

Data analysis

Analysis began already during the interviews, as emerging themes informed follow-up questions. Initial notes were refined during transcription, and over time the transcripts were organised thematically, integrating input from respondents with different organisational affiliations. This iterative process led to the construction of a 'raw case,' which served as a foundation for more refined case descriptions.

The research employed an iterative, multi-level analytical process, starting at the business unit level and extending through the firm, relationship, and network levels. Each level built upon the previous one, deepening the understanding of the business actors' operations and of the interdependencies among their resources and activities in the business network. Halinen and Törnroos (2005) emphasise the importance of defining case boundaries in business network studies and propose multi-level perspectives to support this process. These perspectives facilitate analysis across different levels and viewpoints, helping researchers understand how actors perceive and respond to change initiatives both within and beyond organisational boundaries (ibid.).

The thematic structuring enabled exploration and analysis of resources and changes of their features and interfaces, in relation to directly and indirectly interfacing resources, as well as the perspectives and interactions of the actors involved across business relationships.

The first study focused on packaging as a focal resource, examining its resource interfaces with other resources and how business actors perceived both the focal resource and the related resources. The second study emphasised the role of business relationships in change initiatives aimed at achieving more sustainable packaging, exploring how actors viewed existing packaging solutions, related resources, and the initiatives themselves. Together, the two studies contributed complementary insights: while the first revealed how resource embeddedness influences the conditions for

change initiatives, the second showed how inter-organisational relationships condition and connect such change initiatives.

Using the Industrial Network Approach, the analysis focused on how actors, resources, and activities were configured through interaction within and across firms, with particular emphasis on the resource layer. The evolving analysis was shaped by findings from each round of data collection - including interviews, observations, and secondary materials (e.g., internal documents and industry sources) - enabling continuous refinement of the case narrative. Iterative casing ensured that both the case boundaries and the working concepts were revisited and sharpened as new connections emerged (Dubois et al., 2023).

The concept of network settings emerged during the first study and was treated as the unit of analysis throughout data collection and analysis. A setting was delimited when: (i) a small set of resource interfaces was repeatedly activated, (ii) a stable performance logic (e.g., damage, fill rate, unload time) dominated decision-making, and (iii) respondents referred to shared standards/constraints (such as formats, labels, automation specifications). Analytically, network settings functioned as an analytical tool that made it possible to explain why the same change initiative became feasible in one part of the activated resource structure while generating friction in another. Network settings are further elaborated in later chapters of this thesis.

5.5 Research Process

Figure 3 shows the timeline (2020-2025) of the research process including the research projects, papers, and theses.

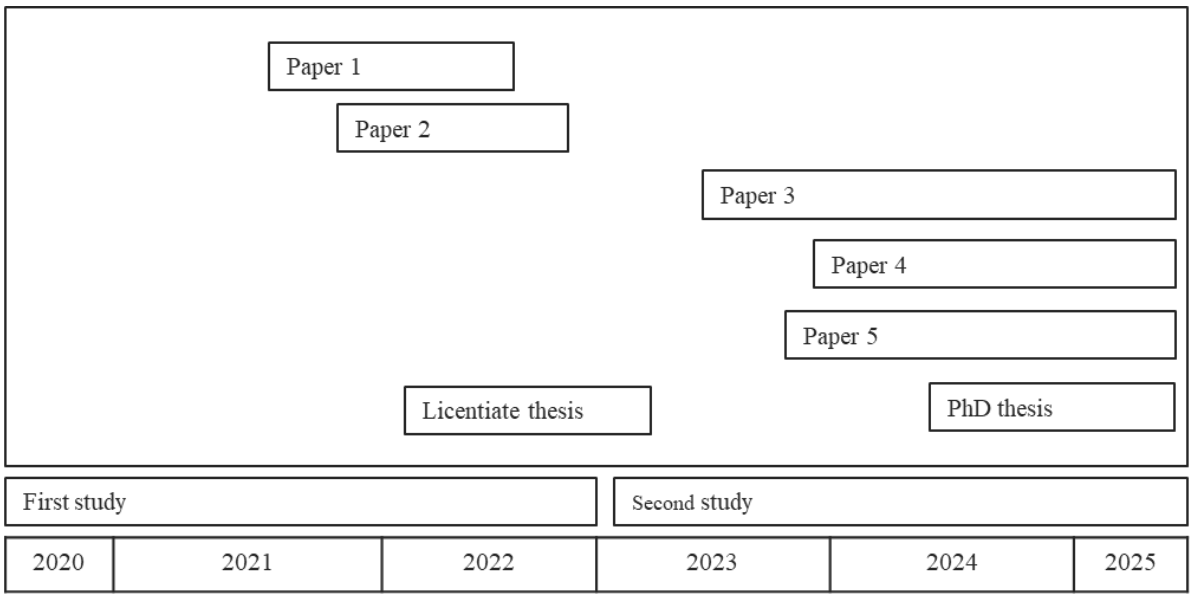

Figure 3 Timeline and milestones

When I began my PhD journey, I had 15 years of working experience in the retail sector, having worked in smaller, entrepreneurially driven companies in various roles, including logistics, product and assortment development, purchasing, executive teamwork, and project management in international environments. My motivation for pursuing a doctoral degree was to explore the challenges facing retail, such as the rise of e-commerce and the globalisation of retail.

My previous experience in retail was both an asset and a challenge in my early research, as my initial perspective was shaped by the retailer's viewpoint. To mitigate the risk of a retailer-centric framing, the studies actively sought contrasting perspectives across upstream and downstream actors. Over time, my understanding developed through these multiple viewpoints, leading to a realisation that even extensive knowledge of a subject is rarely sufficient to fully grasp the underlying 'reality'.

During my PhD studies, I developed the philosophical underpinning of my research and adopted a critical realist stance. It acknowledges the existence of an independent reality while recognising that our understanding of it is shaped by social, historical, and cultural factors. Critical realism is particularly useful for examining complex systems, uncovering hidden mechanisms, and integrating theoretical and empirical approaches (Easton, 2010; Avenier & Thomas, 2015). In practice, this meant analysing change initiatives through their connections in resource structures, rather than treating change as isolated events or processes. Specifically, the analysis focused on identifying how interdependent resource interfaces generated enabling and constraining effects when actors' change initiatives attempted to modify resource features and resource interfaces. Change outcomes were thus explained not as cause–effect relationships, but as the result of causal mechanisms (Easton, 2010) operating in open systems, where multiple change initiatives interacted through the activated resource structure.

The first study

The first study began with a review of the literature on the Industrial Network Approach and packaging in retail distribution. It also involved interviews with representatives from the three initial firms that shared an interest in e-commerce packaging and the challenge of reducing excessive air in e-commerce parcels. Data collection and initial analysis focused on packaging as a focal resource, examining its resource interfaces with other resources and how business actors perceived both the focal resource and the resources it interfaced with.

By exploring the focal resource of e-commerce packaging and its direct and indirect resource interfaces, a structure of embedded resources was identified. This is further elaborated in Paper 1 (see section 6.1).

Through further exploration of the resource layer, the specific issue of excessive air was analysed. Although it was a shared concern among several actors in retail distribution, the findings revealed that e-commerce parcels are embedded in a structure of interrelated resources controlled by various actors, each with differing perspectives on how to address the issue. As a result, excessive air was not always prioritised and was found to be one of several concerns. This is discussed further in Paper 2 (see section 6.2).

As the research progressed, new themes and interconnected change initiatives were identified, such as introducing automation in e-commerce packing, changing packaging materials, and increasing automation in the sorting of parcels. These change initiatives led the researchers to expand the scope of the study to include related but initially unforeseen changes.

Figure 4 illustrates the key steps in the research process for the first study.

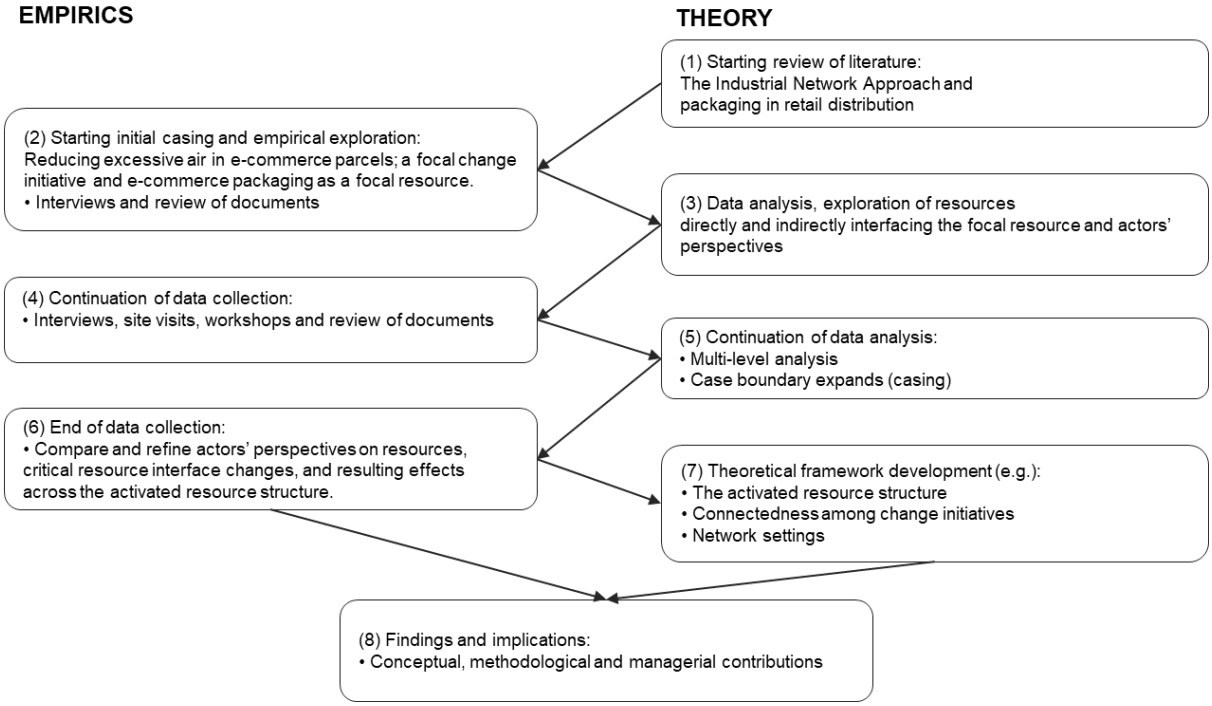

Figure 4 The abductive journey of the first study

(1–2) Literature review and initial casing

A focused review of literature dealing with packaging in retail distribution and the Industrial Network Approach (with emphasis on resource interaction and resource interfaces) set the initial analytical focus. In line with this, early interviews with representatives of the three initial firms centred on e-commerce packaging as the focal resource and its direct interfaces. In parallel, particular attention was paid to the change initiative to reduce excessive air in parcels.

Starting from ‘an arbitrary centre’ (Dubois & Araujo, 2004), relevant actors and resources were progressively added as casing unfolded and the case boundary evolved.

(3) Early analysis during data collection
Interview and site-visit material was thematically organised around the focal resource and its direct resource interfaces across actors. A ‘raw case’ was assembled by aggregating perspectives from actors with different organisational affiliations, clarifying how the change initiative to reduce excessive air manifested around e-commerce packaging and which resource interfaces it activated.

(4–5) Continuation of data collection and data analysis
Subsequent interviews revealed indirect interfaces and connected change initiatives (e.g., packing automation, material substitutions, parcel-sorting requirements). The analysis proceeded iteratively across multiple levels, beginning with the business unit and extending to the firm, relationship, and business network. Each level built upon the previous one, deepening the understanding of business actors’ operations and the interdependencies among their resources and activities in the business network.

Network settings were analysed as recurring resource combinations in which a small set of resource interfaces was repeatedly activated, a shared performance logic (e.g. damage, fill rate, unload time) guided actors’ decisions, and respondents referred to shared standards and constraints (such as packaging sizes, labels, and automation specifications). Analytically, these settings were used to explain why the same change initiative could be feasible in one part of the activated resource structure while generate friction in another.

(6–7) End of data collection and theoretical framework development
At the end of data collection, insights were compared and refined across actors to uncover which resource features and resource interfaces were influenced, in which network settings and business relationships, and with what effects in the activated resource structure. This supported the development of a theoretical framework, centred on: (i) connectedness among change initiatives; (ii) how change initiatives unfold through adaptations of resource features and resource interfaces within an activated resource structure; and (iii) network settings as contextual conditions influencing actors’ perceptions and actions.

(8) Findings and implications
A thematic integration linked conditions (the activated resource structure), actions (actors’ adaptations of resource features and resource interfaces), and consequences for

the change initiative to reduce excessive air and its connected change initiatives. The results contribute:

- Conceptually: a way to conceptualise connectedness among change initiatives in business networks.
- Methodologically: a casing process to uncover and analyse connected change initiatives.

In Paper 3 (see section 6.3) a more in-depth description of this casing process is provided, illustrating how it allows researchers to uncover connected changes.

The second study

The first study sparked both curiosity and new questions - particularly regarding how the observed phenomenon could be further analysed theoretically and how such understanding could inform managerial insights and implications. Whereas the first study primarily focused on the activated resource structure and on adaptations of resource features and resource interfaces, it also highlighted the importance of business relationships in influencing how change initiatives unfold.

Building on these insights, the second study placed greater emphasis on the role of business relationships in change initiatives aimed at developing more sustainable packaging in retail distribution. It explored how actors across the business network perceived existing packaging solutions, related resources, and the change initiatives themselves, and how these perceptions influenced responses to change

Although the empirical focus remained on developing sustainable packaging in retail distribution, the second study centred on a major beauty retailer's change initiative to develop more sustainable packaging. This retailer was of particular interest not only due to its proactive sustainability efforts, but also because of its dual role in coordinating e-commerce and physical store distribution. This enabled a broader analysis, including how the traditional three-level packaging system - developed primarily for distribution to physical stores - was being challenged and adapted in response to omnichannel distribution and sustainability demands.

Figure 5 illustrates the key steps in the research process for the second study.

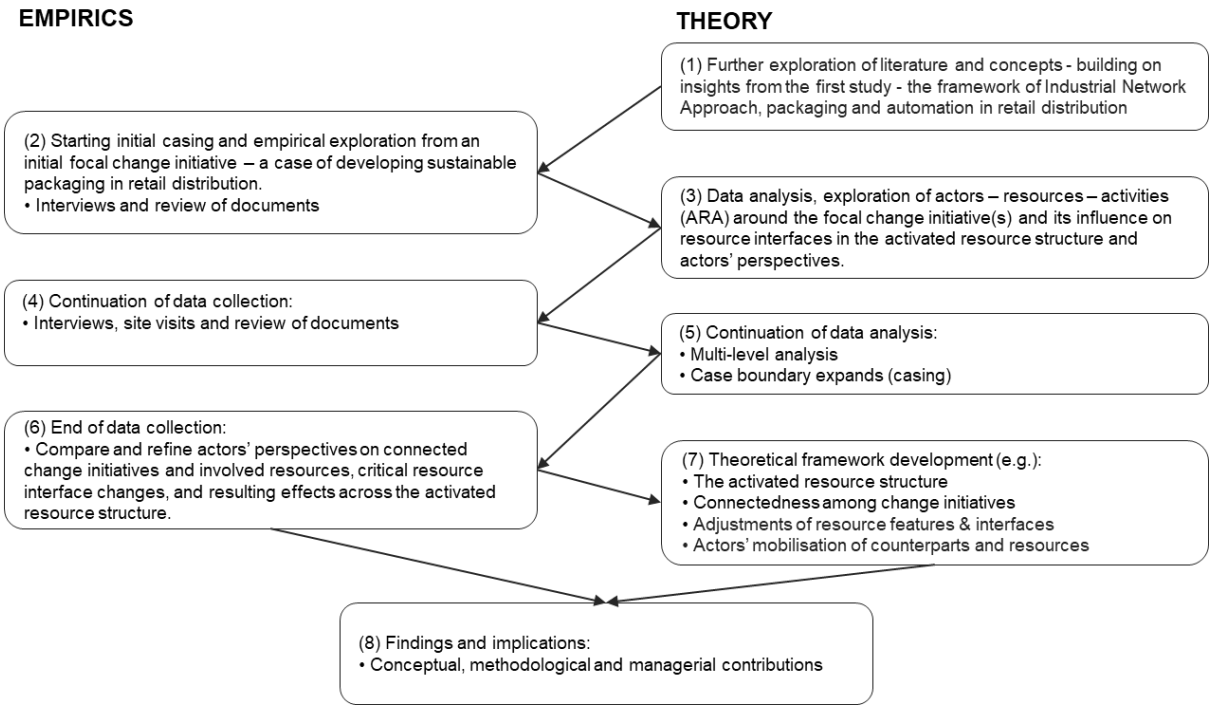

Figure 5 The abductive journey of the second study

(1-2) Further exploration of literature and initial casing

The literature review was extended, building on insights from the first study – including the Industrial Network Approach, focusing on the ARA-model, activated resource structures, and connectedness among change initiatives – together with literature on deliveries, packaging and automation in retail distribution.

In parallel, interviews with representatives of the retailer's internal functions initially framed the case around a focal change initiative: developing more sustainable packaging. This change initiative involved warehouse automation for single-item storage and packing, a shift to receiving single-packed items from suppliers, and B2B deliveries using e-commerce parcels.

(3-5) Continuous data collection and analysis

Interviews and site visits were used to construct and develop a 'raw case', capturing the structure of resources surrounding the focal initiative and how business relationships were connected within the business network. Transcribed material was analysed thematically, focusing on resources and actors' perspectives on both the change initiative and the resources involved. As the case boundary expanded, the scope was broadened to include packaging and product suppliers, logistics service providers, and business customers, revealing divergent responses – ranging from adaptations to resistance – as well as additional upstream and downstream change initiatives (e.g., packing automation and distribution adaptations).

(6-7) End of data collection and theoretical framework development
At the end of data collection, insights were compared across actors to synthesise perspectives on connected change initiatives, identify critical changes of resource interface, and analyse their effects within the activated resource structure. The analysis was developed into a framework highlighting: (i) the activated resource structure; (ii) connectedness among change initiatives; (iii) adaptations to resource features and resource interfaces within the activated resource structure; and (iv) actors' mobilisation of counterparts and their resources to manage connected change initiatives across the business network.

(8) Findings & implications
The findings provide conceptual, methodological, and managerial implications, including how automation initiatives impact packaging requirements and how the retailer mobilises partners and resources in a change initiative to develop more sustainable packaging in relation to other connected change initiatives.

Throughout the research process, connected automation initiatives were identified as having impact on packaging requirements – an aspect explored further in Paper 4 (see section 6.4). In addition, the study examined how the retailer's initial ambition to mobilise partners and resources, such as product suppliers and business customers, unfolded in practice. This is elaborated on in Paper 5 (see section 6.5).

5.6 Methodological coherence

This chapter positions the thesis empirically and methodologically by showing how the phenomenon of interest - connectedness among change initiatives - can be studied in a complex and open system such as a business network. By anchoring the research in the Industrial Network Approach and a critical realist stance, the methodological considerations motivate a research design that treats resources and resource interfaces as real conditioning structures, while recognising that actors' interpretations and priorities influence what becomes actionable in practice (Easton, 2010).

Across the two studies, the case study approach is operationalised through iterative casing and systematic combining (Dubois & Gadde, 2002), allowing the empirical boundary to expand when new change initiatives become causally relevant through resource interfaces. The result is a research process that moves from a focal change initiative and its immediate resource interfaces toward an analysis of the activated resource structure, while using network settings as units of analysis to capture variation in performance logics, constraints, and feasibility across the business network.

Taken together, this chapter establishes methodological coherence with the thesis' theoretical claims: if change initiatives are structurally connected across business

relationships through resource interfaces, then the research design must be capable of following this connectedness through resource interdependencies rather than assuming firm- or project-bounded cases.

Overall, the methodological choices made in this thesis enable analysis of change initiatives as relational, distributed, and contingent. They make it possible to analyse how stability and change co-produce outcomes through resource interfaces, and why feasibility and friction emerge unevenly across different network settings within a business network.

5.7 Reflecting on the quality of the research

In addition to methodological coherence, it is important to reflect explicitly on the quality of the research process. This thesis has been developed through an iterative and transparent research process, characterised by continuous movement between empirical material, theoretical concepts, and analytical interpretation. Rather than following a linear sequence of predefined steps, the research design evolved as new connections and change initiatives became visible through resource interfaces. This required repeated reassessment of case boundaries, analytical focus, and theoretical framing.

Transparency has been pursued by documenting how data collection, case expansion, and analytical decisions were made over time. The abductive logic of systematic combining (Dubois & Gadde, 2002) made it possible to move back and forth between data and theory, allowing emerging findings to inform data collection and conceptual development. This iterative process is described in detail in Sections 5.4 and 5.5, and illustrated through the abductive journeys of the two studies.

Reflexivity has been an integral part of this process. Throughout the research, continuous reflection was applied to how empirical observations were interpreted, how concepts were selected and refined, and how the researchers' prior experience and assumptions influenced analytical choices. This reflexive stance supported critical evaluation of alternative interpretations.

Taken together, the transparency of the research process, the iterative movement between theory and data, and the continuous reflexive evaluation of analytical choices contribute to the trustworthiness of the study. This reflective approach aligns with the thesis' theoretical position that change initiatives are contingent, relational, and embedded in evolving resource structures, and therefore require a research design capable of adapting as empirical understanding deepens.

5.7 Lessons learned

Relying on the research process and methodological tools has made me appreciate the uncertainty of both where answers and new questions will emerge and what they will be. Trusting the process rather than drawing quick conclusions has been a significant behavioural change for me. Continuous data collection, combined with methodological and theoretical insights over the past five years, has shaped my development as a researcher.

6 Summaries of appended papers and their contributions

This thesis is based on five appended papers, each offering insights into how connectedness among change initiatives can be conceptualised, analysed and managed by business actors within firms and across firm boundaries.

The following sections (6.1 – 6.5) provide summaries of each paper. Section 6.6 provides an overview of the studies underlying the appended papers and section 6.7 reflects on the contributions from these five papers in relation to the phenomenon: connectedness among change initiatives. Finally, section 6.8 discusses how various concepts have been used in the different papers.

6.1 Summary of paper 1

Title: E-commerce packaging as an embedded resource in three network settings
The paper is published in *The International Review of Retail, Distribution and Consumer Research*.

The aim of Paper 1 was *to identify packaging challenges and opportunities for business actors involved in e-commerce distribution.* Based on a case study, the paper explored the challenges faced by business actors as they adapted to e-commerce within established distribution structures, which had evolved over time to fit the business logic of sales in and distribution to physical stores. Specifically, it examined how e-commerce packaging could be made more sustainable while supporting more efficient distribution, and how e-commerce packaging interacted with other resources in a business network.

The primary source of data consisted of interviews, complemented by site visits and secondary data such as firm documents, websites, videos, and seminars. The data collection focused on identifying resources that interfaced with e-commerce packaging, as well as capturing various business actors' perspectives on these resources.

The data were analysed thematically using the Resource Interaction Approach and the 4R-model (Håkansson & Waluszewski, 2002a, 2002b). By first analysing direct and then indirect resource interfaces, the study shows how e-commerce packaging, as a focal resource, is embedded in a structure of interdependent resources. It further shows how interaction over time among these resources results in varying degrees of stability, forming more or less locked-in sets of resource interfaces that are combined into resource combinations related to network settings.

Building on the settings of develop, produce, and use, proposed by Håkansson and Waluszewski (2007) and Ingemansson (2010), this paper highlights how the exploration of other network settings - such as product development, packing, and sorting - is

relevant when analysing how a focal resource relates to various parts of a business network. The study shows that current change initiatives related to making e-commerce-packaging more sustainable were mainly found in the packing setting. However, greater sustainability gains may be achieved by modifying the packaging design within the product development setting and from adapting the sorting setting to allow more individual, gentle handling of parcels. Network settings, further elaborated in the licentiate thesis (Brüel Grönberg, 2023), refer to specific parts of a business network where a set of resource interfaces, formed through resource interactions, are configured into resource combinations (e.g. multiple technical and organisational resources that are fitted together in practice to make distribution work). Within these network settings, more or less stabilised resource interfaces influence how business actors perceive the potential for changing resources and resource interfaces.

Consequently, packaging needs to align with and adapt to a range of resources controlled by different business actors, with different performance logics, operating in different network settings and holding diverse perspectives and requirements regarding packaging and sustainable retail distribution. This analysis helps explain why change is more likely to succeed in some network settings than in others. Resource embeddedness can thus help explain business actors' behaviour and how change initiatives unfold in a business network.

6.2 Summary of paper 2

Title: Disembedding air from e-commerce parcels: A joint challenge for supply chain actors

The paper is published in *Industrial Marketing Management*.

The aim of Paper 2 was *to analyse the role of air in e-commerce parcels.* Building on the conclusions and insights from Paper 1, the case study on which this paper relies focused specifically on the embeddedness of the resource 'air in e-commerce parcels'. It examined the challenges faced by business actors in removing - or disembedding - excessive air from e-commerce parcels, and illustrated how the focal resource is embedded in a structure of interdependent resources. These resources were influenced by multiple actors, each with differing perspectives and priorities regarding what constitutes excessive air, and how it should be addressed.

The study took its point of departure from a major logistics service provider (LSP Inc.) and its efforts to manage increasing volumes of e-commerce deliveries. As part of this effort, LSP Inc. initiated a change initiative to reduce what it described as a 'disproportional' amount of air in e-commerce parcels, currently estimated to average at least 30% per parcel. To address this, LSP Inc. engaged with retail customers to explore potential solutions. Data collection focused on identifying resources interacting

with the focal resource – air in e-commerce parcels - and included interviews with several business actors influencing these resources. Their perspectives on both the resource 'air' and the related resources were analysed. The main data source was interviews, complemented by site visits, a workshop, and secondary materials such as company documents, websites, and seminar content.

For data analysis, resources were identified and categorised using the 4R-model. The analysis began with direct resource interfaces related to air in e-commerce parcels, followed by indirect resource interfaces. The paper highlights how air is embedded in a structure of resources and explores the challenges associated with removing - or disembedding - excessive air from these parcels.

6.3 Summary of paper 3

Title: A casing approach to analyse connected changes in business networks
The paper was submitted to a journal in 2024 and is currently in the third-round-review.

The aim of Paper 3 was *to elaborate on, and illustrate, how the challenges involved in casing connected changes in business networks can be tackled.* Building on the methodological insights from Paper 2, the study took its empirical starting point in a change initiative aiming to reduce excessive air in e-commerce parcels. As the research progressed, several ongoing and connected change initiatives were identified and included in the analysis. While the initial focus was framed around 'an arbitrary centre' (Dubois & Araujo, 2004), the case boundary expanded to include other relevant change initiatives connected to the focal initiative and to analyse how involved actors perceived the connections between these changes. These perceptions were influenced by how actors perceived time, with ongoing changes often being more visible than past or planned ones.

The paper underlines the importance of connectedness among business relationships in understanding how change initiatives are connected in business networks. Interaction among business actors has a 'material character' as it creates interdependencies in the form of activity links, resources ties, and actor bonds, which act as the substance of relationships between business actors (Håkansson & Snehota, 1995). When analysing change initiatives in a business network, it becomes evident that actions within one business relationship are influenced by developments in other directly and indirectly connected business relationships. These interdependencies - formed through the substance of activity links, resource ties, and actor bonds - highlight how any change initiative is situated within a business network. Since connectedness is mediated in business networks, it impacts on business actors, business relationships, and network dynamics. Hence, no actor can act independently from other actors and change is a result

of resource interdependence and interaction between actors (Håkansson & Snehota, 1995).

The study drew on Holmen's (2001) concept of 'change boundaries' to explore how change initiatives are defined in relation to their contexts. The question, "How hard can it be to make this change?", was used to investigate the complexity of a focal change initiative as a function of other ongoing change initiatives and their interdependencies. The casing distinguished 'context' from 'contingency', that is, when connected changes move from background conditions to causal relevance.

While case study research has frequently addressed how to frame a case in relation to its context (Welch et al., 2022), this paper proposes a casing approach that demonstrates the value of examining several connected change initiatives within a single case framework, with each initiative being analysed both in its own context and in relation to the other change initiatives' contexts.

The proposed casing approach builds on three key elements:

1. Analysing individual change initiatives within their respective contexts.
2. Uncovering how involved actors perceive connections between these changes.
3. Understanding how those connections influence actors' actions and interactions.

This methodology allows researchers to make sense of how change initiatives relate to one another from different actors' perspectives, and how they unfold across different parts of a business network. It also reduces the risk of interpreting single change initiatives merely as successes or failures, encouraging instead a focus on the direction and interplay of multiple, connected initiatives.

6.4 Summary of paper 4

Title: Packaging requirements in retail distribution networks: The impact of connected automation initiatives

The paper is published in *The International Review of Retail, Distribution and Consumer Research.*

The aim of Paper 4 was *to explore how connectedness among automation initiatives impacts packaging requirements in retail distribution networks*. The paper relied on a case study involving three connected automation initiatives: (1) the extension of unloading automation by a logistics service provider (LSP), (2) the adoption of warehouse automation by a retailer, and (3) the introduction of packing automation by a producer. Each initiative was driven by the firms' internal goals - such as operational efficiency, volume growth, or improved workplace conditions – but was also embedded

in a structure of connected resources across business relationships. Consequently, all three automation initiatives affected packaging through changes in resource interfaces.

These interdependencies illustrate that automation initiatives, although introduced as internal improvements, have effects beyond the implementing firm. Since packaging is a shared, interfacing resource embedded in an inter-organisational resource structure, automation initiatives can impact packaging requirements across connected firms and business relationships. For example, the LSP's extension of automated unloading (through tipping from cages) introduced handling conditions that increased the need for robust and protective packaging, while the retailer's warehouse automation (single-item storage, picking, and automated e-commerce packing) contributed to standardised packaging formats and reduced flexibility in adapting packaging for other distribution contexts (e.g., deliveries to physical stores). Similarly, the producer's packing automation reinforced the use of store-packaging, thereby reducing both the willingness and ability to accommodate customer-specific packaging requests, such as single-packed items on pallets. In combination, these initiatives created both alignments and misalignments in packaging requirements, with consequences such as increased material use, reduced packaging adaptability, and tensions between efficiency ambitions and sustainability-related performance.

Methodologically, the paper built on the abductive logic and boundary expansion as emphasised in Paper 3, as automation initiatives were not the initial focus but emerged as a recurring influence on packaging requirements during the analysis. Drawing on the Industrial Network Approach (Håkansson & Snehota, 1995) focusing on resource interaction (Baraldi et al., 2012), the study analysed how automation-related change initiatives unfold across firm boundaries through interaction at resource interfaces, and how packaging is evaluated and adapted in relation to operational and sustainability-related performance categories (e.g., damage risk, throughput, material intensity, and transport volume efficiency).

The findings show that automation initiatives often enhance internal efficiency, but also generate cross-firm consequences by stabilising specific packaging-automation interfaces. This stabilisation constrains packaging flexibility and influencing what actors consider feasible, efficient, and sustainable packaging across the retail distribution network. Accordingly, Paper 4 underscores the importance of viewing automation not as an isolated technological upgrade, but as a connected change initiative embedded in a retail distribution network of interdependent resources and business relationships. The paper also highlights that achieving efficiency and sustainability-related improvements in packaging requires attention to how automation initiatives interact across firm

boundaries and how packaging requirements are influenced by connected resource interfaces in the retail distribution network.

6.5 Summary of paper 5

Title: Making business networks sustainable: Theoretical and managerial challenges

The paper was submitted to a journal in 2025 and is currently in the second-round-review.

The aim of Paper 5 was *to problematise the notion of sustainability in business network studies.* It elaborated on a dilemma: while sustainability-oriented change initiatives often require interaction and collaboration across connected business relationships (making the Industrial Network Approach highly relevant), it is problematic to integrate 'sustainability' as a theoretical dimension or component in frameworks based on the Industrial Network Approach, because sustainability is broad, ambiguous, and perspective-dependent.

The paper combined an integrative literature review with a single case study in the European retail context. The literature review scrutinised how sustainability has been approached in prior Industrial Network Approach research and identified three patterns:

1. Studies drawing on externally defined sustainability notions or phenomena,
2. Studies analysing sustainability as grounded in business actors' perspectives.
3. Studies that introduce or suggest theoretical sustainability notions.

Based on this, the paper argues that studies relying on the Industrial Network Approach can analyse sustainability efforts but cannot generalise 'sustainability' as a theoretical construct.

Empirically, the case study examined a retailer's change initiative to develop what it perceived as a more sustainable packaging solution. The initiative involved reducing store packaging and moving toward single-packed products in bulk to improve internal efficiency, reduce packaging waste, and enhance transport fill rates. The case illustrates how sustainability is enacted and negotiated in practice through actors' perspectives on resource and activity features (e.g., material use, damage rates/returns, transport fill, ergonomics), and how these perspectives differ across suppliers, logistics service providers, and business customers. It shows that what appears 'more sustainable' in one part of the business network may generate frictions or be regarded as less viable elsewhere due to interdependencies in resources and activities (e.g., automation constraints, handling routines, receiving processes).

Theoretically, the paper relied on concepts and models within the Industrial Network Approach (the ARA model; activity links, resource ties, actor bonds; and connectedness among business relationships) to analyse how sustainability efforts unfold as resource and activity changes across a business network. However, it keeps sustainability in the empirical domain as a 'performance category' rather than integrating it into the theoretical framework. Accordingly, the paper argues that sustainability features of resources and activities should be analysed in relation to other features (e.g., efficiency, robustness, standardisation) and in relation to actors' positions in the business network and their perspectives.

The paper concludes that sustainability is a perspective-dependent performance category and should not be built into the Industrial Network Approach as a theoretical component (e.g., no 'SARA model', and no theorising of 'sustainable networks' as such). Instead, the Industrial Network Approach is best used to analyse how actors attempt to develop and implement solutions they consider more sustainable through interaction, adaptation, and mobilisation in connected business relationships. To evaluate whether resource and activity changes are 'more sustainable' in an absolute sense, the paper suggests complementing the Industrial Network Approach with evidence from other disciplines (e.g., life cycle assessment) rather than theorising sustainability within the Industrial Network Approach.

6.6 Overview of the studies underlying the appended papers

This section provides an overview of the two studies underlying the appended papers. Together, the studies examine how change initiatives related to packaging unfold in business networks when resources are interdependent. While each paper has a different empirical focus and analytical emphasis, all build on a shared interest in how change initiatives become connected through resource interfaces and business relationships.

Table 1 Overview of the studies underlying the appended papers summarises the key characteristics of the studies, including their focus, data collection, analytical approach, and key outcomes. The table highlights both the progression of the research - from resource embeddedness (Papers 1–2), through methodological development (Paper 3), to connected automation initiatives (Paper 4) and how to handle sustainability in Industrial Network Approach research (Paper 5) - and the complementary insights generated across the studies.

Together, the studies form an integrated empirical and analytical basis for addressing the thesis aim of understanding how connected change initiatives can be conceptualised, analysed, and managed in business networks.

Table 1 Overview of the studies underlying the appended papers

	Paper 1	Paper 2	Paper 3	Paper 4	Paper 5
Type of study	A case study of how to make packaging more sustainable: Effects of resource embeddedness			A case study of how to make packaging more sustainable: The role of business relationships	
Focus	E-commerce packaging as an embedded resource in a business network.	Air in e-commerce parcels and its embeddedness in a structure of resources.	Illustrating how a casing approach uncovers multiple, connected change initiatives.	How connected automation initiatives impact packaging requirements.	How business actors interpret and negotiate sustainability-oriented change initiatives, and why sustainability cannot be generalised as a theoretical construct within INA.
Data collection	25 interviews, site visits, firm documents, websites, videos, seminars.	33 interviews, 4 site visits, a workshop, firm documents, websites, seminars.	31 interviewees across 3 core firms, and 18 from 15 other firms.	27 interviews, 4 site visits.	27 interviews, 4 site visits, firm documents.
Analysis	4R-based analysis of both direct and indirect resource interfaces.	4R-based analysis of resource interfaces around 'air', linked to actor perspectives.	Stating in an initial change initiative and tracing others uncover connected changes.	Analyse resource interfaces between automation and packaging, and key business actors and business relationships.	Literature review of sustainability research and case analysis of actor perspectives on sustainability-related resource and activity features.
Key outcome	Packaging is interdependent with diverse resources and business logics across network settings.	'Air' is embedded within a structure of interdependent resources; business actors hold conflicting priorities and perspectives on how to develop sustainable packaging solutions.	Proposes a casing approach to study connected changes in business networks.	Connected automation initiatives influence packaging requirements.	Sustainability is a perspective-dependent performance category. The Industrial Network Approach explains interaction and connectedness, not sustainability itself.

6.7 Contributions of the papers to understand the phenomenon

The appended papers collectively contribute to understanding the phenomenon that is the focus of this thesis: connectedness among change initiatives in business networks. The papers, and this thesis, take a theoretical point of departure in the Industrial Network Approach, with particular emphasis on resources. Across the papers, key concepts such as resource interfaces, resource embeddedness, and connectedness are iteratively developed and applied in interaction with the empirical material to uncover how change initiatives involving resource features and resource interfaces are connected and unfold through business actors' actions and reactions in relation to their positions in the business network. Papers 1 and 2 analyse resource interaction using the Resource Interaction Approach (RIA) and the 4R-model, whereas Papers 3, 4 and 5 - and the thesis as a whole - examine activated resource structures through the resource layer of the ARA-model, to explore how connected change initiatives unfold in business networks.

The exploration begins in Paper 1, where e-commerce packaging is treated as a focal resource embedded in a structure of interdependent resources across network settings. RIA and the 4R-model are used to analyse how e-commerce packaging interacts with technical resources (e.g. packing automation, sorting facilities, vehicles) and organisational resources (e.g. brand manuals, packing personnel, routines). Here, the concept of resource embeddedness is used to explain why certain sets of resource interfaces, established within certain resource combinations, are more resistant to change. Network settings are introduced as an analytical tool to analyse resource interaction, showing that the possibility for change is distributed differently across contexts in a business network.

Building on these insights, Paper 2 focuses on a specific aspect of packaging: air in e-commerce parcels. The paper introduces the notion of disembedding, framing the reduction of excessive air as a matter of reconfiguring resource combinations. As in paper 1, RIA and the 4R-model remain central, showing how air is interdependent with directly and indirectly interfacing resources, such as packaging features and automation solutions. Actors' perspectives diverge on what constitutes excessive air and on the importance of reducing it, highlighting that evaluations of resources are not universal but influenced by firm-specific logics and actors' positions in the business network. This reinforces the need to study change initiatives as negotiated across interdependent resources, and in relation to other ongoing changes of resource interfaces within the activated resource structure, rather than as isolated change initiatives.

The insights from Paper 1 and 2 are deepened methodologically in Paper 3, which introduces a casing approach to uncover and analyse multiple connected change initiatives. Here, resource interaction is placed within a broader analytical perspective:

one that attends to how actors perceive interdependencies, consider change boundaries, and interpret the connectedness among change initiatives. This methodological development enables an evolving empirical scope - crucial for analysing the involvement of business actors in interrelated change initiatives such as air reduction, automation, and packaging redesign. With this approach, change initiatives are no longer analysed as focal, but as connected, where outcomes are influenced by how changes of resources and resource interfaces are connected in the activated resource structure.

Paper 4 applies the casing approach developed in Paper 3 to uncover and analyse three connected automation initiatives - at a logistics service provider, a retailer, and a producer - and trace the effects of these automation initiatives on packaging requirements. It shows how resource interfaces between automation and packaging become points of friction when operational and sustainability goals are not aligned across firms. The resource layer of the ARA-model is used to analyse how automation initiatives impact the activated resource structure beyond firm boundaries, reinforcing the idea that change initiatives, while initiated internally, are connected through business relationships. In doing so, it clarifies how the connectedness of resource interfaces influences the trajectory and outcomes of connected change initiatives.

Finally, Paper 5 contributes by elaborating on how sustainability-oriented change initiatives become connected to other initiatives in business networks. By combining a literature review of sustainability research grounded in the Industrial Network Approach with a case study, the paper shows that actors' sustainability evaluations hinge on how specific resource features interface with other ongoing changes across connected business relationships. In this way, the paper reinforces the thesis' core argument: connectedness among change initiatives operates through the activated resource structure and actors' perspectives, while 'sustainability' remains a perspective-dependent performance category that is analytically best kept in the empirical domain.

6.8 Conceptualising across the papers

The theoretical development across the papers reflects a sharpening and recombination of key concepts that enables a deeper understanding of ***connectedness among change initiatives in business networks*.** While each paper is grounded in the Industrial Network Approach, the use and meaning of core concepts - such as resource interfaces, connectedness, network settings, and change initiatives – evolved in the research process.

Across the papers, sustainability is treated less as a fixed theoretical construct and more as a performance category that business actors interpret and negotiate differently across the business network. Within the Industrial Network Approach, sustainability outcomes

emerge through interaction, resource combinations, and business relationships. Accordingly, what counts as 'sustainable' varies with dominant performance logics and resource interdependencies, which helps explain why sustainability-oriented change initiatives gain traction in some parts of the business network but generate friction or resistance in others.

Across the papers, core concepts within the Industrial Network Approach are combined and refined through systematic combining - an abductive movement between theory and empirical material (Dubois & Gadde, 2002). Early papers used resource interfaces primarily to describe interdependencies packaging and other resources; later papers used them analytically to trace connected change initiatives across firms. Similarly, connectedness evolved from a descriptive term into a key concept capturing how resource interdependencies generate both alignment and misalignment as change initiatives connect across business networks.

This progression reflects a growing theoretical understanding of how the Industrial Network Approach can be used not only to analyse resources and actors in business networks, but also to explain how change initiatives are connected through resource structures. Rather than introducing new concepts, the thesis demonstrates how established concepts - when recombined and grounded in empirical detail - can generate novel insights into the coordination challenges of sustainability-oriented and operational change initiatives.

Across Papers 1-5, resource structures and actors' interaction in relation to those resource structures serve as a unifying conceptual thread. The research begins with the Resource Interaction Approach (RIA) and the 4R-model (Papers 1–2), where a focal resource (e-commerce packaging; later 'air in e-commerce parcels') and its direct and indirect interfaces to other resources are identified and analysed. This focus on resource interfaces grounds the analysis of how resource adaptations connect across business relationships. Building on this, Paper 3 introduces a casing approach to follow multiple, connected change initiatives beyond a single firm and to capture how actors perceive connections and how case boundaries evolve over time. Papers 4–5 then shift to the ARA-model to analyse activated resource structures - the current configurations of resource interfaces across business relationships - and to explain why change initiatives align or conflict. Figure 6 shows the analytical focus in papers P1-P5.

	P1	P2	P3	P4	P5
Stage 1 — RIA/4R	RIA/4R	RIA/4R			
Stage 2 — Casing			Casing		
Stage 3 — ARA				ARA	ARA

Figure 6 The analytical focus in Paper 1 – Paper 5

Network settings provide the empirical bridge in the research process. Starting from the established develop–produce–use settings (Håkansson & Waluszewski, 2007; Ingemansson, 2010), the thesis operationalises a set of network settings relevant to retail distribution - e.g., product development, packing, and sorting. Within each network setting, specific resource interfaces become more or less stabilised, influencing what actors perceive as feasible, desirable, and sustainable. The move from RIA and the 4R-model to the ARA-model thus marks a shift in analytical focus: from treating business relationships as one type of organisational resource within a resource classification, to analysing how resource interfaces are activated and become connected through business relationships within an activated resource structure. This shift also brings actors more explicitly into the analysis by examining how they use business relationships to mobilise and negotiate counterparts, and to influence adaptations of resource features and resource interfaces across network settings - connections that were progressively uncovered through the casing approach.

Taken together, this conceptual trajectory shows that change initiatives can be understood in relation to (i) the resource features and resource interfaces actors modify, (ii) the other change initiatives to which they are connected, and (iii) the positions of the actors and business relationships within the business network. This theoretical framework shifts the focus from viewing change initiatives in isolation (for example, a single firm upgrading its packaging) to a network perspective in which multiple, connected, and sometimes conflicting change initiatives both influence and are influenced by the reconfiguration of interdependent resources.

7 Results

This chapter presents the results of the thesis by answering the three research questions that have guided the work. Each section corresponds to one question. Section 7.1 deals with: *How can connectedness among change initiatives be conceptualised in business networks?* Section 7.2 addresses: *How can connected change initiatives be uncovered and analysed in business networks?* Finally, Section 7.3 focuses on: *How can connected change initiatives be managed by actors in business networks?*

7.1 Research question 1

How can connectedness among change initiatives be conceptualised in business networks?

Change initiatives in business networks - such as introducing new packaging materials, implementing automation, or adapting to sustainability regulations - are not isolated efforts. They are often cross-functional and initiated in a context of other ongoing changes. In this thesis, connectedness among change initiatives is conceptualised as initiatives that are connected via business relationships through interdependent resource interfaces and that therefore influence one another through the activated resource structure. The activated resource structure refers to the current configuration of resource interfaces that business actors reproduce through ongoing interaction across business relationships.

Since these changes of resource features and resource interfaces recur in different parts of the business network, connectedness among change initiatives is also contingent on network settings. Network settings are defined as analytically bounded parts of a business network in which specific configurations of resource interfaces are repeatedly activated by business actors and thereby temporarily stabilised into resource combinations through which actors' dominant performance logics are reproduced, influencing how change initiatives are perceived. Network settings are not bounded by firms or functions; rather, they are arrangements of actors, resources, and activities tied to more or less stabilised resource combinations that cut across organisational boundaries.

To delimit network settings and trace connections among change initiatives, the studies employ a casing approach: starting from an initial focal point and expanding the case boundary as additional connections among change initiatives are identified by the researcher(s). Network settings help to identify where connectedness becomes consequential in practice - that is, why change initiatives that are connected across different parts of the business network are perceived and enacted differently by actors in different network positions.

The conceptual understanding in this thesis is based on the Industrial Network Approach with a focus on resource heterogeneity and the context-dependent value of resources (Penrose, 1959; Håkansson & Snehota, 1995), resource interfaces as specific contact points of influence (Baraldi & Strömsten, 2009; Baraldi et al., 2012), and business relationships as both enabling and constraining channels for unilateral action (Håkansson & Snehota, 1995).

In sum, connectedness among change initiatives should not be treated as a contextual background. Conceptualised in this way, initiatives can be analysed as connected via resource interfaces across business relationships; they influence one another through the activated resource structure, and they are perceived differently by business actors within different network settings. This clarifies why apparently rational changes for one business actor or network setting may conflict with others - and how such tensions can be uncovered.

7.2 Research question 2

How can connected change initiatives be uncovered and analysed in business networks?

In business networks, change initiatives may first appear as firm-specific or confined to a small set of actors, yet they are frequently connected with change initiatives pursued by other business actors, as illustrated in this thesis. Uncovering and analysing this connectedness is methodologically demanding, particularly because the connectedness among change initiatives can be obscured by firm boundaries, temporal lags, and differing strategic priorities. Consistent with a critical realist stance, the analysis attends to both the real (enduring resources and resource interfaces) and the relative (actors' views and priorities).

This challenge is addressed by introducing and operationalising a 'casing approach' (Paper 3), grounded in the Industrial Network Approach, which enables researchers to uncover and analyse connected change initiatives in a business network context. The casing approach is a dynamic and emergent process in which the analytical boundaries of a case evolve as new connections and interdependencies are revealed during the empirical investigation (i.e., systematic combining as suggested by Dubois and Gadde, 2002).

Paper 3 illustrates the casing approach by starting from a focal change initiative – the reduction of air in e-commerce parcels. The case boundary is expanded iteratively as additional, connected, and relevant changes are identified. The paper addresses two core issues: how casing should proceed in studies of change in business networks, and which criteria determine what is analytically relevant and what should be set aside. By

foregrounding structural features - resource interfaces and the activated resource structure - the study shows how actors perceive, influence, and are influenced by changes beyond their immediate control.

Analytically, connected change initiatives can be examined through the concept of the activated resource structure, with a focus on resource interfaces - the points where two or more resources interact (e.g., packaging-packing automation, transport facilities-packaging). Analysing direct and indirect resource interfaces uncovers resource combinations, embedded in different parts of the activated resource structure, that may enable or constrain change.

The concept of network settings (elaborated in section 7.1) helps explain how recurrently activated configurations of interdependent resource interfaces influence business actors' interpretations of, and responses to, change initiatives. To understand why connected change initiatives play out differently across the business network, the analysis traces how resource interfaces are stabilised and distributed across business relationships and uses this to explain variation in feasibility and friction across network settings.

The introduced casing approach moves beyond the scope of a single firm and a business relationship. Instead, change initiatives are viewed as connected within a business network of interrelated business relationships and situated within the activated resource structure. As shown in paper 4, this approach can illustrate how change initiatives in different parts of the business network, such as an automation initiative at a supplier or logistics service provider, can impact packaging requirements elsewhere. It also shows how ongoing change initiatives can conflict or align, depending on how resources and resource interfaces are configured and perceived across network settings.

In sum, the introduced casing approach provides a practical way to uncover and analyse connected change initiatives in business networks. The thesis offers both methodological and conceptual tools for tracing how a change initiative is influenced by other connected changes, through the activated resource structure and business actors' ongoing interactions in business relationships. These insights are relevant for researchers studying change in business networks and other kinds of open systems, as well as for practitioners navigating parallel inter-organisational change initiatives.

7.3 Research question 3

How can connected change initiatives be managed by actors in business networks?

Managing change initiatives in business networks often requires more than implementing internally initiated projects. It involves navigating connected business

relationships, the activated resource structure, and interdependent resources and resource interfaces that together form resource combinations. When business actors introduce change initiatives—such as implementing automation or adopting e-commerce packaging—they do so while multiple change initiatives unfold in parallel, both within the focal firm and across connected business relationships in the wider business network, and in relation to past and planned change initiatives. These connected changes can conflict, reinforce, and influence one another, highlighting that actors require mechanisms to engage with these connections, even when they cannot control them unilaterally.

Business actors' mobilisation of other actors and resources provides such a mechanism. Inter-organisational mobilisation of resources refers to the active (re)configuration of heterogeneous resources pursued by business actors across organisational boundaries (Håkansson & Snehota, 1995; Håkansson & Ford, 2002). By mobilising other actors through business relationships, a focal actor increases its ability to influence how others adapt their activities and resources, and thereby to influence adaptations at shared resource interfaces. The results indicate that inter-organisational mobilisation of resources functions as a central mechanism for coping with connected change initiatives, because it enables actors to engage, align, and negotiate adaptations at resource interfaces that they do not control unilaterally.

As illustrated in this thesis, change initiatives cannot be understood or managed in isolation. They are influenced by other change initiatives unfolding across business relationships through resource interfaces in the activated resource structure.

In sum, managing connected change initiatives in business networks involves mobilising and (re)configuring resource combinations across the activated resource structure in ways that take resource interdependencies into account. Outcomes depend not only on internal execution but also on actors' ability to mobilise counterparts and negotiate adaptations of resource interfaces across business relationships and within and across network settings.

8 Discussion

This chapter reflects on how connected change initiatives can be analysed and managed in business networks, and on how temporal and spatial resource embeddedness influence stability and change in the activated resource structure. Rather than reiterating empirical findings or deriving direct implications, the purpose of this chapter is to interpret the results by situating them within broader theoretical, methodological, and practical discussions. In this thesis, connectedness among change initiatives is conceptualised as initiatives that are connected via business relationships through interdependent resource interfaces and therefore influence one another through the activated resource structure.

The discussion is grounded in the Industrial Network Approach and adopts a critical realist stance: the real comprises resources and resource interfaces that, in turn, condition action; the relative concerns actors' situated interpretations and priorities as they interact across business relationships (Easton, 2010). Change and stability are thus seen as outcomes of interaction among temporally and spatially embedded resource interfaces – interfaces that are connected through the activated resource structure (Gadde & Håkansson, 1992; Halinen & Törnroos, 1998; Baraldi et al., 2012).

This chapter is structured in three parts: Section 8.1 theoretically interprets how temporal embeddedness (historical adaptations, current configurations, and future expectations) and spatial embeddedness (positions across the business network) influence stability and change within the activated resource structure. Section 8.2 discusses the methodological consequences of studying such a phenomenon in business networks, focusing on a casing approach that traces connections as they become causally relevant, rather than treating context as mere background. Section 8.3 reflects on practice by analysing how actors mobilise resources to manage connected change initiatives under conditions of temporal and spatial embeddedness.

8.1 Discussion in relation to theory

Understanding connected change initiatives in relation to time and space

The Industrial Network Approach provides a theoretical foundation for conceptualising connectedness among change initiatives through business relationships, in which interdependent resources and their interfaces together form resource structures. The interplay between the current configuration of resource interfaces (i.e. the activated resource structure) and actors' ongoing interaction influences both stability and change within this structure (Baraldi et al., 2012; Prenkert et al., 2022). This implies that neither stability nor change can be treated as attributes of a focal change initiative alone, but can be explained relationally through how resource interfaces are maintained and

reconfigured over time and across different business relationships in the business network.

In this thesis, resource-related change initiatives are viewed as distributed across time and space and driven by business actors' changes of resource interfaces within the activated resource structure. Change, in this sense, results from actors' deliberate attempts to modify resources and resource interfaces, while its effects unfold through multiple resource interfaces and often extend beyond the initiating actor's control. As stated by Håkansson and Waluszewski (2013, p. 452) "the never ending story is far from a simple, linear chain of actions; it is a complex pattern of actions and reactions where the effects on the resources involved are distributed among different interactions — for better and for worse." This captures a central insight of the thesis: connectedness is not an exception, but a condition of how stability and change emerge in business networks. This interpretation aligns with Harrison's (2010) argument that initiatives in networks develop through interaction with multiple counterparts rather than through unilateral managerial action. Initiatives gain meaning as they connect with other actors' activities and resources over time, reinforcing the view that change initiatives are relational and structurally embedded in business networks.

Temporal resource embeddedness

Temporal resource embeddedness highlights how past adaptations, current configuration, and future expectations influence the possibilities for change. As Håkansson and Waluszewski (2002a, p. 19) argue "…time in itself is necessary when trying to understand how technical changes emerge, develop, grow or terminate". The activated resource structure reflects historically accumulated adaptations, investments, and decisions (Håkansson & Waluszewski, 2002b, 2002a). These past choices influence which changes are currently feasible and which are resisted. Recent work on resource deficiencies sharpens this argument by showing how disruptions related to resource scarcity, quality, or availability challenge stabilised patterns of resource interaction (Tunisini et al., 2023). Such deficiencies do not affect isolated resources only, but disturb established resource combinations across business relationships, thereby interrupting incremental paths of adaptation. This supports the interpretation advanced here that connected change initiatives often emerge when previously stabilised resource interfaces become problematic, exposing interdependencies in the activated resource structure and triggering adjustments in multiple parts of the business network. Resource deficiencies thus make visible how historical adaptations both enable and constrain present change initiatives.

Since the activated resource structure consists of multiple resource combinations, actors positioned in different parts of the business network encounter and prioritise these

combinations differently. This leads to variation in time horizons, which, in turn, leads to different responses to change initiatives. Change is therefore not only forward-looking but influenced by actors' historical pathways and their interpretations of past experiences and future expectations (Halinen & Törnroos, 1998). This helps explain why actors may disagree not only about what should change, but also about when change is appropriate or necessary.

Analysing network settings - building on the settings of develop, produce and use (Håkansson & Waluszewski, 2007; Ingemansson, 2010) - helps to explain how temporal embeddedness generates tensions between stability and change across a business network. Stability of resource structures emerges from repeated interaction that stabilise particular resource interfaces and sediment into routines (Gadde & Håkansson, 1992). Rather than representing stages in a linear process, network settings are interpreted in this thesis as coexisting configurations within the activated resource structure.

Actors positioned in different network settings may relate to time in different ways because they encounter stabilised resource combinations. Accordingly, the focus is not on linear process models but on how historically accumulated resource interfaces condition what change becomes feasible across different network settings. A change of a resource or resource interface in one network setting is therefore likely to affect resource combinations in other network settings through connected business relationships. Time is thus inherent in resource structures - through past adaptations, current configurations, and future expectations - rather than as a sequence of discrete change processes (Håkansson & Waluszewski, 2002b).

Spatial resource embeddedness

In business networks, resources are activated and combined across organisational boundaries. Through resource interfaces in business relationships, these combinations form resource structures (Håkansson & Snehota, 1995). The value and performance of resources are influenced by their positioning within the business network (Ford et al., 2008) and by how they are combined through business relationships. Spatial embeddedness refers to how resources are combined and stabilised across organisational boundaries, forming relatively stable resource combinations (Håkansson & Snehota, 1995; Baraldi et al., 2012). Spatial embeddedness helps explain why changes initiated in one part of the business network can propagate through interdependent resource interfaces and generate unintended effects elsewhere. This aligns with Baraldi et al.'s (2012) account of resource interaction, which shows how changes in one resource affect others through established interfaces, making the consequences of change distributed and difficult to localise. It also resonates with Prenkert et al. (2022), who conceptualise

resource structure as a pattern of interacting resource interfaces that simultaneously enable and constrain change, thereby explaining how spatially distributed resource interdependencies shape both stability and transformation in business networks.

Spatial stability in the activated resource structure is elusive, because part of it is always changing. Stability is not a default state but an outcome actively maintained by actors through routines, lock-ins, and aligned resource interfaces (Gadde & Håkansson, 1992). Even as change unfolds, elements of stability persist as actors seek continuity (Weick, 1979). This co-existence of change and stability helps explain why connected change initiatives often appear slow, contested, or uneven, rather than being smoothly implemented.

Although a business network is continuously changing, a particular network setting may appear relatively stable when its resource combinations, routines, and actors' performance logics remain aligned. It becomes unstable when new change initiatives or external disturbances disrupt those alignments. Stability is therefore best understood as provisional and context-dependent, influenced by how change initiatives elsewhere in the business network interact with and are influenced by the stabilised resource interfaces in a given network setting.

Reflection

Theorising connectedness among change initiatives requires understanding of how stability and change co-emerge through resource interfaces that are both temporally and spatially embedded. Change initiatives are influenced by past adaptations, current configurations, and actors' future expectations, as well as by how resources are combined across business relationships in the network. The activated resource structure is influenced by the ongoing resource interaction among multiple, partially connected change initiatives. Network settings serve as an interpretive tool for analysing where resource interfaces are stabilised, how temporal and spatial embeddedness vary across network settings, and why connected change initiatives generate both alignment and misalignment in the business network.

8.2 Discussion in relation to method

Uncovering connected change initiatives through a casing approach

Methodologically, analysing connectedness among change initiatives requires a casing approach that turns 'context' into 'contingency': the case boundary expands as connections become causally relevant at resource interfaces. This section discusses what kinds of causal explanations casing enables in studies relying on a network or open-systems approach, and what kinds of misattribution more bounded approaches risk producing.

The case boundary is allowed to expand as connected change initiatives are uncovered, rather than being fixed at the outset, enabling multiple changes – framed by network settings – to be traced. This reflects an interpretive stance in which relevance is established analytically, not administratively, as connections become consequential for explaining observed outcomes (Welch et al., 2022).

Analysing the activated resource structure shifts the explanatory focus from evaluating 'implementation success or failure' to 'interface-conditioned feasibility': outcomes are analysed as effects of changes in interdependent resources connected through business relationships, rather than as a direct result of managerial implementation. Such adaptations of resource features and resource interfaces may affect other resources indirectly, and stability becomes visible in actors' efforts to protect routines and prior investments (Gadde & Håkansson, 1992), even while adapting to change initiatives. The concept of network settings helps to interpret these change initiatives by indicating where resource interfaces are actively stabilised and where they are more open to reconfiguration.

Temporal embeddedness in the research design

A longitudinal perspective - understood here as analytical sensitivity to time rather than as a strict research design requirement - is often required to trace how past resource configurations and actors' future expectations influence the network structure (Halinen & Törnroos, 1998). Because connected change initiatives unfold within historically developed resource structures, temporal embeddedness becomes inseparable from how the phenomenon can be meaningfully studied. Temporal embeddedness is therefore as much a feature of the phenomenon as of the research process itself.

Temporal resource embeddedness is incorporated into the analysis through three interrelated dimensions. First, historical adaptations of resource interfaces have shaped the current configuration of resource interfaces. Second, actors' expectations about the future use of resources are influenced by past adaptations, and in turn, influence how they interpret and respond to ongoing change initiatives. Third, the activated resource structure influences which change initiatives currently become aligned and misaligned. Taken together, these dimensions imply that studying connected change initiatives requires attention to how actors act in relation to the activated resource structure, influenced by both past adaptations and anticipated futures.

Analysing actors' perceptions of resources and resource interfaces is particularly important in this regard, because it makes visible how time enters the analysis through actors' interpretations (Halinen & Törnroos, 1998). Actors' accounts provide access to

how historical adaptations are remembered and evaluated, and how anticipated futures (e.g., expectations about regulation, technology, or partner requirements) inform present priorities and responses.

Spatial embeddedness in the research process

Spatial embeddedness can be uncovered by moving beyond dyadic business relationships to examine how resource interfaces interact through multiple actors across organisational and functional boundaries (Halinen & Törnroos, 1998; Baraldi et al., 2012). Because connected change initiatives unfold through interdependent resource interfaces distributed across a business network, spatial embeddedness is not adequately captured by focusing on a single firm, project, or relationship. This implies that spatial embeddedness is not merely a contextual backdrop but a constitutive condition for how change initiatives are perceived and acted upon by different business actors. Comparing actor perspectives across different network settings allows researchers to interpret divergence not as inconsistency, but as a consequence of actors' different positions and roles in relation to the activated resource structure.

Reflection

Methodologically, time and space relate both to the phenomenon under study and to the process of studying it. Evolving case boundaries and openness to emergent connections are therefore essential for analysing connected change initiatives. The proposed casing approach reduces the risk of oversimplifying the 'causation of change' (Pettigrew, 1990). The casing approach discussed here supports causal explanation in studies relying on business network or open-systems approaches by foregrounding how multiple, interconnected change initiatives interact through resource interfaces, rather than attributing outcomes to isolated actions or actors.

8.3 Discussion in relation to practice

Managing resource-related change initiatives in business networks

In practice, managing resource-related change initiatives means understanding how resource combinations are influenced by temporal and spatial embeddedness, thereby enabling or constraining future action. This discussion focuses not on prescribing managerial actions, but on considering why managing change in business networks is inherently complex and relational. Accordingly, the aim here is not to recommend 'best practices', but to discuss why managerial agency in business networks is influenced by resource interdependencies.

Actors' mobilisation of resources emerges as a central mechanism through which actors attempt to manage connected change initiatives. Mobilisation involves engaging and coordinating internal and external actors and aligning resource interfaces to make

change initiatives manageable across the business network (Håkansson & Ford, 2002; Van Bockhaven & Matthyssens, 2017; Kragh et al., 2022). Mobilisation is less about control and more about influencing resource interdependencies that actors only partially control.

Temporal embeddedness and the limits of managerial agency

Previous change initiatives - such as major investments in resources (e.g. facilities) – can constrain what is feasible due to sunk costs or entrenched routines (Gadde & Håkansson, 1992; Håkansson & Waluszewski, 2002a). These 'legacy decisions' often become visible only when they interfere with new change initiatives. Temporal misalignment among actors' change trajectories helps explain why mobilisation efforts may stall or require re-sequencing rather than immediate alignment.

Spatial embeddedness and negotiated feasibility across business networks

Resource interfaces connect changes across space (Baraldi et al., 2012). A shift in one resource interface may require adaptations elsewhere, which are evaluated differently depending on actors' positions in the business network (Håkansson & Snehota, 1995; Ford et al., 2008). Resistance can therefore often be interpreted not as opposition to change per se, but as a rational response to misaligned resource interdependencies. Mobilisation can thus be understood as efforts to configure and align resource interfaces to signal credible value for others and - where needed - to reconfigure parts of the business network so an initiative becomes workable across network settings.

Reflection

In practice, coping with connected change initiatives requires actors to look beyond organisational boundaries and recognise how stability is actively constructed through routines and dependencies. This reinforces the core insight of the thesis: change and stability are relational, and both are influenced by the activated resource structure evolving over time and across space.

9 Implications

The phenomenon focused on in this thesis is ***connectedness among change initiatives in business networks***, understood as emerging through interdependencies among resources and resource interfaces across business relationships. In line with this, the aim has been ***to explore how connected change initiatives can be conceptualised, analysed and managed in business networks.*** Building on the results (Chapter 7) and the discussion of time and space (Chapter 8), this chapter consolidates the thesis' contributions and explains why they matter. It also underscores that these interdependencies are both temporally and spatially embedded: historically developed resource interfaces condition what change is feasible, while actors' positions within the business network influence how the same change initiative is interpreted, prioritised, and acted upon. The chapter articulates implications that follow from theorising change initiatives as structurally connected in business networks.

This final chapter concludes the thesis by articulating the theoretical implications (Section 9.1), the methodological implications (Section 9.2), the societal implications (Section 9.3), and the managerial implications (Section 9.4).

9.1 Theoretical implications

Change management research has predominantly treated change initiatives as firm-centric, bounded and linear (Errida & Lotfi, 2021; Naslund & Norrman, 2022), often evaluating outcomes as either successes or failures. This thesis instead frames change initiatives as an inherently networked phenomenon, whose outcomes are influenced by interdependencies among resources and resource interfaces that span business relationships. In line with the Industrial Network Approach, the thesis shows that change initiatives cannot be analytically separated from the historically developed and spatially distributed resource structures in which they unfold. Theoretically, this shifts attention from explaining change initiatives through isolated managerial intent or organisational capabilities to explaining change initiatives as an outcome of interaction among actors as they maintain and reconfigure resource interfaces within resource structures.

Connectedness among change initiatives

By applying the Industrial Network Approach and, in particular, the resource layer of the ARA-model (Håkansson & Snehota, 1995), this thesis conceptualises change initiatives as interconnected and mutually influencing, rather than as independent.. Connectedness among change initiatives is theorised as arising from interdependencies among resource interfaces within the activated resource structure. This implies that the effects of a change initiative cannot be understood by analysing the focal change initiative or the focal firm in isolation, since changes of one resource feature or resource

interface may enable, constrain, or redirect other change initiatives involving directly or indirectly interfacing resources.

This thesis implies that change initiatives should be explained as a networked outcome of interaction among business actors, rather than as a linear, change-initiative-specific process Resources and resource interfaces are temporally and spatially embedded (Håkansson & Waluszewski, 2002a), meaning that the activated resource structure reflects past adaptations, current configurations, and actors' future expectations, as well as actors' different positions in the business network, which condition what change initiatives are feasible and for whom. By introducing the notion of 'connected change initiatives', the thesis conceptualises change initiatives as emergent responses to other changes, influenced by how business actors combine and re-combine resources across business relationships rather than by isolated decisions or projects.

Advancing the concept of network settings

The thesis advances the concept of network settings by developing it into an analytical tool for explaining variation in the feasibility and consequences of change initiatives across business relationships. Network settings are theorised as analytically bounded parts of a business network in which specific configurations of resource interfaces are repeatedly activated by business actors and thereby temporarily stabilised into resource combinations through which actors' dominant performance logics are reproduced, influencing how change initiatives are perceived. The theoretical contribution lies in showing that connectedness among change initiatives is not uniform across the business network but mediated by these network settings.

Building on earlier work on settings in innovation (Håkansson & Waluszewski, 2007; Ingemansson, 2010), the thesis extends the concept beyond innovation to theorise change initiatives as context-specific, showing how change initiatives - whether incremental or transformative - are conditioned by, and must relate to, multiple network settings simultaneously through the activated resource structure. These network settings represent different stabilised resource combinations and dominant performance logics, which influence how the same change initiative is interpreted, prioritised, and acted upon by different actors. Network settings thus allow researchers to explain heterogeneous outcomes (feasibility/friction) as consequences of different stabilised resource interface configurations, rather than as differences in managerial intent or implementation competence.

Actors' mobilisation of resources in the context of connected change initiatives

Building on the conceptualisation of connectedness, this thesis frames actors' mobilisation of resources and counterparts as a relational capability for navigating interdependencies among multiple, coexisting change initiatives. Extending prior work

based on the Industrial Network Approach on network mobilisation (Mouzas & Naudé, 2007), the thesis theorises mobilisation not merely as the alignment of actors around a focal initiative, but as an ongoing effort to engage with the constraints and commitments created by other business actors' past, ongoing, and anticipated change initiatives. Mobilisation thus involves making the activated resource structure visible to oneself and to relevant counterparts - by identifying critical resource interfaces, recognising where resource combinations are stabilised, and understanding how connected change initiatives condition the scope for action. This implies that mobilisation is not primarily persuasive work, but analytical and configurational work aimed at influencing resources and resource interfaces across network settings.

The theoretical implication is that mobilisation cannot be assumed to produce alignment or convergence. Instead, mobilisation is understood as a mechanism through which actors search for feasibility, reveal lock-ins, and negotiate across network settings and over time. Even 'unsuccessful' mobilisation efforts are theoretically informative, as they expose the structural limits of change imposed by the activated resource structure. By conceptualising mobilisation in this way, the thesis links actors' agency to the structural conditions of connected change initiatives, rather than treating mobilisation as a matter of persuasion or influence alone.

Together, the theoretical implications of this thesis lie in reconceptualising change initiatives as structurally connected through resource interfaces, advancing network settings as a concept for analysing differential feasibility and friction, and framing mobilisation of resources and actors as a relational capability for managing connected change initiatives under conditions of temporal and spatial embeddedness. This contributes to the Industrial Network Approach and to change-oriented research by offering a coherent theoretical explanation of why connected change initiatives so often become complex and contested as they unfold across business networks.

9.2 Methodological implications

Uncovering and analysing connected change initiatives in business networks is methodologically challenging because change initiatives are rarely bounded or confined to a single firm or business relationship. In line with the conceptualisation of connectedness among change initiatives, an empirically grounded casing approach is developed as a methodological contribution for studying change initiatives in business networks or open-systems, where boundaries cannot be assumed ex ante. The casing process begins from an analytically chosen centre - a focal change initiative - and allows the boundary to expand as causally consequential interdependencies and connected change initiatives are uncovered through empirical inquiry. Methodologically, this implies that 'context' is not treated as a given backdrop but as something that gains or loses analytical relevance as the case unfolds.

A casing approach to analyse connected changes

The proposed casing approach proceeds iteratively. Rather than defining a case as a bounded empirical object, casing is conceptualised as an analytical process (Easton, 1995, 2010; Avenier & Thomas, 2015) for determining what needs to be included to analyse a change initiative. As empirical material indicates that additional initiatives influence the focal initiative through resource interfaces (as well as activity links and actor bonds), the case boundary is expanded. The analysis moves between a micronet perspective (actors directly involved in the focal initiative) and a macronet perspective (additional business actors and business relationships implicated through interdependencies via resource interfaces), continuously asking 'what is the case a case of?' (Ragin & Becker, 1992). Inclusion is governed by causal relevance established at resource interfaces within the activated resource structure. This implies that 'case completeness' is assessed through explanatory sufficiency (have we captured the conditions that explain the focal initiative in its context?), not through exhaustive mapping.

Methodologically, this implies a casing approach capable of capturing how multiple, connected change initiatives are connected through resource interfaces (as well as activity links and actor bunds). The casing approach thus reduces the risk of attributing observed outcomes to a single change initiative while obscuring the influence of other, connected changes unfolding elsewhere in the business network.

Dealing with time and space via the activated resource structure

The method explicitly addresses time and space as inherent in resources and resource interfaces. Temporal resource embeddedness is addressed by tracing past adaptations, accumulated investments, and stabilised resource interfaces that condition present possibilities for change, while spatial resource embeddedness is addressed by following how interdependent resources and resource interfaces are distributed across organisational boundaries within the activated resource structure. Researchers can therefore treat time and space as properties of resource interfaces and their stabilisation, and use network settings to structure comparisons across heterogeneous parts of the activated resource structure, rather than relying on linear process narratives.

The concept of network settings provides a methodological tool for distinguishing between different parts of the business network where particular configurations of resource interfaces are stabilised. This allows researchers to explain why connected change initiatives may appear feasible in one part of the business network yet meet friction in another, without reducing such variation to differences in actors' intent, commitment, or implementation capability. Network settings thus link empirical observations of variation in outcomes to actors' positions in relation to the activated resource structure.

Uncovering actor perspectives

Data are gathered across multiple analytical levels - individual, firm, business relationship, business network - to analyse how connected change initiatives are interpreted, prioritised and resisted by different business actors. Adopting a critical realist stance (Easton, 2010), the analysis combines ontological realism (resources and resource interfaces are treated as real and observable) with epistemological relativism (actors' interpretations condition what becomes actionable). This methodological combination allows attention to both structural constraints and actors' situated sense-making.

Inclusion of additional change initiatives within the evolving case boundary is based on causal relevance for the focal and already included change initiatives, established through comparison of actor perspectives, identification of critical resource interface changes, and analysis of resulting effects across the activated resource structure. Actor perspectives are therefore treated as essential empirical material for identifying mechanisms (how stabilised interfaces become constraints and enablers) rather than as subjective 'views' detached from material resource conditions.

Together, these methodological implications highlight the need for research approaches that remain open to emergent connections, shifting boundaries, and multiple forms of causality when studying change initiatives in business networks. The casing approach provides a framework for systematically combining empirical observations with relevant theoretical concepts to uncover and analyse connectedness among change initiatives as relational, distributed, and contingent without losing explanatory coherence. Methodologically, this positions the casing approach as a way of producing causal explanations of change initiatives in open systems, rather than as a descriptive mapping of complexity in these systems.

9.3 Societal implications

Sustainability transitions and resilience-building initiatives require coordination across firms and sectors (Derks et al., 2022). As outlined in Chapter 1.2, societal challenges such as climate change, resource efficiency, and resilient distribution systems cannot be addressed through isolated interventions by individual organisations alone. This thesis contributes by explaining why such coordination is difficult to achieve in practice: sustainability-oriented initiatives are conditioned by interdependencies among resource interfaces and by stabilised resource combinations that span firms and sectors. Recognising connectedness among change initiatives therefore has important implications for how societal actors design, support, and evaluate sustainability-oriented interventions. A key societal implication is that interventions aimed at 'sustainable outcomes' need to consider which resource interfaces and network settings are affected,

because responsibilities and effects are distributed across business relationships. In this way, the thesis links its theoretical contribution on connected change initiatives to the societal relevance of sustainability transitions.

Recognising the networked nature of sustainability challenges

Sustainability initiatives such as reducing emissions, minimising packaging waste, and improving transport efficiency often require changes that extend beyond individual firms, because the relevant resources - products, packaging, transport facilities, and information systems - are distributed across multiple business actors and combined in interdependent ways. From a societal perspective, this implies that sustainability challenges are inherently networked rather than organisational (Koberg & Longoni, 2019). A local change (for example, in packaging design, delivery mode, and automation) may shift emissions, costs or waste upstream or downstream in the business network rather than reduce them overall (Escursell et al., 2021). This thesis underscores that such efforts also unfold within business networks of connected change initiatives, where one actor's changes of resource features and resource interfaces are influenced by interdependencies across the activated resource structure. Recognising these interdependencies - analytically captured through the concept of network settings – supports the identification of changes that are not only desirable but also feasible and scalable across business networks. This reinforces the argument that sustainability should be analysed as a property of interconnected resource and activity configurations, rather than attributed to isolated organisational decisions.

Supporting coordination across organisational boundaries

Policies and sustainability initiatives that focus primarily on firm-level or sector-specific change may overlook how outcomes are influenced by inter-organisational resource structures and business relationships. This thesis implies that effective societal change initiatives require coordination mechanisms that cut across organisational and sectoral boundaries (Patterson et al., 2017; Williams et al., 2017), rather than relying solely on individual firms' compliance or voluntary action. Insights from this research can inform the development of collaborative strategies and policy instruments that encourage mobilisation of resources across network settings, aligning adaptations of resource features and interfaces across firms and sectors in business networks. Such approaches are better suited to addressing systemic challenges where responsibility and control are distributed across business networks.

Anticipating unintended consequences of isolated improvements

The research shows that well-intentioned change initiatives in one area can create new constraints elsewhere (Dolgui et al., 2018) if they are not coordinated across firm boundaries. For societal stakeholders - including regulators, policy makers, and NGOs - this highlights the importance of anticipating network-wide consequences rather than

evaluating initiatives solely on local or short-term effects. Isolated improvements may unintentionally reinforce lock-ins, shift burdens, or reduce feasibility for complementary changes in other parts of the business network. A business network perspective on connected change initiatives supports more informed decision-making by making visible where frictions are likely to arise and where additional coordination or sequencing of activities is required. In this sense, the thesis contributes societal value by explaining how and where unintended consequences of connected change initiatives arise – and how they can be analysed - within business networks.

The role of business networks in sustainability transitions

The thesis contributes to ongoing discussions on sustainability transitions by foregrounding business networks – rather than only individual firms – as critical arenas of societal change. It provides concepts and analytical language that help identify where changes need to be negotiated and aligned, including when and where to mobilise other actors and resources at critical resource interfaces. For societal actors, this implies a shift from promoting isolated 'best practices' toward enabling alignment work across interdependent actors, that is, supporting negotiation, and adaptation at critical interfaces. Such an approach makes it easier to support systemic transitions that depend on joint efforts among multiple, interdependent actors.

Taken together, these societal implications foreground business networks as central arenas of societal change. By targeting critical resource interfaces, using network settings as an analytical concept, and supporting mobilisation of resources across organisational boundaries, policymakers and practitioners can better design and support transitions that are not only environmentally desirable but also operationally and economically feasible. In this way, the thesis' conceptualisation of connected change initiatives informs how societal challenges such as sustainability and resilience can be addressed in practice.

9.4 Managerial implications

Managing change initiatives requires more than internal alignment. This thesis shows that managers operate within business networks where changes to resources and resource interfaces initiated within the firm both affect, and are affected by, other change initiatives through shared resource interfaces in the activated resource structure. The managerial contribution of the thesis is to make this connectedness actionable by providing concepts and a way of working: managers can identify critical resource interfaces, locate where feasibility and friction arise across network settings, and mobilise counterparts accordingly. Thinking in terms of connectedness across business relationships is therefore useful when mobilising and adapting change initiatives with counterparts, instead of managing them as isolated internal projects.

Recognise connectedness as a constraint and an opportunity

Managers should recognise that resources - such as packaging, logistics facilities, and automation solutions - form interdependent resource combinations. Changes to packaging design, for instance, can propagate through resource interfaces, influencing other resources (e.g. warehouse facilities and sorting equipment). From a managerial perspective, connectedness is not only a source of resistance but also a potential leverage point: understanding where resource interfaces are stabilised helps managers anticipate where change is likely to meet friction and where alignment across actors may unlock effects. Recognising this connectedness thus supports more realistic planning by shifting attention from single-project optimisation to assessing feasibility at critical resource interfaces - examining how planned change initiatives will work (or not work), and where resources meet and interact across business relationships and network settings.

Manage differing logics and goals across business relationships

Business actors often hold differing priorities depending on their position in the business network, including the network setting(s) in which they operate. A change initiative that improves efficiency and/or sustainability in one part of the business network may create friction in another due to incompatible performance logics. Managers therefore need to replace 'assumed alignment' with deliberate negotiation of resource interfaces across network settings. Identifying critical resource interfaces and facilitating dialogue across functional and organisational boundaries – and across network settings – can support the mobilisation of counterparts and the negotiation of viable adaptations of resource interfaces.

Develop relational mobilisation capabilities

Mobilising resources with counterparts requires identifying not only focal change initiatives but also other ongoing or recent change initiatives that influence critical resource interfaces within the activated resource structure. It also requires attention to timing and ordering of activities - recognising when partners are able or willing to commit, when they are constrained by prior investments, and when adaptations need to be coordinated across network settings. Importantly, mobilisation is not always about pushing change forward: managers must discern when not to mobilise and instead adapt to others' change initiatives. Such restraint can be a strategic response: delaying mobilisation may be necessary until critical interfaces become negotiable due to other actors' investment cycles or operational changes. Here, the thesis contributes by framing mobilisation as work focused on negotiating and reconfiguring shared resource interfaces: increasing the scope for influence by engaging counterparts around interdependencies that no actor controls unilaterally.

Navigate parallel and connected change initiatives

Firms are rarely involved in only one change initiative at a time. Internally, different functions – such as logistics, purchasing, product development, IT, and sustainability – often pursue parallel projects, which are connected to external change initiatives through shared resources and resource interfaces (e.g. product–package, package–warehouse, package–customer). This implies a need for managerial capabilities in coordinating multiple change initiatives across internal functions and business relationships, centred on critical resource interfaces. Focusing on these resource interfaces, and sharing information about counterparts' ongoing change initiatives, can support better coordination, reduce rework, avoid conflicting signals to business partners, and improve managers' ability to mobilise others in connected change initiatives.

In sum, managers need to treat change initiatives as connected rather than isolated. This involves recognising interdependencies between resources, managing differing logics and constraints across firms and functions, developing relational mobilisation capabilities, and coordinating parallel internal and external change initiatives around critical resource interfaces. By doing so, managers can better cope with friction, avoid unintended consequences, and increase the likelihood that change initiatives become workable and durable across the business network.

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