

How do business-to-business actors experience circular solutions? Uncovering the interplay between experience, interaction, and adaptation in the case of concrete element reuse[☆]

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ABSTRACT

The circular economy (CE) is a systemic effort requiring business-to-business (B2B) actors to adopt circular principles to enable loop-closing through collaboration. A crucial, yet unstudied, perspective is the individual B2B actors' experiences of circular solutions in interorganizational collaborations aiming to promote the CE. Therefore, this study examines diverse B2B actors' multidimensional experiences of circular solutions and how such experiences shape actors' interactions and adaptations. We leverage research on customer experience, CE business, and interactions and adaptations in business relationships and conduct a qualitative case study in the construction industry where diverse B2B actors from a value chain collaborate to increase circularity by reusing concrete elements. As our contribution, we 1) uncover B2B actors' multidimensional experiences of circular solutions manifested along cognitive, affective, behavioral, social, and sensory dimensions and identify their triggers; and 2) show how B2B actors' experiences of circular solutions shape their interactions and lead to four adaptation forms at different levels. The findings are synthesized into a conceptual model that displays the interplay between B2B actors' experiences, interactions, and adaptations in interorganizational settings. Our findings highlight the importance of B2B actors' experiences in catalyzing the adoption of CE principles by companies in interorganizational collaborations.

1. Introduction

The circular economy (CE) is gaining importance in business-to-business (B2B) markets. Companies and value chains are developing novel approaches and solutions that adhere to the CE principles of recycling, reuse, and reduction (Aarikka-Stenroos, Chiaroni, Kaipainen, & Urbinati, 2022; Huang, Surface, & Zhang, 2022; Ranta, Keränen, & Aarikka-Stenroos, 2020). Given the systemic nature of the CE, this transition requires changes within supply and value chains (Aarikka-Stenroos et al., 2022): complementary companies and public organizations must adjust their operations and collaborate to replace linear, waste-generating processes with circular, loop-closing ones (Aarikka-Stenroos, Ritala, & Thomas, 2021; Ghisellini, Cialani, & Ulgiati, 2016).

Existing studies indicate that redesigning offerings and business models into circular solutions requires various *adaptations* (Aarikka-

Stenroos et al., 2022; Eisenreich, Fuller, Stuchtey, & Gimenez-Jimenez, 2022; Ellström & Carlborg, 2022; Huang et al., 2022; Ranta, Aarikka-Stenroos, Ritala, & Mäkinen, 2018). Previous research has primarily considered technological, environmental, and economic adaptations toward the CE, focusing on organizational and interorganizational perspectives as well as changing value perceptions, business models, and value chains (e.g., Aarikka-Stenroos et al., 2022; Sairanen, Aarikka-Stenroos, & Kaipainen, 2024). In contrast, the perspective of the individual business actor has remained virtually unaddressed despite reports that the circular transition involves personal motivations, attitudes, concerns, and even prejudices (e.g., Anastasiades et al., 2021; Condotta & Zatta, 2021; Huuhka & Hakanen, 2015; Rose & Stegemann, 2018). Recent research indicates that actors' experiences with circular solutions can significantly shape their orientations and contributions to the CE (Guyader, Ponsignon, Salignac, & Bojovic, 2022; Pecorari & Lima,

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2021; Ta, Aarikka-Stenroos, & Litovu, 2022). Nevertheless, current research has largely overlooked individual B2B actors' experiences with circular solutions and how they shape actors' adaptations and interactions within and between organizations, influencing the CE transition.

In the broader marketing research, *experience* is considered a powerful concept in explaining customer behavior in the marketplace, as it impacts loyalty, satisfaction, and attitude formation, particularly in business-to-consumer (B2C) settings (e.g., Brakus, Schmitt, & Zarantonello, 2009; Lemon & Verhoef, 2016). Academics and managers have recently argued that individual actor experiences are also important in the B2B context (e.g., Doheny, 2020; Wirtz et al., 2025; Witell et al., 2020). However, most research on B2B experiences is conceptual and focuses on business customers (e.g., Witell et al., 2020). We therefore lack empirical insights into individuals' experiences in diverse business roles, and the role of B2B actors' experiences in circular business remains largely uncharted.

This study examines B2B actors' experiences and how they affect interactions and adaptations in interorganizational collaborations for the CE. *Adaptations* in business relationships refer to relationship-specific adjustments occurring through interaction between actors (Brennan, Turnbull, & Wilson, 2003; Mouzas, 2024; Schmidt, Tyler, & Brennan, 2007; Zafari, Biggemann, & Garry, 2023). *Interactions* in business relationships are complex and dynamic processes (La Rocca, Hoholm, & Mørk, 2017) that involve how resources are adapted and interfaced and how activities are organized (Guercini, La Rocca, Runfola, & Snehota, 2014). According to previous research, individual business actors' past events affect their behavior (Gonçalves, da Silva, & Teixeira, 2019; Guercini et al., 2014; La Rocca et al., 2017; Mouzas, 2024). However, the link between individual experiences, adaptations, and interactions has not yet been explored.

Against this backdrop, this study examines the experiences of individual business actors evoked by *circular solutions*, that is, offerings that harness circular principles such as recycling and reuse (Ellström & Carlborg, 2022; Ranta, Aarikka-Stenroos, & Väisänen, 2021; Sairanen et al., 2024). We aim to uncover the largely overlooked interplay between individual actors' experiences, interactions, and adaptations within interorganizational settings, specifically, *circular value chains* where companies collaborate to close, intensify, and dematerialize resource loops (Aarikka-Stenroos et al., 2022; Eisenreich et al., 2022). Understanding how individual actors' experiences shape individual, organizational, and collaborative actions is also managerially relevant, as it can support better management of joint circular efforts. Therefore, we pose the following research questions: *i) How do B2B actors experience circular solutions, and ii) how do these experiences shape B2B actors' interactions and adaptations when pursuing the CE?*

To answer these questions, we conducted an extensive qualitative single-case study of an interorganizational circular construction project focused on reusing concrete elements. Our data cover individuals in various roles and from different companies and organizations in diverse fields, including architecture, construction, engineering, demolition, and manufacturing. This setting enabled us to examine how individual actors' experiences with circular solutions led to various forms of adaptations as the actors adjusted to reusing concrete elements. We also explored how these experiences affected interactions within organizations and across interorganizational settings. The construction industry offers a rich context for this inquiry, as construction projects typically involve diverse, interdependent actors, and recent circular initiatives have required intensive interaction for sustainable industry development.

Our study contributes to the *B2B experience research* by offering novel empirical insights into the experiences of actors beyond the customer, who have been overlooked by most existing studies (e.g., Becker & Jaakkola, 2020; Lemke, Clark, & Wilson, 2011; McColl-Kennedy, Zaki, Lemon, Urmetzer, & Neely, 2019). We reveal how these experiences emerge within interorganizational collaboration, extending prior

research that focuses on experience triggers during purchase journeys (Lemon & Verhoef, 2016). For the *B2B circular business research*, this study offers a novel perspective on how individual actors' experiences of circular solutions shape collaborations: we build a detailed understanding of how multidimensional experiences influence adoption, implementation, and value creation within the CE (e.g., Närvänen, Mesiranta, Mattila, & Heikkinen, 2020; Ranta et al., 2021; Urbinati, Chiaroni, & Chiesa, 2017). Our study also contributes to the *interaction and adaptation research* in business relationships, as it is among the first studies to explore the role of experiences as drivers of adaptations (e.g., Brennan et al., 2003; Hagberg-Andersson, 2006; Mouzas, 2024). Furthermore, the study contributes to the *CE research* (e.g., Hossain, Ng, Antwi-Afari, & Amor, 2020; Kirchherr et al., 2018; Lehtimäki, Aarikka-Stenroos, Jokinen, & Jokinen, 2024; Leising, Quist, & Bocken, 2018) by analyzing how individual actors' experiences can catalyze the CE. Managerially, our framework provides a tool to help managers across industries understand how actors' multidimensional experiences shape collaborations.

2. Theoretical background

Three areas of research underpin this study. First, we draw from experience studies within the marketing and service research for theoretical insights into what B2B actors' experiences may entail (2.1). Second, we discuss the concept of adaptation and its relation to interaction within the B2B and business relationship research (2.2). Third, we review the CE and circular business research to gain a contextual understanding of actors' experiences of circular solutions and the adaptations required for companies and circular value chains (2.3). Finally, we integrate these elements into a theoretical framework (2.4).

2.1. The experience concept in the B2B context

Experience has become a central marketing concept, originating in the service and consumer marketing research and conventionally studied from the customer perspective (e.g., Becker & Jaakkola, 2020; Lemon & Verhoef, 2016). Researchers have recently highlighted the relevance of customer experiences in B2B (e.g., Wirtz et al., 2025; Witell et al., 2020) and the need to understand the experiences of actors beyond customers, such as suppliers and partners (Becker et al., 2023).

According to Wirtz et al. (2025), the B2B customer experience is the cumulative set of cognitive, affective, behavioral, sensorial, and social responses of individuals within a client organization that stem from their direct and indirect interactions with a supplier through various cues, touchpoints, and journeys and manifest both individually and collectively. Experiences are thus *multidimensional* (e.g., Becker & Jaakkola, 2020; Lemon & Verhoef, 2016). *Cognitive* experiences relate to the intellect, such as evoked thinking or conscious mental processes (Gentile, Spiller, & Noci, 2007). *Affective* experiences involve emotions; for example, McColl-Kennedy et al. (2019) identified feelings such as joy, surprise, anger, sadness, and fear among B2B customers. *Behavioral experiences* concern physical actions and behaviors (Brakus et al., 2009). *Sensory experiences* are evoked through the senses—sight, hearing, smell, taste, and touch—and *social experiences* reflect a sense of relating or belonging (Gentile et al., 2007).

Experiences are *triggered by an actor's interactions with a particular object*, such as product features, meetings with sales reps, or customer reviews (e.g., Becker & Jaakkola, 2020). In B2B, interpersonal interaction is an important experience trigger (Jaakkola, Helkkula, & Aarikka-Stenroos, 2015; Witell et al., 2020).

Few studies have empirically explored how the various experience dimensions play out in the B2B context. Individual experiences are evoked regardless of whether actors take business or consumer roles; therefore, the multidimensional approach is assumed to be applicable in the B2B context as well (e.g., Becker & Jaakkola, 2020). B2B actor experiences may be even more multifaceted than those of consumers:

actors' goals serve as a frame of reference for evaluating experiences (Becker et al., 2023; Becker & Jaakkola, 2020; Lemon & Verhoef, 2016), suggesting that B2B actors' experiences are affected by both their personal goals and needs (e.g., job ease or security) and organizational business goals (Macdonald, Kleinaltenkamp, & Wilson, 2016).

In this study, we examine i) experience triggers related to interactions with circular solutions and circular value chain actors, ii) the multidimensional experiences these triggers evoke for diverse B2B actors, and iii) the outcomes of these experiences concerning interactions and adaptations.

2.2. Interactions and adaptations in business relationships

Research in both industrial marketing and purchasing (IMP) and broader B2B marketing underscores the importance of interaction and mutual adaptations among business actors within larger interconnected interorganizational settings (e.g., value and supply chains and ecosystems) (Aarikka-Stenroos et al., 2021; Eisenreich et al., 2022; Ford, 1990; Håkansson & Snehota, 1989). Adaptations typically refer to modifications made by one business actor to meet the specific needs of another (see, e.g., Hallén, Johanson, & Seyed-Mohamed, 1991; Brennan & Turnbull, 1995; Hagberg-Andersson, 2006). They occur in specific relationships and are tightly linked to inter- and intra-firm processes (Brennan et al., 2003; Brennan & Canning, 2002; Håkansson & Snehota, 1995). Adaptation processes are inherently connected to the ongoing interactions between actors in business relationships (Brennan et al., 2003; Mouzas, 2024; Schmidt et al., 2007).

Through interaction, B2B actors gain insight into each other's needs and can tailor strategies, products, and services accordingly (Håkansson & Ford, 2002; Håkansson, Ford, Gadde, Snehota, & Waluszewski, 2009; Holma, 2009; La Rocca et al., 2017). Therefore, interaction is crucial for the closely intertwined processes of initiating and guiding adaptations (Ford, 1990, 2002; Mouzas, 2024). While much research has examined adaptation in specific relational settings, such as buyer–seller/–supplier relationships (e.g., Brennan & Turnbull, 1995, 1999; Viio & Grönroos, 2016), dyadic and triadic relationships (e.g., Brennan et al., 2003; Holma, 2009), and interfirm and intrafirm as well as business relationships (e.g., Hallén et al., 1991; Schmidt et al., 2007; Medlin & Törnroos, 2014; Viio & Grönroos, 2014), research into actors' adaptations in broader interorganizational contexts (e.g., value chains and ecosystems) remains scarce.

Previous research has shown that adaptations can take different forms and occur at various levels in business relationships (see Table 1). First, adaptations encompass changes in *mindset and attitude* at both individual and organizational levels, such as changes in perspectives, beliefs, and mental approaches in particular business relationships (Hagberg-Andersson, 2006; Svensson & Funck, 2019). Second, *product and service* adaptations involve adjusting offerings to meet specific partner requirements, such as customization and changes to features, personnel, distribution, and marketing (Brennan et al., 2003; Hallén et al., 1991). Third, *behavioral and process* adaptations entail changes to routines, scheduling, methods, and information exchange to meet the needs of another business actor and occur at the individual, group, corporate, or interorganizational network levels (Brennan et al., 2003; Brennan & Turnbull, 1995; Medlin & Törnroos, 2014; Parida, Burström, Visnjic, & Wincent, 2019; Viio & Grönroos, 2014, 2016). Finally, *structural and system* adaptations concern organizational systems, financial arrangements, or roles within value chains and ecosystems, often requiring coordinated changes among multiple actors and thereby changing the system of which they are part (Brennan et al., 2003; Harala, Alkki, Aarikka-Stenroos, Al-Najjar, & Malmqvist, 2023; Medlin & Törnroos, 2014). Table 1 categorizes the forms of adaptations discussed in earlier research, noting that they take place at different levels.

Adaptation and change are related yet distinct concepts: while all adaptations can be interpreted as changes, not all changes are adaptations, as changes can be both the trigger for and outcome of an

Table 1
Forms and levels of adaptation.

Form of adaptation	Examples of adaptations in previous research
Mindset, attitude, culture	<p><i>Individual level:</i></p> <ul style="list-style-type: none"> Changes in mental attitude or mindset within specific relationships (Hagberg-Andersson, 2006) <p><i>Organization and company level:</i></p> <ul style="list-style-type: none"> Changes in the corporate culture due to circular values in multi-actor environments (Svensson & Funck, 2019)
Product, service	<p><i>Organization and company level:</i></p> <ul style="list-style-type: none"> Changes and modifications in offerings, services, and products to meet the customer's needs (Brennan et al., 2003; Hallén et al., 1991; Schmidt et al., 2007)
Behavior, processes	<p><i>Individual level:</i></p> <ul style="list-style-type: none"> Salesperson tailors communication style to prospective customer (Viio & Grönroos, 2014, 2016) <p><i>Organization and company level:</i></p> <ul style="list-style-type: none"> Changes in the production or organization's sale process to meet the specific needs of another actor in business relationships (Brennan et al., 2003; Hallén et al., 1991; Viio & Grönroos, 2014, 2016) Developing new routines and processes (e.g., digitalization of service) to meet the needs of the multi-actor environment (Parida et al., 2019) <p><i>Interorganizational network level (in this study, value chain and ecosystem):</i></p> <ul style="list-style-type: none"> Business partners mutually align their processes (Medlin & Törnroos, 2014)
Systems, structures	<p><i>Organization and company level:</i></p> <ul style="list-style-type: none"> Adopting customer-defined quality standards (Brennan et al., 2003) Supplier invests in a manufacturing facility or equipment for particular customers (Hagberg-Andersson, 2006) Altering organization structures to meet the specific needs of another actor (Brennan et al., 2003; Medlin & Törnroos, 2014) <p><i>Interorganizational network level (in this study, value chain and ecosystem):</i></p> <ul style="list-style-type: none"> Mutual alignment of activities among business actors, thereby changing the system of which they are part (Medlin & Törnroos, 2014)

adaptation (Holma, 2009). In business relationships, the key difference is the relationship between actors, as adaptation implies specific changes in a particular business relationship (Brennan & Canning, 2002). We thus define an adaptation as *a relationship-specific modification or adjustment that manifests through interaction between business actors and can take place at the individual, organization and company, and/or value chain and ecosystem levels, resulting in one or more changes in the attitudes or mindsets, products and services, behaviors and processes, or systems and structures of one or more business actors.*

2.3. The circular economy and circular solutions perceived and experienced by B2B actors

As the systemic transition toward the CE cannot be achieved by a single company, collaboration and interaction across circular value and supply chains (Aarikka-Stenroos et al., 2022) and industrial ecosystems

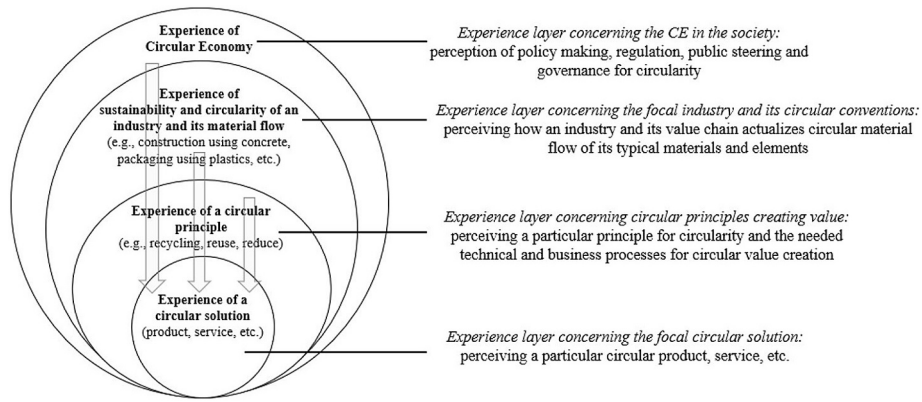


Fig. 1. Conceptualizing the experience of circular solutions via multiple interconnected layers in the B2B context.

(Harala et al., 2023) are essential to actualize loop-closing and circular principles in both joint and individual actions. Research shows that the move toward circular operations requires extensive changes and adaptations: individual companies must redesign their business models and internal processes and develop circular innovations, products, and solutions. At the interorganizational level, companies within supply and value chains must co-innovate and reorganize around circular, loop-closing operations. At the industry level, companies and value chains must jointly change the industry norms and practices of how economic value is ensured, captured, and delivered from circularity (Aarikka-Stenroos et al., 2022; Parida et al., 2019).

Some studies have addressed the implications of increased circularity by examining how diverse actors (e.g., companies, consumers) perceive the CE or what their concerns are, as these can drive or inhibit their shift toward more circular modes of action (cf., Huuhka & Hakanen, 2015). Few recent CE studies have explicitly used the concept of experience (Guyader et al., 2022; Pecorari & Lima, 2021; Ta et al., 2022) in B2C settings. Most frame the phenomenon through other, experience-related concepts, such as the “perceptions,” “concerns,” “attitude,” “acceptance,” “behavior,” or “social factors” of actors involved in circular material flows in industry sectors ranging from construction to manufacturing and second-hand context (e.g., Condotta & Zatta, 2021; Huuhka & Hakanen, 2015; Klang, Vikman, & Brattebø, 2003; Rose & Stegemann, 2018; Shaurette, 2006; Van Weelden, Mugge, & Bakker, 2016). The reviewed studies largely examine how business customers or consumers perceive products that are recycled or reused (e.g., garments, steel, appliances), a certain circular principle (recycling, reuse, sharing), and/or the CE in general. Although these studies inform us about how actors can perceive the CE and circular products, they do not shed light on multiple dimensions of experiences among B2B actors within the CE.

By integrating insights from the CE research with the experience

research that provides an established conceptual framework for studying such “perceptions,” we developed a structured conceptualization that captures the complex, systemic nature of experiences of circular solutions (see Fig. 1). As an experience addresses a focal object (cf., Becker & Jaakkola, 2020), our conceptualization places the *circular solution* (product, service, or combination of both) as the core object of experience. While experiencing the circular solution, the actor also experiences the *circular principles* (e.g., recycling or reuse) harnessed to generate/produce it. Furthermore, each circular solution represents an offering of a certain *industry*, processed and produced within that industry’s value chain through the typical materials of that industry through more circular processing; hence, an actor’s experience of the solution is characterized by how the actor experiences the sustainability and circularity of the focal industry and its material flow. Finally, circular solutions and their production and demand are steered in *society* via regulations and institutions; therefore, how the actor experiences the circular solution and CE can be affected by how they/them experience circularity in society in general.

2.4. Theoretical framework

As more knowledge is needed about individual B2B actors’ multidimensional experiences of circular solutions and the adaptations required in interorganizational settings, we synthesize our theoretical building blocks into a priori framework (Fig. 2). The framework delineates how individual B2B actors experience circular solutions and how such experiences shape the way they interact and collaborate in an interorganizational setting (the circular value chain and ecosystem of which they are part), ultimately leading to adaptations of different forms at different levels, facilitating B2B actors’ transition toward more circular operations. By building on experience research (section 2.1) and

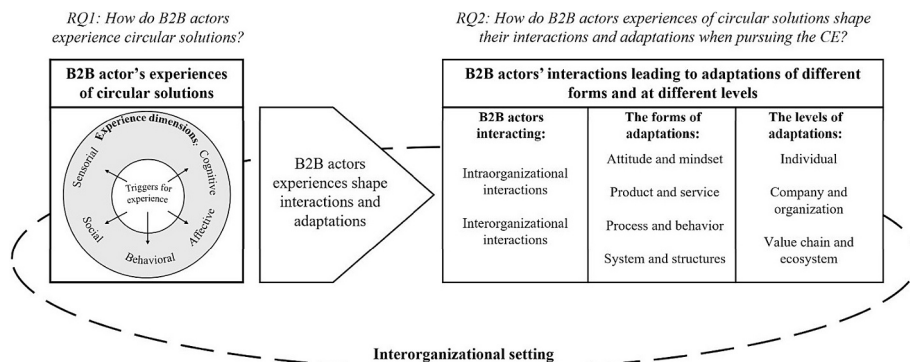


Fig. 2. A priori framework: B2B actors’ multidimensional experiences of the circular solutions shaping actors’ interactions and adaptations when pursuing the circular economy.

insights from the CE business research (section 2.3), our framework comprises the triggers for B2B actors' experiences of circular solutions that may manifest in cognitive, affective, behavioral, social, and sensory dimensions (RQ1). Thereafter, we delve deeper into the outcomes of the experiences in diverse individual B2B actors' interactions and adaptations when they pursue circular solutions in an interorganizational setting (RQ2), utilizing the understanding that interaction and adaptation are intertwined in business relationships and that adaptations occur at different levels (section 2.2). This priori framework provides a theoretical and analytical starting point for our empirical analysis of our case study.

3. Methodology

3.1. Research design and case

Given the paucity of empirical research on the topic, we employ a qualitative research design and case study strategy (Baskarada, 2014) to empirically explore and conceptualize B2B actors' experiences of circular solutions and their consequences for interactions and adaptations in the value chain. The industry setting is construction, as our case concerns B2B actors involved in a reuse-harnessing construction project where they experience a circular solution: concrete element reuse as a product (reusable concrete elements substitute virginly produced concrete elements), and related services (the reusable concrete elements must be harvested, transferred, quality-assured, refurbished, redesigned, etc. to be reusable). We assume that the experience (see Fig. 3) is affected by how the actors perceive the reuse principle, circular

construction, and the circular flow and use of concrete as a material and by how policies and regulations affect the construction industry (e.g., safety requirements and building materials standards).

The construction industry and the reuse of concrete elements offer an optimal case setting for our study, giving it both theoretical and pragmatic relevance. While this novel approach, concrete element reuse, faces technical and economic challenges, it has the potential to reduce emissions by over 90 % compared to virgin production (Mettke, 2010) and generate new business opportunities, thereby encouraging adaptations across the industry (Harala et al., 2023). Moreover, the industry's material intensity, reliance on natural resources, and substantial waste production (of which concrete is one of the largest fractions) (Ghisellini, Ripa, & Ulgiati, 2018) underscore the urgent need for the industry to adopt circular solutions. In addition, construction projects involve a variety of actors in long-term relationships, offering a fruitful opportunity to investigate B2B actors' interactions and adaptations in an interorganizational context.

We accessed the case through an EU Horizon2020 project, ReCreate, that allowed us to reach diverse business actors (companies) from a reuse construction pilot project in Finland. The companies actualized a reuse-enabling value chain, aiming to deconstruct (i.e., harvest) elements from an old building, check and reprocess them, and then "reconstruct" a building from the harvested concrete elements in a new location between 2021 and 2025. The reuse process and value chain require diverse types of expertise from companies (see Figs. 4 and 5). Value chain actors' operations, however, are shaped by regulators, public actors (e.g., cities and local and national-level authorities), and other industry actors and stakeholders (e.g., industry associations and

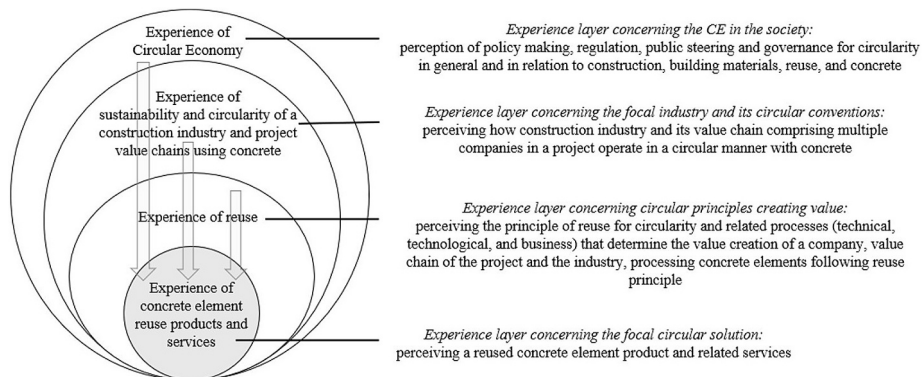


Fig. 3. Actor's experience of a circular solution in our case study setting.

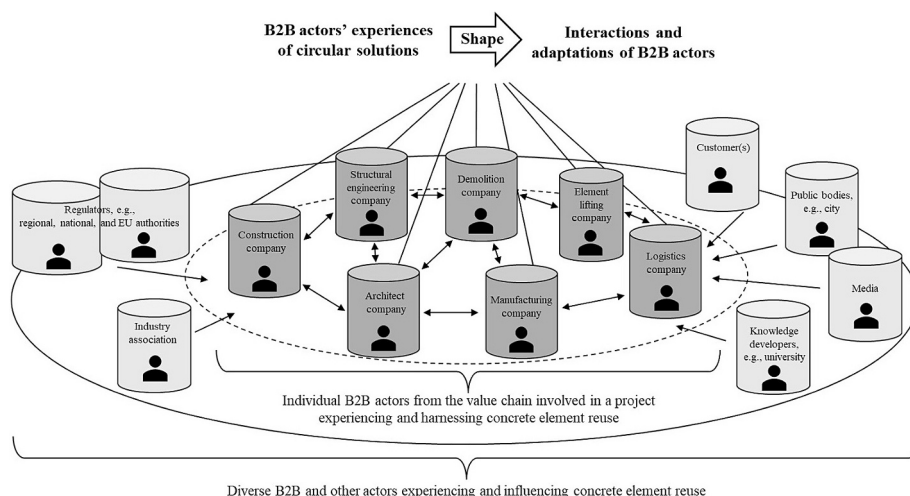


Fig. 4. Our research setting: Studying B2B actors' experiences of circular solutions shaping interactions and adaptations in an interorganizational setting.

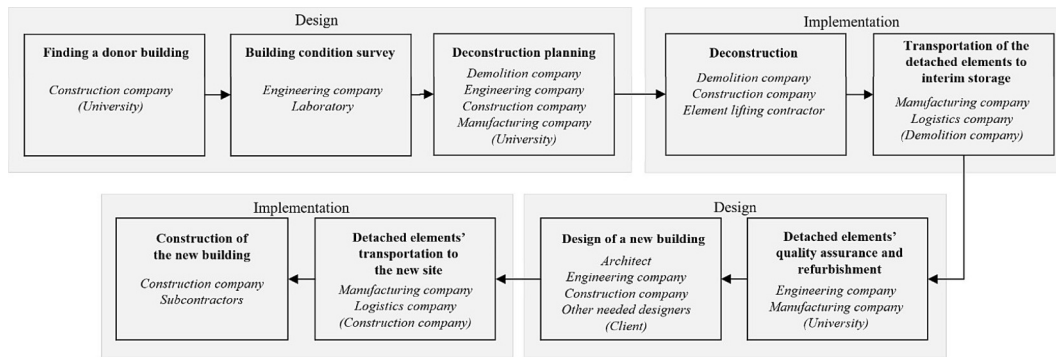


Fig. 5. The process of concrete element reuse in the pilot project actualized by B2B actors comprising the value chain.

media). The university also plays an important role, as the EU project enabling the pilot project is led by a professor from the architectural research unit coordinating companies' collaborations, whilst researchers with different areas of expertise (technical, societal, business, etc.) supported creating new knowledge about the reuse approach more distantly. Thereby, researchers supporting business knowledge creation (i.e., the authors of this study) used interviewing and observation rather than the action research method. Fig. 4 illustrates our case and industry setting, where individual actors experiencing the focal circular solution represent a specific type of company or organization within an inter-organizational setting.

The reuse pilot project was initiated in April 2021. Soon after, an office building in Tampere was chosen for deconstruction for later reuse. Following a 3D inventory and condition survey in September 2021, the deconstruction planning process began in October, requiring diverse types of expertise. After a demolition permit was secured in early 2022, deconstruction took place between June and December 2023. The deconstructed elements were then transported to the concrete element manufacturer's facilities to be stored, quality checked, and refurbished.

The harvested elements are, and will be, used in several buildings in different locations in Finland. Companies have contributed to the pilot project via numerous operational and design tasks (see Fig. 5), public actors, such as the city, have helped in regulatory issues, and the university has coordinated the pilot (and created new knowledge on different aspects of the novel method).

3.2. Data collection and analysis

Our study is based on primary data collected from two rounds of actor interviews, ethnographic observations, and secondary sources (see Fig. 6 and Table 2) (Corbin & Strauss, 2015). Face-to-face and online interviews were conducted with both individuals and groups. The interviewees were company and organization representatives involved in the pilot project or substantially influencing it (e.g., regulators), such as CEOs, managers, and leading technical and business experts. The first-round interviews (5/2021–4/2022) were semi-structured individual and group interviews addressing the novel approach and actors' perceptions of it. The second-round interviews (6/2022–9/2022) were

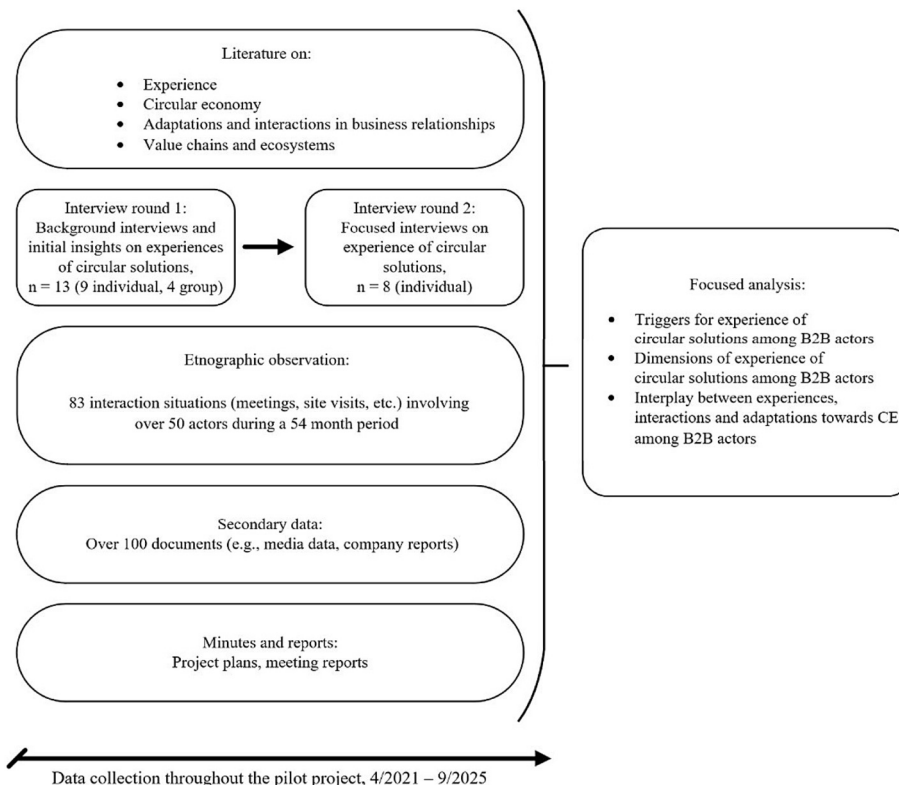


Fig. 6. Data and their analysis during the research process.

Table 2
Data types, descriptions, and roles in the analysis.

Data types	Description of the data
Interview round 1: Semi-structured interviews	<p>Nine individual interviews: Designers:</p> <ul style="list-style-type: none"> - Business development manager (BDM); (structural) design & consulting company (8/2021) - Architect/owner; architectural office (9/2021 and 4/2022) <p>Implementors:</p> <ul style="list-style-type: none"> - BDM; construction company (5/2021) - Chief technology officer (CTO); concrete-element manufacturing company (7/2021 and 5/2022) - Site manager; demolition company (9/2021) - Project manager (PM); demolition company (4/2022) <p>Stakeholder:</p> <ul style="list-style-type: none"> - Senior research fellow; university (10/2021) <p>Four group interviews: Designers:</p> <ul style="list-style-type: none"> - Unit manager, PM, and department manager; (structural) design & consulting company (5/2022) <p>Implementors:</p> <ul style="list-style-type: none"> - BDM and PM; construction company (10/2021 and 5/2022) <p>Stakeholder:</p> <ul style="list-style-type: none"> - Manager of housing and development and PM/specialist; city organization (10/2021)
Interview round 2: Semi-structured thematic interviews	<p>Eight individual interviews: Designers:</p> <ul style="list-style-type: none"> - PM; (structural) design & consulting company (9/2022) - Architect/Owner; architectural office (6/2022) <p>Implementors:</p> <ul style="list-style-type: none"> - PM; construction company (6/2022) - CTO; concrete-element manufacturing company (9/2022) - PM; demolition company (9/2022) <p>Stakeholders:</p> <ul style="list-style-type: none"> - PM/specialist; city organization (6/2022) - Senior architect; ministry (9/2022) - Senior research fellow; university (7/2022)
Ethnographic observation	<p>Attending</p> <ul style="list-style-type: none"> - the pilot project's monthly meetings (47) - deconstruction planning meetings (8) - meetings regarding the use of digital technologies and tools (2) - quality assurance and factory refurbishment process meetings (5) - the design and planning meetings of the new building(s) (14) <p>Visiting</p> <ul style="list-style-type: none"> - at the deconstruction pilot site (3) - at the intermediate storage (4)
Minutes and reports	<p>Project plans (1) Meeting memos (83) (4/2021–9/2025)</p>
Secondary data	<p>News, annual and company reports, blog posts, media data ($N = 117$) sourced via systematic LexisNexis search Master's theses (3)</p>

thematic and in-depth individual interviews focusing on actors' experiences per dimensions, triggers, and outcomes. The interviews lasted approximately 80 min and were recorded and transcribed. Field memos (Corbin & Strauss, 2015) were written during the interviews. Telephone discussions and e-mail correspondence supplemented data gathering. The data were collected along years-long pilot project, allowing us to follow experiences in different situations and the evolution of interactions and adaptations.

Ethnographic observation was conducted between 4/2021 and 9/

2025. This included consistent, non-participant observation at project events and several technical meetings (e.g., meetings discussing deconstruction planning; usage of 3D models; refurbishment process; quality assurance; and site visits). Observations provided valuable insights into actors' actions, perceptions, behavior, and experiential reactions in their natural environment. Field notes were derived from observations, and the insights gained were later compared and validated collaboratively by the participating researchers.

We also analyzed secondary data, including the communication

materials of the companies and organizations (e.g., blogs, annual reports, and news) and publications on the CE, circular construction, and reuse (e.g., news, theses, and other relevant publications). This enabled us to analyze more general perceptions and experiences of circular construction and concrete element reuse, enriching our understanding of organizational views, ongoing projects, needed changes, and plans.

The analysis followed an abductive reasoning process, allowing theory development via the use of both structured and emergent frameworks (Dubois & Gadde, 2002). We began with an initial framework of the five experience dimensions, providing an analytical basis to identify and code the dimensions perceived by the actors, triggers, and outcomes. We first categorized actors' experiences according to the five dimensions (affective, cognitive, social, sensorial, behavioral), then examined the underlying triggers and resulting outcomes, such as effects on intra- and interorganizational interactions and various forms of adaptations at different levels. As the analysis progressed, we refined this initial framework when new conceptualizations emerged. Data management and coding were facilitated using Atlas.ti software.

Below, we give a transparent example of our interpretation and analysis process. One informant stated:

I would say it's definitely due to the nature of the [reuse-based]project, if we compare this to a so-called basic all-in contract where you compete and negotiate and are sort of like pitted against each other even before it starts—here, we have kind of been on the same side from the very beginning and everybody is aiming to the same goal—this is different than in a competitive situation. (Implementor, manager-level informant).

This statement was coded to both the *social* and *cognitive experience dimensions*, as it displays how one actor experienced *togetherness* and *unison* with other actors during the project execution (experience: social dimension) as well as increased knowledge and understanding (experience: cognitive dimension), triggered by an *understanding* of the actors' shared goal and the social setting of a conventional demolition project. Furthermore, the statement was coded to the *behavior and process* and *systemic and structural* forms of adaptations, reflecting both the *organization and company* and *value chain and ecosystem* levels. The statement reflects adaptation at the company and interorganizational levels when moving from conventional to novel reuse-based operation mode.

The coding was developed throughout the analysis process. After the first round, the coding was refined, and the coded data were reanalyzed and re-coded if needed. To ensure quality and trustworthiness, we applied different types of triangulations (Flick, 2004): data triangulation, by collecting data from different sources, and researcher triangulation, by involving multiple researchers to collect data, compare, consolidate, and discuss interpretations.

4. Results

The next section presents our empirical results on B2B actors' experiences of circular solutions and their triggers (section 4.1). Then, we analyze how these experiences shaped the interactions and adaptations of diverse B2B actors (section 4.2).

4.1. B2B actors' multidimensional experiences and triggers

Our analysis uncovered the manifestations of individual B2B actors' *cognitive, affective, behavioral, social, and sensorial* experience dimensions as well as the triggers that induced such experiences. Fig. 7 depicts these findings and their dynamic flow: the inner circle shows the triggers related to the circular solution (see also Fig. 3 to understand the emergence of triggers), the gray middle illustrates multidimensional experiences as responses to the triggers, and the outer circle highlights their outcomes (i.e., interactions and adaptations).

Our analysis revealed five key experience trigger types: *information* (e.g., deconstruction site risks), *activities* (e.g., novel reuse operating models), *other actors* (e.g., expert collaboration), the *circulating material* (e.g., concrete as a material and method itself; physical reuse processing

outcomes, such as noise and dust), and *institutions and structures* (e.g., rigid industry roles and bureaucracy). The triggers emerge from multiple layers of circularity (see Fig. 3): the circular solutions per se (e.g., the harvested elements as a product and related services), reuse principles (e.g., reuse-based operations), sector-level circularity (e.g., the diversity of expertise needed), and societal impacts on CE (e.g., regulations, stakeholder resistance). Next, we examine individual actors' experiential responses across each experience dimension and their corresponding triggers.

The *cognitive dimension* was the most prominent in our data. Cognitive responses centered on *new understandings of the significance of the reuse project, the scale of required changes, and potential challenges and solutions related to reuse*. For example, business partners' interest in low-carbon solutions and media visibility triggered actors' *realization of the significance* of the new reused-based operating model (trigger types: activities; other actors; institutions and structures; circulating material):

"As the project has progressed, there has been a growing understanding of how extensive a process [reusing concrete elements] is. [...] You realize that this is not just a small thing, but really significant, giving you the motivation to do your best to succeed in the project." (Implementor, manager-level informant).

Project plans triggered *surprise about the number of modifications required* to the traditional linear system: some realized that conventional operating models, working practices, and attitudes did not align with the new plans, prompting the need to explore and clarify these new reuse-oriented practices (trigger types: information; activities; circulating material). Redefining these practices was described as challenging and causing uncertainty, although informants also noted that "swimming against the current" could be stimulating and that "it is important to learn to look and do things differently than what we have been used to." Overall, the new way of operating triggered a *shift in perspectives*:

"After doing this work from different perspectives for a long time, it's great to find this completely new perspective that's related to climate impacts and business potential, but also to the CE. And it's also surprising that so little has been said about these things [concrete element reuse] before." (Implementor, manager-level informant).

Another cognitive experience was the emergence of *new insights into the requirements and challenges* of reusing concrete elements, often triggered by collaborations with diverse experts across the value chain and industry (trigger types: circulating material, other actors, and activities). The actors recognized that varying resources and practices among regional authorities could hinder the scaling of reuse. They also realized that reused elements may cause measurement errors, as the dimensions are more uncertain than with new virgin elements, pushing actors to learn how to use data modeling tools (e.g., Building Information Modeling) to make planning easier and less error-prone:

"The biggest challenges we will face in this project are how to make the harvested elements fit into the new buildings [...], how all the processes, attitudes, and legislation will play out. [...] We cannot simply assume that using old elements will fit into the current construction processes by just replacing the virgin elements with harvested ones, while everything else remains unchanged." (Designer, manager-level informant).

Within the *affective dimension*, experiential responses evoked *diverse emotions*, both positive (*pride, joy, excitement*) and negative (*concerns, uncertainty, frustration*). *Pride* emerged from collaboration between value chain actors with expertise in different fields to solve reuse challenges. Progress in the reuse process resulted in feelings of *security, pride, and confidence* and fostered confidence and motivation to change operations (trigger types: other actors; activities; circulating material). Interest from business partners outside the pilot project was seen as *delightful* (trigger type: other actors), and successful reuse efforts sparked *joy and excitement*, catalyzing a desire to share jointly developed new knowledge and success stories (trigger types: activities; circulating material):

"This project is so great, and it makes you feel proud to be involved in developing and thinking about new, more sustainable ways of working." (Implementor, manager-level informant).

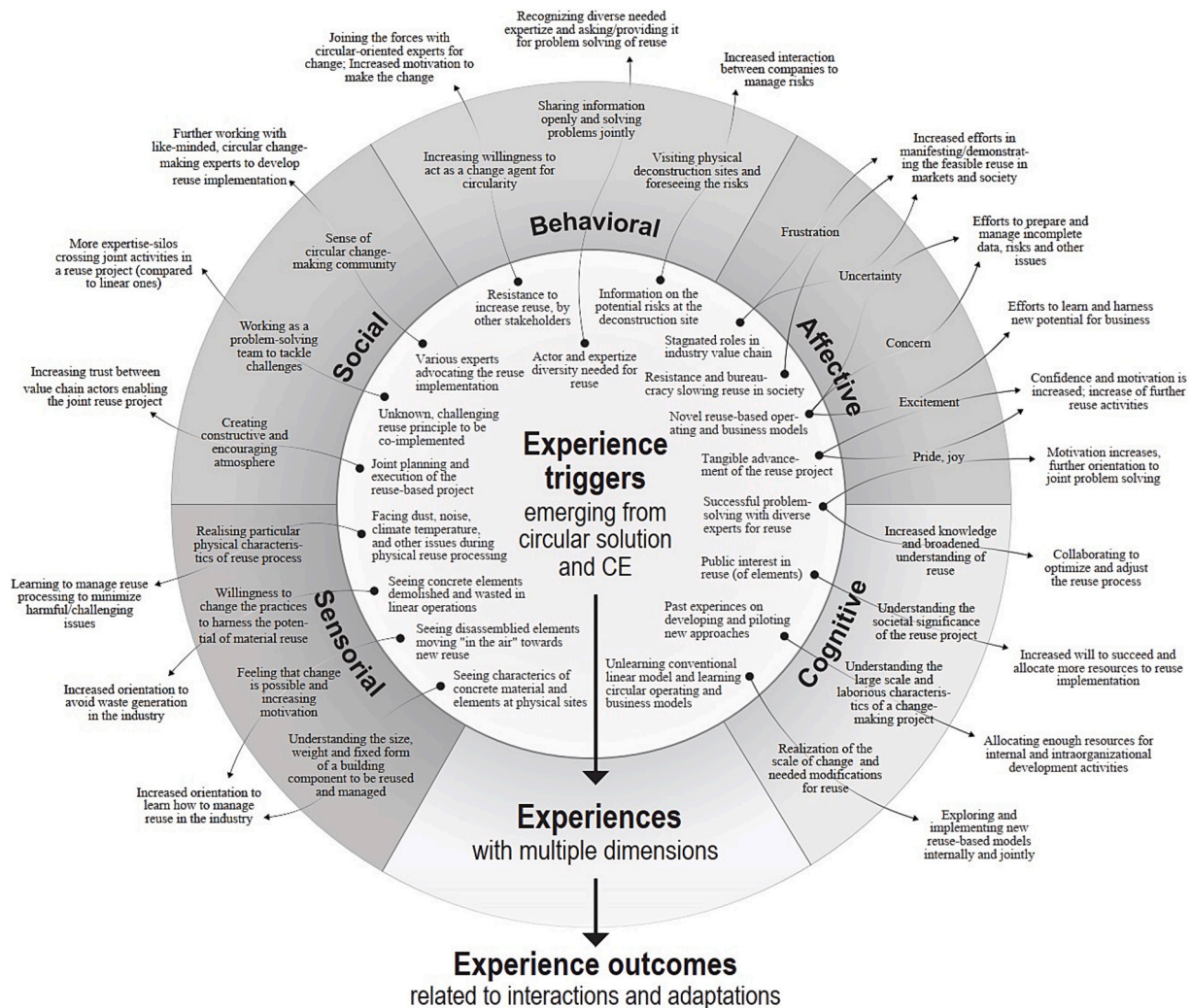


Fig. 7. B2B actors' experiences of circular solutions: Triggers, multidimensional experiences, and outcomes.

Regarding negative emotions, multiple informants emphasized *concern* and *uncertainty* that arose from changes in conventional materials and unfamiliar operating modes during planning, deconstruction, and construction (trigger types: other actors; activities, circular material). *Frustration* was triggered by rigid industry roles, social resistance, and slow bureaucratic processes that hindered reuse (trigger types: institutions and structures; other actors). For some actors, the shabby appearance of reused concrete elements triggered *concern* over consumers' possible prejudices against reused elements (trigger types: other actors; institutions and structures):

"I think this is affected greatly by a kind of primitive feeling that stems from the industry and usual work environment. Like, what you are expected to do and achieve in that current, conservative role. There are really strong and rigid roles within which people need to work, which, in turn, means that when that system is disturbed in the slightest, it affects the interaction, thinking, actions, and behavior." (Designer, manager-level informant).

The **behavioral dimension** manifested in business actors' diverse behavioral responses, such as *acting as change agents*, *sharing information and collaborating on problem-solving*, and *assessing risks at the deconstruction site*. For instance, an international reuse-oriented excursion triggered some actors' efforts to promote concrete element reuse in Finland to *shift construction practices and standards* toward sustainability and circularity (trigger types: other actors; activities). One behavioral response was *showcasing the feasibility of the reuse method and the potential of reused concrete as a building material*. The actors also demonstrated the

practical implementation of the reuse method to diverse stakeholders, aiming to establish it as a feasible alternative in construction and induce institutional push to more circular, and particularly reuse-enabling, industry practices (trigger types: other actors; institutions and structures):

"It is interesting how this [reusing concrete elements] supports the promotion and marketing of what we do with concrete as a material and how we communicate about it. That if it can be circulated and everyone understands its potential, especially from an environmental point of view, then it is worth trying to reuse once-manufactured components." (Implementor, manager-level informant).

Furthermore, the diversity of the actors and their expertise triggered open dialogue around joint problem-solving during planning and design (trigger type: other actors). In a novel reuse-based construction process, the actors needed to implement more collaborative planning and implementation, harnessing a range of expertise types to address challenges effectively. Moreover, the risky nature of deconstruction, however essential to harvesting concrete elements for later reuse, triggered *cautious behavior* among the actors during deconstruction (trigger types: information; activities). These risks spurred *joint planning and detailed refinement of reuse plans*. The actors *visited the deconstruction pilot site* during planning to capture the details of the deconstruction for reuse to consider and assess the risks (trigger types: information; activities):

"The building [to be deconstructed] was built in the early 80s with original plans basically drawn on wax paper—so that's maybe not the greatest thing to create trust that the building had actually been built accordingly [...] it's a

kind of way to assure oneself [...] you're more certain about something, when you go on site to check things out instead of just staring at those old plans." (Implementor, manager-level informant).

The **social dimension** manifested as business actors' *collaborative problem-solving*, triggered by the novelty of reuse and the uncertain properties of the harvested concrete elements (trigger types: activities; other actors; circulating material). Joint planning triggered experiences of a *constructive and encouraging atmosphere* and a *sense of community*, especially when the actors' opinions aligned or they jointly promoted concrete element reuse beyond the pilot (trigger types: other actors; activities). *Increased trust* among the value chain actors reassured them that the reuse process could be successfully implemented. The actors explained that they were *tackling the challenges collectively* rather than alone. This collaborative spirit led to fewer confrontations and accusations than in traditional linear construction projects (trigger types: activities; other actors; circulating material):

"I would say it's precisely due to the nature of this reuse-based project [...] that we have kind of been on the same side from the very beginning, and everybody is aiming for the same thing [...] If we compare this to a so-called

basic all-in contract, where you compete and negotiate and are sort of like pitted against each other [...] The setting is different than in a competitive situation." (Implementor, manager-level informant).

Although the **sensorial dimension** was less prominent, several sensorial experiences emerged throughout the reuse process: *seeing* concrete elements being harvested and reused and *observing* buildings as the results of reuse processes materialized on site reinforced actors' belief that change can truly happen and motivated further engagement (trigger types: circulating material; activities). One informant noted: "It was so great to see that the [deconstructed, harvested] concrete elements were there, finally, in the air, moving."

Seeing and sensing the *material characteristics on site* helped the actors to realize the project's scale and the physical conditions needed, such as space for element storage, dismantling speed, and aspects defining the quality and condition of the elements (trigger type: circulating material). Furthermore, *sensing dust, noise, weather conditions, and other physical conditions* highlighted the physical characteristics of reuse (trigger types: circulating material; activities). Moreover, witnessing the brutal visuals of conventional demolition and waste-handling—where

Table 3
Adaptation forms and their subtypes as outcomes emerging from actors experiencing circular solutions.

Adaptation form	Subtypes of adaptation forms
Attitude and mindset	<p><i>Pro-circularity mindset and attitude:</i></p> <ul style="list-style-type: none"> • Changing attitude and mindset toward circularity from skeptical and negative to encouraging, optimistic, and positive. • Becoming an endorser of circular ways of working. • Starting to consider circular ways of working as pioneering. <p><i>Collaborative mindset and attitude:</i></p> <ul style="list-style-type: none"> • Developing an attitude and mindset that both individual and shared goals can be more easily achieved when actors work together across organizational boundaries for circularity. <p><i>Problem-solving mindset and attitude:</i></p> <ul style="list-style-type: none"> • Attitude and mindset changing from problem to solution orientation when adopting new circular ways of working.
Product and service	<p><i>New products and services:</i></p> <ul style="list-style-type: none"> • Developing new products and services to enable circular ways of working. <p><i>Modifying existing products and services:</i></p>
Process and behavior	<p><i>Work processes:</i></p> <ul style="list-style-type: none"> • Modifying existing products and services to fit new circular processes. <p><i>Organization of operations and collaboration:</i></p> <ul style="list-style-type: none"> • Adjusting work and processes to the new circular ways of operating. • Extending knowledge and skills related to the new circular processes. <p><i>Change-making behavior:</i></p> <ul style="list-style-type: none"> • Reorganizing work and processes from linear to circular, reuse-based ways of working. • Aligning work and processes within and between organizations at different phases of the reuse process. • Increasing collaboration between actors in product development to enable new circular ways of working.
Systems and structures	<p><i>Organization of the value chain:</i></p> <ul style="list-style-type: none"> • Change-making activities to support new circular ways of operating. <p><i>Interorganizational data management:</i></p> <ul style="list-style-type: none"> • Changes in actor roles to enable new circular ways of operating. • Reorganizing the value chain for new circular ways of operating. <p><i>Societal and institutional settings' change-making activities:</i></p> <ul style="list-style-type: none"> • Changes in information and data management between organizations needed for circularity. <p><i>Changes in social and institutional systems caused by a new disruptive way of working due to circularity.</i></p>

still functional materials were discarded—triggered strong reactions, such as a desire to harness the potential of materials through reuse (trigger types: circulating material; activities):

"Seeing how the waste is handled and how things that could serve an actual purpose transform into a kind of mush [...] That has been a pretty powerful experience, in a sense, that there would be potential for so much more." (Stakeholder, manager-level informant).

In response, the informants described feelings of sadness but also of increased motivation to promote circular methods and to honor the legacy of the deconstructed building by reusing its components.

4.2. B2B actors' interactions and adaptations as outcomes of experiencing circular solutions

In terms of the *outcomes* of the B2B actors' multidimensional experiences of circular solutions, we focused on adaptations of different forms (attitude and mindset; product and service; process and behavior; systems and structures) at different levels (individual; company and organization; value chain and ecosystem) together with interactions (intraorganizational; interorganizational; joint project). This section is structured around the four forms of adaptations to which the experiences led (see Table 3).

The experiences in all five experiential dimensions led to adaptations in **attitude and mindset**. During the reuse process, individual actors adapted their attitudes and mindsets through *pro-circularity, collaborative, and problem-solving mindsets and attitudes*.

Individual actors adapted their attitudes and mindsets toward *pro-circularity* once they had had the chance to see how the concrete elements were disassembled, refurbished, and used; learnt that, jointly, they could develop more informed plans and better reduce risks; and felt secure due to well-prepared planning. Seeing the brutality of conventional demolition sites and the wasted potential of materials changed the actors' mindsets toward accepting that change is needed within the construction industry. The actors started to adapt to a forerunner mindset, making companies and their individual representatives feel like pioneers in circular practices in the construction industry, which generated pride and enthusiasm:

"I've been feeling like telling people about it, because there is a certain kind of pride about this project. After all, it is like, others are just talking, but there is actual concreteness in what we are doing." (Designer, manager-level informant).

As an outcome of the perceived concerns on how to manage the risks related to reusing concrete elements, adaptations emerged through *collaborative mindsets and attitudes* as actors started to adopt more open, proactive mindsets, enabling collaborations between diverse experts to jointly develop circular operations and business models and unlearn linear ones. Moreover, this seemed to increase interactions between (interorganizationally, project level) and within (intraorganizationally) companies and organizations.

However, *problem-solving mindset and attitude* adaptations did not happen rapidly. Some actors approached the reuse of concrete elements with prejudice and skepticism, focusing more on problems than solutions. The outcome was twofold: while some became open to exchanging ideas to optimize the process, others responded defensively, requiring proof of the new method's feasibility. Negative experiences reinforced prejudice in interactions, while positive ones strengthened optimism, increasing the actors' willingness to collaborate, innovate, and jointly solve problems at both the intra- and interorganizational levels:

"Reusing parts of buildings is a new way of thinking about demolition projects, so when we've discussed this internally, (some) were very cynical and negative about it (...), and (others) saw it as an opportunity. However, as the project progressed and reached milestones, even the negative opinions started to turn more positive and optimistic." (Implementor, manager-level informant).

Product- and service-related adaptations were rooted in diverse

experience dimensions as actors developed new business models and adjusted operations for the reuse process, leading them to explore and consider *new reuse-based products and services* and adapt their *existing offerings*. However, the broad adoption of new circular solutions—both within companies and across value chains—will take time, as viable and scalable operating and business models, markets, and customer preferences must first be understood and developed.

Furthermore, emerging from the novel ways of operating, we observed *new product adaptations*, such as the development of new lifting accessories for deconstruction, where the companies worked collaboratively to identify and implement the necessary steps for economically viable concrete element reuse, ensuring both customer value and technical and business model feasibility. The actors' experiences of the reuse process also led to the *emergence and development of new services*, such as reuse-oriented planning and design (both in deconstruction and construction); dismantling elements intact; project management; and refurbishing and quality assuring the dismantled elements:

"In some ways, the design of a new building is different from the traditional design of a new building, because new parts are designed along with reusable parts, and they must be coordinated to work together." (Designer, manager-level informant).

Moreover, as the project progressed, the actors realized that the reuse process required *existing services to be modified*, for example, repurposing storage facilities to store the elements to be reused, engaging project management in reuse-based operations, and using the existing marking and identification systems to track the elements. The actors noted that working closely with others helped them to identify the needed product and service modifications throughout the reuse process. Moreover, the growing societal push for circular developments in the industry prompted them to gradually adjust both their business models and professional competencies in response:

"We're investing in this because we see it as future business. To meet targets for carbon neutrality, resource wisdom, and waste legislation [...] we need to develop new solutions, even before they're required. [...] It's about being pioneers and preparing to offer these services to customers and meet targets when the time comes." (Designer, manager-level informant).

Experiences also led to adaptations in **process and behavior** at the intra- and interorganizational levels: adjustments were made to *work processes, the organization of operations, and collaboration* in different reuse phases, and the actors enacted *change-making behavior* as the project progressed. At the broader system level, the actors observed that the construction sector is slowly adopting sustainable practices and circular solutions, which many foresee will become standard industry practice. Thus, the actors were keen to reshape operations themselves. However, they felt that many process and work adjustments were incremental, as existing expertise, tools, and methods could be adjusted for use within reuse-oriented processes.

The knowledge and experience the actors accumulated while collaborating on a novel reuse-based project resulted in adaptations in *work processes*. For example, in design and planning, the structural designers and architects needed to manage the dimensions of harvested elements in their designs rather than having virgin elements produced according to their plans. Deconstruction became "reverse construction", where the building was dismantled intact to preserve elements for reuse instead of demolishing them. Adaptations also generated new risk-reducing and well-planned ways of working, increasing the process and business feasibility. Moreover, the actors experienced that reuse-based processes often involve incomplete information about the buildings to be deconstructed, requiring adaptations so they can work with incomplete information while facing new types of risks. This uncertainty prompted closer collaboration among the actors to jointly manage the risks. The joint planning and execution, which engaged various experts, increased trust and spurred the actors to support each other throughout the process:

"Regarding a novel way of working, reusing concrete elements, no one can really say, I know exactly what to do, and I will manage the process. As the

process is unfamiliar to all, it brings confusion and uncertainty, for example, what needs to be done and in what order. So, as it's new for everyone, we are engaging in positive collaboration, thinking together to find the best solutions for everyone." (Designer, manager-level informant).

Adaptations also happened in the *organization of operations and collaboration*. It became evident that effective reuse required the coordinated efforts of diverse actors with specialized expertise. This realization fostered joint problem-solving and the collaborative planning of technical processes, particularly as the participants observed, learned, and succeeded together. The actors' individual roles and responsibilities within the value chain shaped both intra- and interorganizational interactions. Notably, the actors' experiences showed them that open communication and the explicit management and coordination of practices between different value chain actors were essential to avoid confusion, ensure that no value of the harvested elements was lost, and maintain value creation throughout the process, allowing each actor to contribute without undermining the efforts of others:

"We had to actively engage with different companies and organizations, first identifying key responsible units and actors, but also understanding our own role in the process and even the construction industry, then building trust and relationships to influence others and achieve progress in making reuse commercially viable within construction." (Stakeholder, manager-level informant).

As regards *change-making behavioral* adaptations, the actors had to address external resistance regarding the reuse of concrete elements and solutions in the construction industry, such as prevailing attitudes as well as regulatory inertia and friction. In turn, positive experiences from the reuse project fostered pride and motivation among the participants, encouraging collaboration across expertise silos. Moreover, as the actors achieved a better understanding of the novel reuse process and the changes needed, collaboration intensified to overcome challenges, entrenched roles, opinions, and bureaucratic barriers within and beyond the project.

The *system and structural* adaptations concerned how a novel reuse-based way of operating changes the system and its structures as companies harness business from it. Adaptations focused on the *organization of the value chain, interorganizational data management, and societal and institutional settings' change-making activities*.

Regarding the *organization of the value chain*, the actors noted that adopting reuse-based practices expanded their roles and responsibilities compared to conventional construction projects. By collaborating with diverse experts and participating in unfamiliar project phases, the actors redefined their contributions within the reuse process and fostered deeper and more intensive collaboration. The actors emphasized the importance of aggregate diverse expertise to navigate within the industry and its institutional setting, based on linear ways of operating. Positive experiences with shared expertise fostered trust in the collective knowledge of the value chain, facilitating more effective resource allocation and supporting both individual and shared sustainability goals:

"When we have worked together [with an actor] on the planning, the cooperation has worked well. Even though the schedules have not always been met and so on, there has still been more, like, encouragement and more positive than negative feedback, and that has felt good and constructive in terms of cooperation." (Implementor, manager-level informant).

The actors also needed to adapt effective *interorganizational data management* stemming from the novel ways of operating: the companies jointly determined necessary data types, responsibilities for data collection, and appropriate storage formats and locations to support current and future operations.

Moreover, adaptations related to *societal and institutional settings' change-making activities* were evident as actors shifted toward circular practices in a linear-oriented industry. Drawing from their experiences with rigid linear-oriented industry systems and stagnant value chain roles, the actors identified the need to change to better support circular operations, realizing that adaptations were also needed in how the value of materials is considered in regulation and society, particularly whether

reusable elements are considered waste. Within the system change efforts, the actors developed more systemic knowledge of reuse by integrating technical, economic, and institutional perspectives, broadening their competencies and enhancing their technical and business operations. They experienced the critical role of authorities in progressing or hindering reuse, prompting collective efforts to promote new reuse approaches and inform institutional stakeholders of necessary changes. Consequently, the actors spread the word about adaptation needs among other stakeholders to drive institutional transformation and promote circularity in the industry and in society:

"When we are working in a novel way and doing and thinking things completely differently, that fosters change within the whole operation mode radically [...] Such a transformative process will inevitably spark resistance and uncertainty about your own role and actions as well as the project's overall success." (Designer, manager-level informant)

5. Discussion and conclusions

5.1. Summary of the key findings and a conceptual model

Next, we summarize the key findings of our qualitative, theory-developing research. The conceptual model (Fig. 8) displays how B2B actors' multidimensional experiences of circular solutions shape their interactions and adaptations within interorganizational settings, shaping the CE transition.

As shown at the top of Fig. 8, B2B actors' experiences of circular solutions are induced by diverse triggers (cf., Becker & Jaakkola, 2020; Waluszewski, Snehota, & La Rocca, 2019), empirically categorized into types such as information (e.g., risk awareness), activities (e.g., new operating models), other actors (e.g., expert collaboration), circulating material (e.g., material properties), and institutions and structures (e.g., industry roles and bureaucracy). These triggers emerge from multiple layers of circular solutions in business and society (see Figs. 1 and 3). However, the experience triggers were rarely of one type; typically, several triggers blended.

These triggers evoke experiences across five dimensions (cognitive, affective, social, behavioral, and sensorial) (e.g., Becker & Jaakkola, 2020; Lemon & Verhoef, 2016; Ta et al., 2022), with cognitive and affective responses most prevalent in our data. These responses include learning new operational modes, feelings of pride related to working with diverse experts, and frustration with the industry and societal status quo. The behavioral and social responses were most evident through experiences of the inner urge to enact change, the willingness to engage in the reuse process, and the supportive, collaborative, and encouraging atmosphere among the involved experts. The sensorial responses emerged through seeing, handling, touching, and testing the deconstructed components to better understand their properties and lifecycle behavior.

Our analysis demonstrated that the actors' experiences shape their interactions and adaptations within and beyond their organizations (cf., Guercini et al., 2014; Mouzas, 2024), influencing not only internal practices (e.g., in-house communication and knowledge-sharing) but also collaborative practices across the value chain (e.g., open communication and interaction management). Experiences primarily drove attitude and mindset adaptations at the individual and organizational levels through the adoption of pro-circularity and collaborative orientation, whilst product- and service-related adaptations occurred in companies modifying their offerings and business models. Process and behavioral adaptations primarily occurred at the intraorganizational and interorganizational levels, with a notable emphasis on joint problem-solving throughout the process. Systemic and structural changes were most evident at the organizational and interorganizational levels, driven by circular value chain reorganization, evolving roles, and shared data management.

Our model (Fig. 8) illustrates the dynamic interplay between B2B actors' experiences, interactions, and adaptations, showing how they

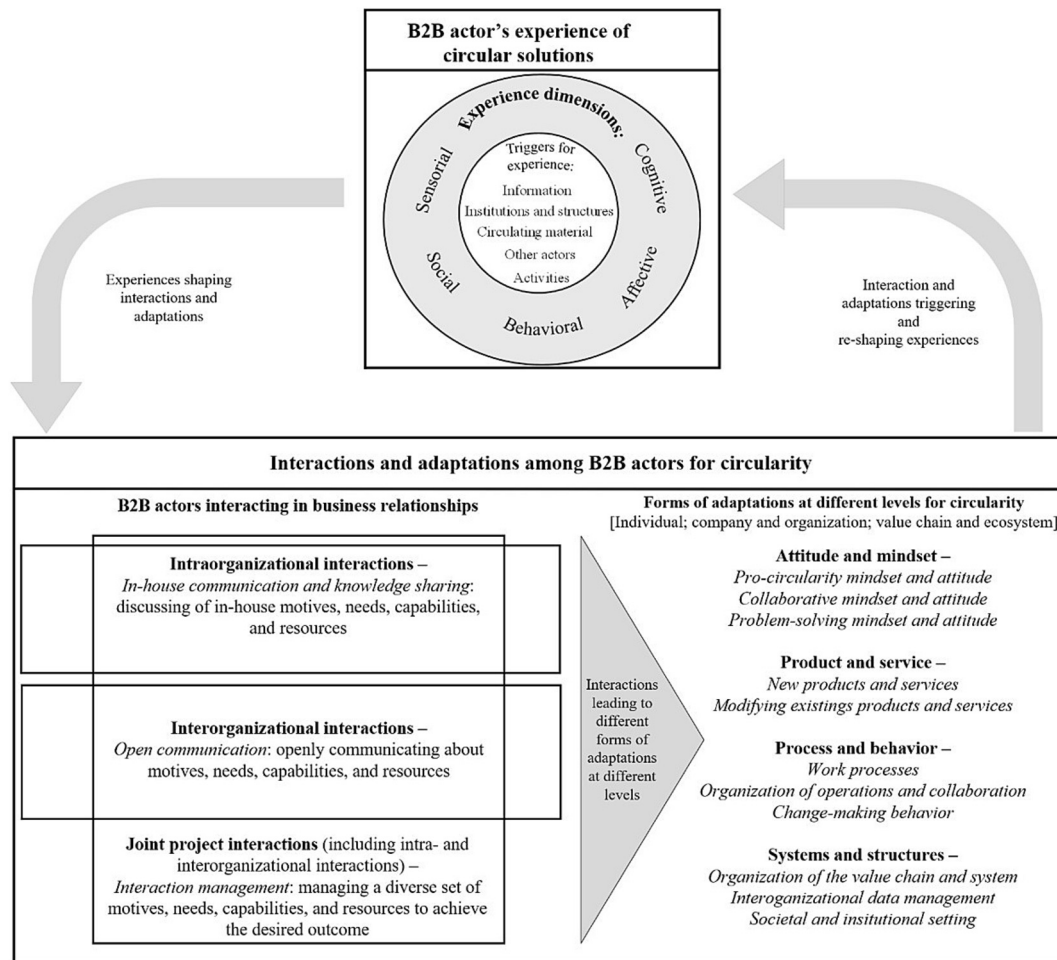


Fig. 8. Conceptual model: B2B actors' experiences of circular solutions shaping interaction and adaptations in an interorganizational setting and the shift toward the CE.

mutually shape and reinforce each other. Thus, our study displays how actors' multidimensional experiences lead to different types of adaptations at different levels, which, however, are interdependent: higher-level chain and system adaptations build upon individual and organizational changes that, in turn, shape actors' further experiences.

5.2. Theoretical contributions

Our study explored how B2B actors experience circular solutions and how these multidimensional experiences shape interactions and adaptations within an interorganizational setting that is shifting toward the CE. We contribute to four research streams.

First, this study advances the *B2B experience* research by providing one of the first empirical investigations into individual business actors' multidimensional experiences of circular solutions. Prior B2B experience research is mainly conceptual (e.g., Wirtz et al., 2025; Witell et al., 2020) or has focused on particular experience dimensions, such as affective (McColl-Kennedy et al., 2019) or cognitive (e.g., Lemke et al., 2011). Our findings illuminate the full, multidimensional range of B2B actor experiences. Our analysis also identifies various business context-related experience triggers, offering a complementary perspective to consumer-biased customer experience research, which has focused on experience-triggering stimuli within purchase journeys (e.g., Lemon & Verhoef, 2016). Furthermore, our study demonstrates that experiences shape interactions and adaptations at multiple organizational levels. Unlike traditional studies that link experience primarily to customer satisfaction or loyalty (e.g., Becker & Jaakkola, 2020; Brakus et al.,

2009), our results demonstrate that individual experiences affect collaboration and change in multi-actor networks, highlighting the need to manage diverse stakeholder experiences in industrial contexts.

Second, our study contributes to *B2B research on circular business* by taking the perspective of an individual B2B actor instead of a company or value chain and examining how B2B actors' experiences of circular solutions shape companies' and value chains' circular business and operations. Our study shows how individual actors' experiences of circular solutions can both facilitate and hinder the adoption of circular business practices in companies and value chains. These insights complement prior research that has centered on individual companies' economic value creation (Ranta et al., 2021; Sairanen et al., 2024) or value chains' collaborative efforts (Aarikka-Stenroos et al., 2022; Parida et al., 2019).

Third, this study contributes to the *adaptation and interaction* research by deepening current understandings of the mechanisms underlying business actors' adaptations (e.g., Mouzas, 2024; Schmidt et al., 2007; Viio & Grönroos, 2014, 2016). Our research extends beyond dyadic and triadic contexts (e.g., Brennan et al., 2003; Holma, 2009) by incorporating an interorganizational setting, highlighting that adaptations occur at multiple levels and that these levels are interconnected. While previous studies have acknowledged that past experiences influence behavior in business relationships (c.f., Guercini et al., 2014; La Rocca et al., 2017; Mouzas, 2024), our study adds by building an understanding of how experience, interaction, and adaptation are interconnected and shows the importance of how individual experiences drive interactions and adaptations.

Fourth, we contribute to the broader CE research by suggesting a relevant conceptual lens, experience, to sharpen the current research of “concerns” and “adoption” of the CE (e.g., Huuhka & Hakanen, 2015; Klang et al., 2003; Rose & Stegemann, 2018; Shaurette, 2006). Our study demonstrates how individual business actors’ experiences catalyze the implementation of the CE in companies, chains, industries, and society and thus adds to research on CE drivers and catalysts (e.g., Kirchherr et al., 2018; Lehtimäki et al., 2024). Moreover, empirical understanding of what affects actors’ ways of operating is needed regarding circular construction (e.g., Hossain et al., 2020; Leising et al., 2018). Whereas previous work often treats perceptions of circularity as a barrier to circular material flows (e.g., Anastasiades et al., 2021; Condotta & Zatta, 2021; Huuhka & Hakanen, 2015), this study emphasizes the potential of experiences to drive the CE.

5.3. Managerial implications, limitations, and future research

Our research offers valuable guidance for business, technology development, and sustainability managers seeking to advance the CE. Managers should acknowledge the importance of experiences and their management and pay particular attention to cognitive, affective, and social experiences, as these strongly influence collaboration in circular value chains.

We acknowledge that this qualitative study, based on a single case of a circular construction project in a Nordic country, has limitations, as CE-related sectoral, regional, and institutional differences (see Ranta et al., 2018) may influence B2B actors’ experiences and adaptations. Future research should examine multiple cases in diverse contexts to broaden the understanding of how circular solutions are experienced across varying settings. Our findings indicate that the interplay between different levels of adaptations deserves further investigation.

Another limitation is the omission of how individual actors’ experiences may aggregate into collective experience at the company level. Prior research acknowledges that individual experiences both influence and are shaped by collective dynamics (e.g., Becker et al., 2023; Witell et al., 2020). Future studies should examine the interplay between individual and collective experiences within companies and their impact on value chains and ecosystems.

CRedit authorship contribution statement

Lauri Alkki: Writing – review & editing, Writing – original draft, Visualization, Validation, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Leena Aarikka-Stenroos:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Methodology, Funding acquisition, Formal analysis, Conceptualization. **Elina Jaakkola:** Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Formal analysis, Conceptualization. **Eeva-Leena Pohls:** Writing – original draft, Visualization, Validation, Methodology, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability

The data that has been used is confidential.

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