Ethical value co-creation in circular economy ecosystems: a case study of the textile industry

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Abstract

Purpose – The purpose of this empirical study is to apply the industrial marketing and purchasing approach to explore ethical value co-creation and business ethics in the circular economy (CE) ecosystem (CEE) of the Finnish textile industry. A CEE involves a variety of business and institutional actors with shared business or societal targets. Ethical principles may become embedded in their first social interaction and can play an important supportive role in economic, environmental and social value co-creation, especially when the actors have sustainability goals.

Design/methodology/approach – This study uses a qualitative single-case study of a CEE in the Finnish textile industry where diverse actors seek to create value from circularity. The analysed data represent a set of interviews with business and institutional actors directly involved in managerial activities in the CEE of textile industry in Finland.

Findings – This study provides a conceptual framework of actors' interactions and ethical value co-creation aimed at meeting CE and sustainability goals at the levels of actors, the network and the ecosystem. The findings emphasise the value of proactive collaboration among business and institutional actors seeking innovations, knowledge-sharing and business development in fostering more circular operations in the textile industry and thereby effecting the CE transition. Efficient interactions for value co-creation among actors can be grounded on ethical values such as trust, transparency, shared sustainability goals and the power to positively influence and motivate actors and even consumers to transition to CE principles.

Originality/value – An original research framework of ethical value co-creation is proposed in this study based on the combined concept of ethical embeddedness and ecosystem orchestration mechanisms to achieve sustainability and CE goals. This study contributes to the limited business ethics studies in circular business and CEE research and empirically examines business interactions among actors within a CE ecosystem. The managerial and policymaking implications of this study highlight the strategic importance of various actors' interactions in implementing circularity in business processes.

Keywords Ethical value co-creation, Case study, Industrial marketing, Textile industry, Circular economy ecosystem, Finland

Paper type Research paper

1. Introduction

The transition to more sustainable practices across industries has been on the agenda for decades, and recent years have seen national and intergovernmental incentives and goals driving companies and industries to start implementing sustainability in practice. Sustainability has a broad meaning, but it generally refers to business activities being environmentally friendly and socially viable while maintaining their economic feasibility. The adoption of *circular economy* (CE) principles contributes to the sustainability transition (Velenturf and Purnell, 2021). The CE concept embraces a closed loop of material flow to preserve, reuse and extract resources from used products or waste, thus also promoting sustainability in the environmental and social spheres, and aims to capture economic value (Murray *et al.*, 2017; Lahti *et al.*, 2018). Circularity logic is gradually being implemented in many environmentally unsustainable industries, for instance, construction (Hossain *et al.*, 2020), packaging (Cantu and Tunisini, 2023), food (Zhang *et al.*, 2022) and, most importantly, the *textile industry* (Dziubaniuk *et al.*, 2024; Franco, 2017; Jia *et al.*, 2020), the focus of this study, which is conventionally considered to be one of the most polluting and least ethical industrial activities (Fontell and Heikkilä, 2017; Niinimäki *et al.*, 2020). The textile industry is facing many uncertainties, as CE innovations and markets facilitating textile circulation are only just beginning to emerge, and there are constant changes in the regulatory environment (Franco, 2017; Desore and Narula, 2018).

To tackle the uncertainties related to the sustainability leap, industrial actors often collaborate and network with institutional and public actors to address CE transition goals (Lacoste, 2016;

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de Abreu *et al.*, 2020; Ranta *et al.*, 2020; Oskam *et al.*, 2021). For instance, CE-related interactions in the textile industry may involve networks of business and non-market actors, such as institutional organisations, governmental entities, non-governmental organisations (NGOs) and research institutions (Murray *et al.*, 2017; Parida *et al.*, 2019; Ranta *et al.*, 2020). In this study, we apply the concept of a *CE ecosystem* (CEE), which refers to diverse complementary actors interacting and co-evolving to achieve system-level goals concerning the reduction, reuse and recycling of post-consumed materials (Aarikka-Stenroos *et al.*, 2021). Although diverse types of CEEs exist, ranging from industrial ecosystems for circularity to innovation and business ecosystems, as we are interested in actors' ethical value co-creation this paper focuses on industrial and business ecosystems. While the *business ecosystem* concept refers to how business relationships enable a company to undertake circular business and actualise circular business models (see, e.g. Aarikka-Stenroos *et al.*, 2021), the *industrial ecosystem* concept refers to collaboration among interdependent actors to promote an innovation that addresses market demand coordinated by organisational leaders aiming at reciprocal value creation (Möller *et al.*, 2020; Phillips and Ritala, 2019; Oskam *et al.*, 2021). In addressing sustainability challenges, the industrial ecosystem embraces cooperation among actors to utilise waste materials and other resources and minimise virgin material input, waste and emissions (Korhonen, 2001). In this study, we focus on the CEE of the textile industry, which enables actors to interact to co-create sustainable value through CE innovations and business and to develop and adopt novel products and operations as well supportive services that may also require a re-thinking of business logic.

This paper argues that ethical and moral considerations are essential parts of the shift to more sustainable practices by a CEE and the actors involved in the focal industry. As businesses are managed by individuals who exercise agency in their organisations (La Rocca *et al.*, 2017), the development of social ties is a vital part of the actors' interactions (McClaren and Vocino, 2017; Oskam *et al.*, 2018). These ties embrace a variety of social behaviour specifics, such as emotions, feelings and moral concerns (Brennan, 2021; Pérez and Cambra-Fierro, 2015), which may lead to the development of ethical norms of business virtue, that is, ethics that are specific to business relationships (Dziubaniuk, 2021; Lindfelt and Törnroos, 2006; Melé, 2009). In this study, *business ethics* reflects the morality of relationship management and interactions between business or institutional actors (Brinkmann, 2002; Dwyer, 2008; Brooks and Dunn, 2021; Melé, 2009) and serves as a catalyst to bring these actors into the textile industry CEE to co-create value to meet CE and sustainability goals (Dziubaniuk *et al.*, 2024). Predominantly, business studies are focused on the adoption of CE principles, whereas ethical considerations for the CE transition and firms' motivation to engage in circularity practices are rarely considered (Corvellec *et al.*, 2021; Gusmerotti *et al.*, 2019; Murray *et al.*, 2017; Rovanto and Finne, 2022). In addition, little attention has been paid to the importance of business ethics in actors' interactions in the business-to-business (B2B) research (Anand *et al.*, 2023; Dziubaniuk and Ivanova-Gongne, 2021; Halinen and Jokela, 2016; McClaren and Vocino, 2017); in particular, few studies have examined how ethical conduct can aid in co-creating economic value in business relationships and networks (Lindfelt and Törnroos, 2006). However, although value co-creation in textile CEEs is a complex process orchestrated by various actors, it is grounded in ethical principles, which we conceptually frame as *ethical value*. Ethical value is initially embedded in the actors' interactions and helps them to tackle the uncertainties and novelty of CE processes and the inability of single actors to create value individually in the transition to sustainability (Aarikka-Stenroos *et al.*, 2021; Dominidiato *et al.*, 2023; Dziubaniuk *et al.*, 2024; Patala *et al.*, 2022).

In this study, we explore ethical value co-creation in an emerging CEE seeking to bring about sustainability and circular developments within the industry sector. In particular, we examine the role of business ethics when the involved actors embark on the process of realising the economically feasible development of a sustainable textile industry and a CEE. To address the process of value co-creation structurally, actors' interactions are explored at the actor (organisational), network and ecosystem levels. We apply the industrial marketing and purchasing (IMP) perspective to the conceptual framing of business and institutional actors' interactions and the economic and ethical value they co-create while aiming to achieve the CE transition (Baraldi *et al.*, 2012; Ratajczak-Mrozek, 2017; Håkansson and Waluszewski, 2013). According to the IMP perspective, *value co-creation* embraces an intense collaboration of suppliers and buyers who align and share resources in pursuit of specific business outcomes (Almeida *et al.*, 2021; Perna *et al.*, 2022; Håkansson and Waluszewski, 2007). Thus, in this research, we regard value co-creation as a process of interaction among multiple actors whose outcome is the transition to sustainability through a CE within an industrial field (La Rocca *et al.*, 2016; Payne at al., 2008; Perna *et al.*, 2022). This subject, too, has scarcely been discussed in the industrial marketing and management field (Aslam *et al.*, 2023; Brzustewicz *et al.*, 2021; Dominidiato *et al.*, 2023; Falkenreck and Wagner, 2022). The process of value co-creation is typically explored within the episodes of interactions devoted to developing complex and innovative solutions in either dyadic relationships or actors' networks (e.g. Aarikka-Stenroos and Jaakkola, 2012; Park and Lee, 2018); hence, it can be explored in the context of circular ecosystems (e.g. Aarikka-Stenroos *et al.*, 2021). Thus, this study addresses the following research questions:

RQ1. How is ethical value unfolded and co-created in a CEE?

RQ2. How does this ethical value drive the development of a CEE in an industry?

Empirically, we conduct a qualitative study to explore value co-creation from the individual perspectives of managers from the Finnish textile industry, who represent business and institutional organisations interacting to develop circular operations and business within the industry and were interviewed for this research. The current Finnish interest in and approach to textile circulation has generated global interest in Finnish technologies, innovations and managerial practices and the collaboration of multiple actors to achieve ethical consumption and the circularity of material flow (Dziubaniuk *et al.*, 2024; Kamppuri *et al.*, 2021). Although the country

context only reflects the domestic embeddedness of companies in national business networks (Ratajczak-Mrozek, 2017), Finland has taken several steps towards mobilising business, institutional and social groups of actors to facilitate its textile CEE (Dziubaniuk *et al.*, 2023; Fontell and Heikkilä, 2017), which makes it an interesting case study for the international community.

This study aims to contribute to the industrial marketing and management literature by extending the conceptualisation of actors' value co-creation through interactions aimed at achieving the transition to a CE (Lacoste, 2016; La Rocca *et al.*, 2017; Perna *et al.*, 2022; Velenturf and Purnell, 2021) that is also grounded on ethical value (Dziubaniuk, 2021; Lindfelt and Törnroos, 2006; Melé, 2009). The findings of this research extend our understanding of CEEs (Parida *et al.*, 2019; Aarikka-Stenroos *et al.*, 2021; Trevisan *et al.*, 2022; Kanda *et al.*, 2021) and conceptualise the ethical principles embedded in the management of the textile industry CEE in a single country, that is, Finland. This study also adds to the scarce business ethics research in the domain of CE transition management (Dziubaniuk *et al.*, 2024; Murray *et al.*, 2017; Rovanto and Finne, 2022) by proposing conceptual and managerial contributions.

The next section of this paper presents a literature review overviewing i) value co-creation, particularly in the textile industry CEE and ii) the role of business ethics in the value co-creation process. The methodology section that follows describes the qualitative data collection and analysis choices. The findings section presents the results of the empirical data analysis. It is followed by discussion and conclusion sections that summarise the key findings of this study, major contributions, limitations and future research avenues.

2. Theoretical background

2.1 Towards CEEs that create value in industrial sectors

We start by discussing the essence of ecosystems and, in particular, the development of sustainability-oriented circular ecosystems and CEEs and how value is created within industrial sectors. According to Möller *et al.* (2020), ecosystems are constellations of partners for focal companies that, in contrast with business networks, play a strategic role in the ecosystem structure, pursue shared value and intentions and share organisational arrangements and integrated value-creation systems. Ecosystems are orchestrated by managerial leaders and require the interdependency and integration of business and institutional actors to achieve their business or societal goals (Aarikka-Stenroos and Ritala, 2017). Conventionally, ecosystems are developed around an innovation or a purpose shared among the actors that aims to create or capture value (Freudenreich *et al.*, 2020; Oskam *et al.*, 2021), which can be typical of sustainability initiatives or the CE (Korhonen, 2001). By applying the industrial ecology approach to sustainable material flows within the industry, Korhonen (2003) discusses the industrial ecosystem as a network of companies and societal actors that commonly use waste materials and energy flows to substitute virgin resources to reduce the waste and emissions generated by this system. At the ecosystem level, the implementation of the CE is targeted at bringing together various actors to address sustainability challenges through the modernisation of production processes and circulation of materials. Murray *et al.* (2017, p. 337) define the CE as "an economic model wherein planning, resourcing, procurement, production and reprocessing are designed and managed, as both process and output, to maximize ecosystem functioning and human well-being". Value creation in the CE is viewed as minimising waste and circulating materials, with the value co-created by the system being superior to that a single actor can create (Lahti *et al.*, 2018; Figge *et al.*, 2022). Specifically, value co-creation occurs when actors collaborate closely and is essential in enabling industries to transition to sustainability through a CE implementation (La Rocca *et al.*, 2016; Payne *et al.*, 2008; Perna *et al.*, 2022). The value co-creation logic requires actors to share resources and dedicate themselves to the common goal of achieving targeted interaction outcomes (Almeida *et al.*, 2021; Håkansson and Waluszewski, 2007), which, as regards the CE, can be based on novel ways to create (economic) value from circularity, i.e. value logics, such as:

- resurrecting value (transformation of waste into resources);
- sharing value (sharing or renting resources);
- optimising value (optimisation or reduction of the resource flow through increased efficiency of usage); and
- replacing value (replacement of a product or production processes with durable innovations) (Ranta *et al.*, 2020).

The concept of the CEE refers to a system of interdependent actors directing their activities towards the reduction, reuse and recycling of waste or used products (Aarikka-Stenroos *et al.*, 2021). A CEE can be viewed from the perspective of a focal actor orchestrating other actors' activities in business relationships or of horizontally distributed collaborating actors. Orchestration embraces the deliberate actions of an actor or actors who take leading positions in business relationships to facilitate innovations (Dhanaraj and Parkhe, 2006). This managerial activity requires commitment from the actors to ensure the alignment of business interests and purposes (Pan *et al.*, 2015). When an industry seeks to develop towards circularity and organises itself into a circular ecosystem, that is, a CEE, a variety of business, institutional and societal actors is involved since the ecosystem outcomes the actors are aiming to achieve encompass not only economic feasibility but also social and environmental impact (Uusikartano *et al.*, 2020; Harala *et al.*, 2023).

2.2 The pursuit of CE development in the textile industry

In terms of value co-creation from circularity in the textile industry and in a CEE, the literature indicates multiple ways to achieve sustainability through collaboration and interaction. According to Fontell and Heikkilä (2017), the Finnish textile CEE attempts to facilitate the recycling and reuse of end-of-life textile products instead of incinerating them, which does not benefit the CE as the material cannot be used further (Potting *et al.*, 2017), or sending them to landfill. However, the accumulation of post-consumption textile products remains a challenge. According to forecasts for the period 2022–2030, the global textile market will grow by 4% as the demand for nylon, polyester and cotton increases (Grandviewresearch, 2021), placing an even greater burden on the emerging recycling infrastructure. The textile industry is under pressure from consumer and business markets and dealing with regulatory changes aimed at ensuring the more sustainable production

and utilisation of textile products (Desore and Narula, 2018). Textile production is conventionally recognised as environmentally challenging, as it is an energy-intensive industry using hazardous chemicals and pesticides that pollute water and release high volumes of carbon dioxide emissions (Boström and Micheletti, 2016; Franco, 2017; Moretto *et al.*, 2018). Moreover, textile production is an ethically questionable business that is criticised for violating human rights, poor working conditions and the low transparency of its international supply chains (Dissanayake *et al.*, 2017; Huq and Stevenson, 2020; Kooli *et al.*, 2010; White *et al.*, 2017). However, selected companies serving consumer markets proactively implement an ethical code of conduct that regulates business relationships with international subcontractors to avoid the risks of unethical textile production (Shen, 2014; Niinimäki, 2015).

A textile CE is supported by EU policies that are currently recommendations but will become regulations in the future (see the European Green Deal, 2022). For instance, The European Commission has introduced the "EU Strategy for Sustainable and Circular Textiles" encouraging companies in the textile industry to implement circularity in their business models (European Commission, 2022). The implementation of a textile CE can also be driven by the economic opportunities that arise from innovations, the involvement of employees in strategic decision-making, governmental incentives and response to the demand for ethical consumption (Dziubaniuk *et al.*, 2024; Niinimäki, 2015; Jia *et al.*, 2020; Siderius and Poldner, 2021). Despite those pragmatic motives, ethical considerations may be involved when business actors implement CE principles. A comparative study by Rovanto and Finne (2022) of Japanese and Finnish textile industry companies shows that business leaders' motivations to implement CE principles may be rooted in their culture and individual ethical values. Business actors in both countries realised their moral responsibility to influence consumption culture and create awareness of the environmental impact of textile product circulation. A study by Fontell and Heikkilä (2017) explores the proactive stance of the Finnish textile industry in its focus on technological innovations, creativity and eco-fashion. The increased recycling of textile fibres in Finland enabled by mechanical and chemical recycling technologies may be a means to decrease environmental pollution and create ethical and economic value for multiple actors. Niinimäki (2015) states that actors in the textile industry must apply ethical principles to achieve system-level ethical and economic feasibility. Transparency, fair treatment of the workforce, the ways a company communicates its values to develop consumers' and business partners' trust and loyalty, the promotion of sustainable consumption, and the ethical management of supply chains can be listed among the ethical principles that the textile business must consider (Niinimäki, 2015; Gardetti, 2017; Cerchia and Piccolo, 2019). Thus, the role of ethics may be vital for CEE actors in the textile industry aiming to co-create sustainable and economic value through collaboration and by achieving sustainability goals.

2.3 Business ethics and ethical value co-creation

Interaction among business actors can be grounded in socially accepted norms that can strengthen communication, collaboration and knowledge exchange, reduce economic uncertainty and develop the actors' commitment (Stanko *et al.*, 2007; Gulati and Sytch, 2007; Zhou *et al.*, 2021). This social interaction embraces a variety of behavioural specifics grounded on the ethical premises that make business ethics an integral part of relational embeddedness (Brennan, 2021). According to De George (1999), business ethics is the morality of business or the ethical code of conduct that emphasises the utilitarian role of ethical virtue in guiding business leaders' behaviour in their interactions with business actors and society. Thus, in this study, business ethics is regarded as the applied ethics and norms of behaviour that have pragmatic implications in business interactions (Brinkmann, 2002; Brooks and Dunn, 2021). Business ethics embraces morally accepted standards of behaviour embedded in business relationship management and reflected in managerial decisions (Dwyer, 2008; Brooks and Dunn, 2021). Among the key ethical norms of behaviour are trust and loyalty, which informally facilitate exchange in the uncertain business environment and show that actors will meet their promises (Hadjikhani and Thilenius, 2009; Brown *et al.*, 2019; Brennan, 2021). Trust may create a background for the commitment of business partners to the common goals, which may also depend on transparency, honesty and fairness in business relationships (Zabkar and Brencic, 2004; Mora Cortez and Johnston, 2019; Høgevold *et al.*, 2020). Melé (2009) emphasised deliberate knowledge-sharing and intentions to achieve common goals and positively influence other actors as among the ethical values of networked actors. These values are contrasted with opportunism, the abuse of trust and power (especially in relation to the interactions among large and small-sized companies), showing favouritism to one actor over another in exchange for benefits, and bribery (ibid, 2009).

Since value co-creation within an ecosystem depends on how each networked actor behaves towards the others (Phillips and Ritala, 2019; Möller *et al.*, 2020), it is also ethically embedded in business relationships through social interaction. Lindfelt and Törnroos (2006, p. 339) define ethical embeddedness as:

> The integration of the ethical value dispositions as well as the economic value dispositions of a firm in relation to the co-created value processes with other connected firms and institutional actors in the network.

The proposed ethical embeddedness framework allows us to structurally explore the role of ethics in the value co-creation process by examining the ethical position, role and identity of interacting actors within a business environment (ibid, 2006). First, *ethical identity* reflects the internal ethical principles of an organisation, defines its strategic perspectives and differentiates it from other networked actors (Huemer, 2004; Lindfelt and Törnroos, 2006). An actor's identity reflects its image and ethical and social values and refers to how managerial leadership sets a benchmark for ethical practices at the organisational level (Kleyn *et al.*, 2012). Second, the *ethical* role reflects proactive and reactive organisational activities in response to the ethical concerns that emerge in business relationships and networks (Lindfelt and Törnroos, 2006). For instance, actors in virtuous networks, as conceptualised by Melé (2009), can proactively implement more ethical business processes towards, for example, the transition to sustainability, whereas other actors need to react to these changes by adapting their business activities. Third, *network position* is a socially

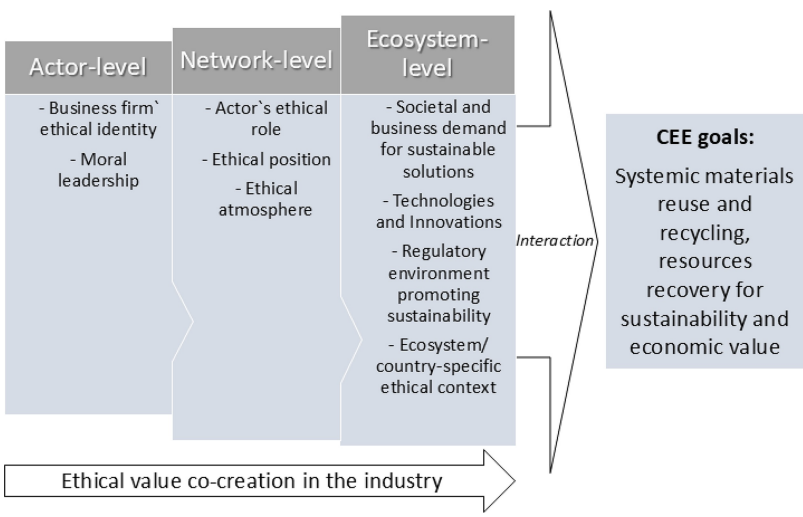
constructed concept that refers to how a company's business relationships are understood by other interacting actors (Abrahamsen *et al.*, 2012; Purchase *et al.*, 2016). An ethical position may be represented, for instance, as the power to influence networked actors to act ethically or adopt ethical virtue. Positions can be changed when a focal actor obtains strategic importance for value co-creation. Finally, the *ethical atmosphere* embraces the ethical context of business relationships and networks that originate from the actors' interactions (Lindfelt and Törnroos, 2006; Sutton-Brady, 2000). According to Melé (2009), emotional and virtuous types of networks embrace a favourable ethical atmosphere in which the actors embedded in emotional networks feel proud of interactions aimed at noble causes, such as sustainability goals, and the orchestrating actors of a virtuous network promote ethical practices of business conduct as a dominant virtue in the networks. The ethical atmosphere may be influenced by country-specific ethics of business conduct. For instance, business ethics in the Finnish context can be characterised by the involvement of employees in decision-making, fairness, the fulfilment of promises and transparency (Dziubaniuk and Ivanova-Gongne, 2021; Kujala, 2004; Grennes, 2011). Finnish businesses show low levels of corruption and are predisposed towards networking and pursuing common interests (Strand *et al.*, 2015; Dziubaniuk and Ivanova-Gongne, 2021).

Ethics plays an important role not only in identifying the moral acceptability of business practices but also in evaluating the role of businesses in society (Islam and Greenwood, 2021). For instance, the ethicality of business actors may be reflected in their motivation to solve social or environmental issues (Dziubaniuk *et al.*, 2024). In the context of the textile industry, the ethical efforts of businesses are often viewed from a perspective of corporate social responsibility (CSR), which characterises a company's intentions to decrease the environmental harm caused by manufacturing or to tackle social challenges, such as poor working conditions, occupational healthcare and child labour issues (Cerchia and Piccolo, 2019; Pedersen *et al.*, 2018). The approach to CSR may be rooted in the culture and social structure in which a business actor is embedded and where ethics plays a natural role in guiding social relations (Korhonen, 2003). However, ethics may have a deeper meaning for business executives than what is expressed in formal CSR programs. Their individual ethics are personal ideologies that guide business activities and manifest obligations towards society (Brinkmann, 2002; Dziubaniuk and Ivanova-Gongne, 2021; McClaren and Vocino, 2017). The personal ethical values of executives may influence actors' interactions at a system level (Melé, 2009), for instance, through the implementation of changes aimed at achieving sustainability that may make other networked actors react accordingly. However, to address sustainability goals, actors need to share perspectives and have a common understanding of the targeted outcomes as, for instance, they arise from CEEs (Aarikka-Stenroos *et al.*, 2021) and are used through ecosystem orchestration, in which a business or institutional actor(s) take the lead in driving ethical business conduct (Dhanaraj and Parkhe, 2006). In the textile industry CEE, business ethics may help to engage various actors in interactions to implement circularity in pursuit of sustainability (Dziubaniuk *et al.*, 2024), as decisions to change may be grounded on a company's ethical strategic norms and the personal values of executives concerning sustainability issues.

2.4 Integrating the theoretical building blocks into a framework

This study specifically explores business ethics in the context of the CEE of textile industry and its role in co-creating value to support the CEE's sustainable development without compromising its economic feasibility. Figure 1 illustrates the proposed conceptual framework, grounded on a summary of the literature review, which structurally represents ethical value co-creation by the actors through interactions at the actor, network and ecosystem levels and how this ethical value drives CE implementation to meet sustainability targets. In the figure,

Figure 1 Conceptual framework of the study



Source: Authors own work

the actor level includes the organisational specifics supporting the CE, the network level reflects the ethics embedded in the actors' interactions, and the ecosystem level embraces the value co-created by multiple actors.

3. Methodology

This empirical study is framed as a single qualitative case study (Merriam and Tisdell, 2016; Halinen and Törnroos, 2005), as this approach enables us to examine a CEE from an industry sector and explore the ethical value creation among its actors. A small number of business actors is directly involved in the Finnish textile industry, especially in CE processes (Dziubaniuk *et al.*, 2024; Fontell and Heikkilä, 2017). The business and institutional organisations participating in this study represent the key players in the Finnish textile industry, although we acknowledge that many other actors are also engaged in the industry. The actors examined in this study actively collaborate to support an industrial transition towards the CE. Thus, the exploration of interactions between commercial firms and institutional organisations is at the heart of this study. The selection of organisations for the data collection was grounded on the following criteria:

- direct involvement in the Finnish textile industry and the emerging CEE to improve circularity within the industry;
- that the actors are engaged in activities directed at CE implementation;
- active interaction or networking with other actors in the Finnish textile CEE; and
- that the responsibilities of an individual interviewee are directly related to the management of CE processes in their company or organisation.

This research uses semi-structured interviews as the primary method of data collection (Freeman and Greenwood, 2020). The interview themes and questions were formulated to develop an understanding of 1) organisational approach and motivation to engage in the CE; 2) the collaboration that has been established and is still needed for CE implementation; 3) the roles of technologies, regulations and other external catalysts of transition to the CE; 4) missing elements in the interaction and what factors slow the transition to sustainable practices; and 5) ethical issues in the interactions at the network and CEE levels. The interviews were conducted from March 2019 to November 2022. Tables 1 and 2 summarise information on the business and institutional organisations participating in this research (14 organisations/interviews in total) by describing each company's main activity, size (according to Eurostat classification) and market(s) served, their activities in the textile industry, and the roles of the interviewees within them. The interviewed actors were assigned reference codes for direct quotations (C – companies, I – institutions; see Tables 1 and 2). The interviews lasted 50–70 min each and were conducted either face-to-face or online via Zoom/Microsoft Teams. The interviews were

Table 1 Empirical data sources: companies and interviewees

Code	Company: main activity, size, market	Activities in a CEE	Respondent position
C1	Textile recycling company a Small B2B market	Performs mechanical recycling of end-of-life textiles delivered and collected by the parent company; primarily recycles workwear	Consumer relationships manager
C2	Textile recycling company B Small B2B market	Recycles cellulose-based materials into textile fabric via methods of chemical recycling; actively collaborates in R&D projects	Company co-founder/ executive
C3	Textile products producer and retailer Small B2B market	Collects and sorts end-of-life workwear from partner companies; produces new workwear from recycled fibres	Sustainability & product manager
C4	Clothing rental company Small B2C market	Rents out clothing in-store and online; collaborates with other garment producers to purchase and rent out clothes made from recycled materials	Executive manager
C5	Producer and retailer of clothes Small B2C market	Produces and retails (in-store and online) clothes made of recycled fibres under its own brand; collaborates with recycling companies and institutions for business development projects	Projects & management executive
C6	Producer and retailer of tools and products used in industrial and house cleaning Medium-sized (in Finland) B2B/B2C markets	The company is part of a large multinational and its brand, but the production of its medium-sized finnish branch is located entirely in Finland; textile materials left over from the production process are supplied to recycling partners	Marketing manager
C7	Producer and distributor of textile products Large B2B market	Finnish-origin, international company that produces, retails and rents out textile products to business customers under its own brand; supplies own end-of-life textiles to recycling partners	Business ecosystems manager
C8	Producer and retailer of textile products Large B2C market	Finnish-origin, international company that produces and retails textile products in consumer markets under its own brand within the premium price segment; collaborates with textile recycling partners in R&D projects to recycle textile leftovers of production	Corporate responsibility manager

Source: Authors' own work

Table 2 Empirical data sources: Institutions and interviewees

Code	Institutional organisation	Activities in a CEE	Respondent position
I1	Technical research Centre	Governmental non-profit organisation that supports business–research institution projects; among its main activities are supporting and promoting industrial transitions to sustainability and the CE, including in the textile industry	Senior researcher/ project manager
I2	Municipal waste management company	Recycles collected consumer and industrial waste; actively collaborates in projects related to textile waste collection, sorting and supplying for recycling to partners for resource recovery	Circular economy specialist
I3	Higher education institution (university)	Performs R&D activity in collaboration with businesses and other institutions; facilitates engineering and business projects for textile recycling innovation	Researcher/recycled textile fibre specialist
I4	University of applied science a	Facilitates textile recycling engineering projects; focuses on innovations in textile collections, sorting, recycling and producing new products of recycled materials; collaborates with business and institutional organisations	Researcher/product development specialist
I5	University of applied science B	Facilitates projects related to recycling and textile composition identification technology development; collaborates with business and institutional organisations	Development manager
I6	Textile, fashion and apparel industry employers' association	Non-profit organisation for textile and fashion industry actors that promotes and communicates CE business initiatives; engages companies and institutions in collaboration	Circular economy specialist

Source: Authors' own work

recorded and transcribed with the kind permission of the respondents. In addition to the interviews, the press releases available on the companies' and institutions' websites were analysed to support our understanding of interorganisational collaboration aimed at achieving the CE.

The companies participating in this study are pursuing the business potential of a CE but are also experiencing financial issues and lack the knowledge required to deal with the sustainability transition. Thus, they engage in interaction with institutional organisations to fill these voids, as the role of these organisations is to support CEE development through shared R&D costs, knowledge dissemination and networking with potential business partners. The complexity of the interactions and networking undertaken by the actors considered in this paper is illustrated in Figure 2. Connection arrows indicate the directions of the material and knowledge flows between the business and institutional actors. Most of these connections are reciprocal, with the few one-directional connections mostly indicating companies supplying their textile waste for recycling but not taking it back. The illustrated interactions aim to facilitate CE activities through collaboration in innovation projects, knowledge-sharing via business/scientific events and establishing material flows to recover resources.

After the interviews were read through and the most relevant data were highlighted, content analysis was applied (Duriau *et al.*, 2007; Elo *et al.*, 2014). First, the researchers read the transcribed interview texts to grasp their general sense. Second, following abductive logic, the respondents' expressions were categorised based on the key concepts summarised in the theoretical framework (see Figure 1) and according to the new evidence that emerged during the interviews. For instance, questions regarding country-context characteristics of the ethical business environment were not originally included in the interview guide but were frequently emphasised by the respondents. The keywords assigned to the interview text codes included sustainability strategy, trust, suppliers' selection criteria, organisational ethical values, attitude to the CE, ethics in interaction and transparency. Figure 3 illustrates the structure of the analysed data codes. The first-order concepts were categorised based on the respondents' descriptions of their roles in the CEE, motivations to engage in the CE, targets from CE engagement, ethical specifics of the interactions and factors external to the organisation that influenced the CE transition. The concepts were grouped into second-order themes corresponding to the objectives of the study. Finally, the selected themes were aggregated into dimensions reflecting the actors' understanding of their ethical identities, roles and positions in relation to other networked actors, ethical value co-creation through interaction and the ethical atmosphere predominant in the textile CEE.

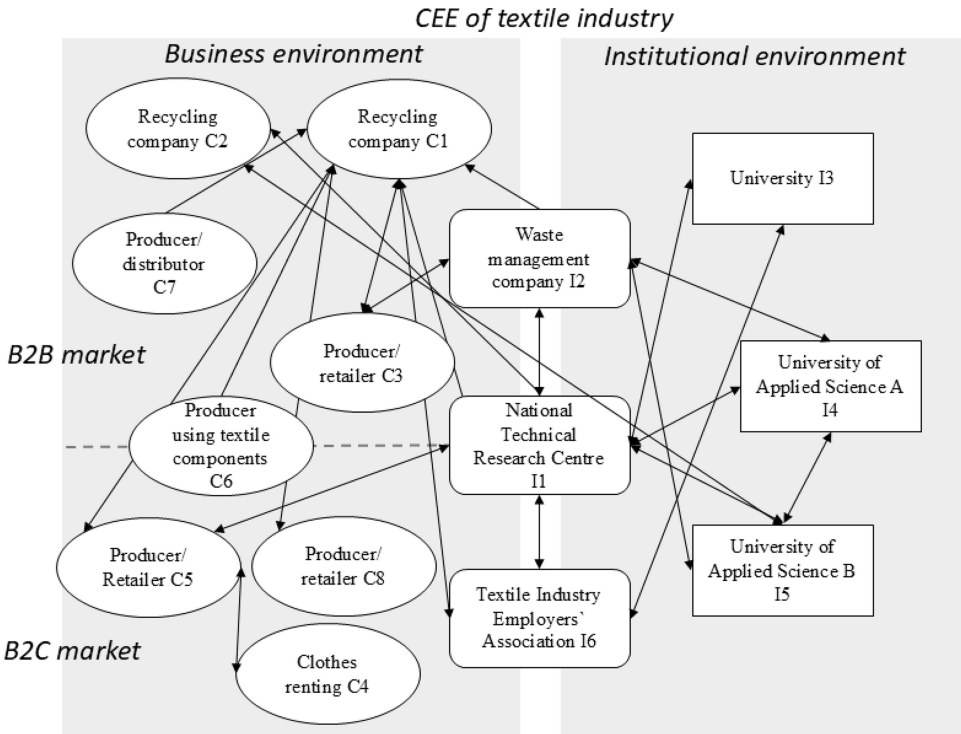
4. Findings

4.1 Ethics in a CEE: actors' ethical CEE identities, roles and positions

Currently, the textile industry CEE in Finland is dominated by small companies that are forerunners in technological advancement and CE business models, such as C1 and C2 in this study. Despite their size and still limited operations, they are building the foundation for the emerging CEE infrastructure. Medium-sized and large textile companies that have been in the market for decades are gradually changing their business activities to embrace circularity to preserve their ethical reputations and integrate environmentally viable business processes. As reflected by interviewee C8:

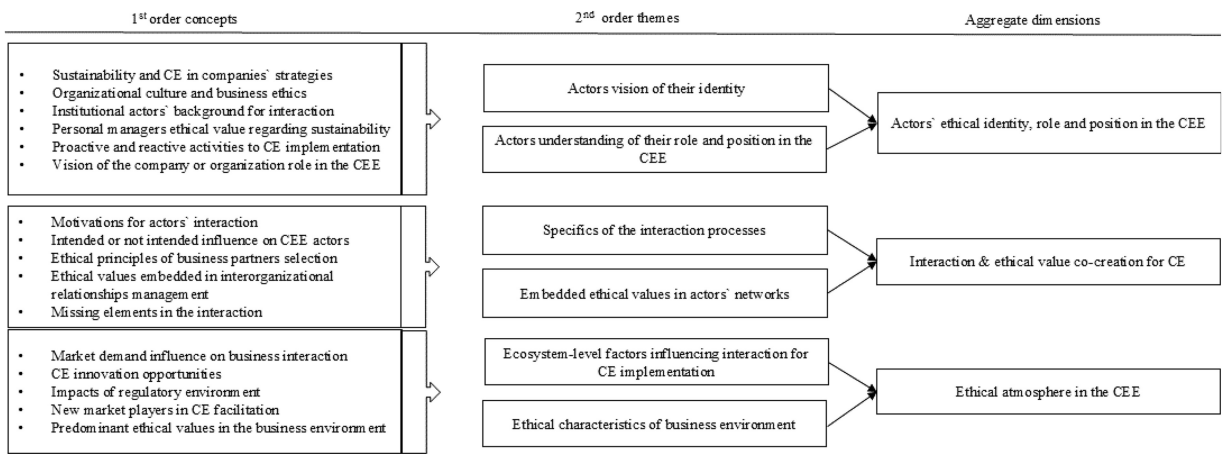
> [Our company] is committed to continuous innovation in technologies, materials, and business models through collaboration to push the industry forward. Our goal is to reduce the amount of waste we generate, and this work starts from the design table.

Figure 2 Business and institutional actors' interactions in the national CEE of the textile industry



Source: Authors own work

Figure 3 Structure of data codes



Source: Authors own work

Thus, approaches to sustainability and ethical branding become markers of a reliable business or institutional partner.

For some companies, the implementation of circularity is the next step in their strategy if they have a strong commitment to CSR and sustainability. Company C6, operating in B2B and B2C markets, emphasises the high environmental standards of its products and states that it is "very keen that all our business divisions try to be as environmentally friendly as possible because we have such a long history of producing ecological and sustainable products". Interviewee C8 refers to sustainability in the company as:

> [. . .] a part of our DNA. Sustainability considerations are part of our daily work for everyone, our design philosophy, and our operations have always been based on the sustainable approach.

Company C5 is a small fashion producer and retailer that grounds its business model in clothing production from

recycled fibres. The original business idea was grounded in environmental and ethical concerns and aimed to tackle textile overproduction. The company's management representative states that organisational culture is important for such business settings since employees' ethical values need to correspond to those of the companies. The small clothing rental company C4 adopts a similar logic and attempts to engage customers and influence their consumption habits towards embracing more ethical fashion. This company closely interacts with C5 and other fashion brands to promote clothing from recycled materials. Its manager stresses the importance of communication transparency for efficient business activities.

The institutional organisations participating in this research have already embedded ethicality within their projects, technologies, knowledge dissemination, etc. to create environmental and social value in the textile industry ecosystem. A project researcher from I3 notes that recycling textiles is strongly in line with the university's own strategy to support sustainability. CE studies have been incorporated into some university curricula in Finland, as the country takes a proactive approach to technological advancement and ecosystem organisation aimed at sustainable textile circulation (Fontell and Heikkilä, 2017; Kamppuri *et al.*, 2021). Universities and research groups are also attempting to promote recycled textile products as a new "normal" instead of making them solely sustainable choices. Regarding business and technological innovations, the I1 research centre was established as a governmental non-profit organisation aiming to facilitate textile circularity and to network business and institutional organisations to foster CE implementation. As explained by its representative: "Our role is to coordinate and help companies to form an ecosystem" (I1). Projects initiated by the centre have aided many businesses and institutions in finding appropriate business partners, developing technologies, sharing information and creating social ties for future business development. The organisation also plays a higher ethical role in changing the societal mindset from unnecessary consumption and a "throwaway" culture to valuing quality and sustainability.

4.2 Interaction and value co-creation

C7, a large company, supports textile circularity through partnership. As one of its business activities, the company rents textiles to other business firms so product ownership can be preserved and valued maximised through reuse:

> When our hotel towels are not suitable any more for the hotel business, we make industrial wipers out of them so they can have a second life. We also produce shopping bags from used hotel linen with one external partner (C7).

This company networks with recycling companies, such as C1, in a strategic step to deepen circularity that opens up opportunities for "strong economic benefits as well as environmental benefits, avoiding overproduction and maximising the lifetime of a product" (C7). Thus, the company combines ethical responsibility with environmental viability and still aims to make a substantial profit. This company also emphasises strict criteria for business partner selection among which is shared ethical values.

Concern over environmental issues is also a part of leading an ethical business and a proactive step towards maintaining a good ethical reputation through partnerships, for instance, that between companies C8 and C1. The production activities of C5 depend on interaction with local recycling companies to obtain raw materials, in this case, recycled fibres. Company C7 emphasises its strategic plans "to be more carbon neutral" and "to recycle 100% of all our end-of-life textiles by 2025" as part of its ethical business conduct. As collaboration is vital to ensure these plans are implemented, the company is participating in national projects to find partners with technologies and knowledge capabilities. In this case, institutions I1 and I6 play a mediating role in the development of a national CEE and in establishing relationships among the actors. The interviewee from C1 indicated the importance of non-profit organisations' involvement with businesses:

> The owners and investors of [C1] all met in the [I1 national project] ecosystem. So, they met there, and they got all the information on what is going on at the European level regarding textile recycling.

The facilitation of textile circularity at a country level requires the holistic reorganisation of waste management and the involvement not only of businesses, municipalities and research institutions but of consumers as well. Institutional actors show their proactivity in organising workshops, seminars, research hubs and projects for business organisations to support the commercialisation of innovations. They proactively integrate CE principles into educational programs to disseminate knowledge about their environmental impact and business opportunities.

The importance of personal relationships in facilitating CE business was confirmed by the researchers and business executives interviewed for this study. Informal interaction has also supported knowledge-sharing and networking. All the interviewees emphasised that cooperation, openness and trust were among the key enablers of ecosystem development due to a need for systemic changes and the uncertainty of the emerging textile circulation market. The interviewee from I1 specifically indicated that trust is important not only for building an ecosystem but also for generating and distributing value in a new way to build a new value network in the CE. Interestingly, as mentioned by institutional representatives, physical meetings or simply "doing things together" should be prioritised over virtual communication to build trust because these activities support social interaction. The product development specialist from I4 pointed out that social ties can also be developed by visiting different workshops, technology-development centres and production facilities and, in general, innovating and creating something new around the same table. These relationships can be extended to other organisations as managers change workplaces but preserve their personal contacts. A representative of research centre I1 also emphasised inclusive teamwork with other actors in the ecosystem and doing things together so actors can maintain their conviction that they have a place in the ecosystem and can co-create value with different actors.

Teamwork and coopetition instead of competition were also emphasised by business actors. However, business interactions still pose challenges, especially regarding information-sharing. As mentioned by the relationships manager from C1: "When textile recycling started to be developed, the situation was that no actor wanted to talk to another person. They thought that the others would steal the great ideas." Lack of transparency

among business organisations was also mentioned by the product development specialist from I4; that is, transparency about the obtained results and challenges could be improved in the relationships within the CEE.

Pursuing common sustainability goals was also mentioned as an ethical background to business relationship development. The CE specialist from I2 highlighted that the main goals are to move towards sustainability, excellence and cooperation in the Finnish textile industry CEE. Among the ethical challenges, the interviewees again mentioned a need for more transparency and information openness from businesses.

4.3 Ethical atmosphere in the CEE of textile industry

The interviewees noted that public opinion is a weighty factor in addressing sustainability and ethical business conduct. Pressure also comes from NGOs, which occasionally spark debate on social media, and "from the [business] customers and then users [consumers] for the textile industry to be more sustainable" (C3). A CE specialist from I6 also mentioned psychological pressure due to climate change anxiety. An important driver for circularity remains governmental regulations and policies promoting sustainability and the CE in different industries. A manager from C7 explained their company's strategic response as follows:

> One of the reasons behind this strategic decision was the changing European legislation for waste management, meaning that all textiles in the European community must be recycled or collected separately so they will not be incinerated or landfill anymore.

Since some policies have been issued as recommendations, they may eventually become legislation; hence, textile companies have already taken reactive steps towards implementing the CE. As the project researcher from I3 pointed out in the interview, textile companies are now being forced to think about what will happen to their textile waste. Economic profitability also remains a strong motivation for the CE in terms not only of selling recycled fibre products but also obtaining access to raw materials. Currently, companies are exploring new business opportunities and knowledge as a reaction to the availability of technologies and material flows. Institutional organisations, in their turn, are supporting circularity in reaction to more global challenges, such as global warming, pollution and textile overproduction.

Ethical concerns also arise from questions of competition and power in emerging textile CEEs. For instance, there may be some concerns about intermediary actors who collect end-of-life textiles and to whom they sell those textiles, given this is a small market with a limited number of actors. Collection of end-of-life textiles is often outside the companies' main specialisations, as pointed out by C6: "We do not have any means of actually collecting back our [used] products from our customers and sending them to recycling." In addition, a power-related issue is how influence can be balanced among raw material collectors, recycling facilities and companies producing new products from recycled textiles. The respondent from C1 specifically emphasised the challenge that potential business customers for recycled fibre are "still willing to buy those virgin materials for the same price [. . .]", which makes this business hard to change.

Creating a CEE to ensure a more circular textile industry in Finland is generally represented as favourable for novel businesses grounded on CE solutions. The CE specialist from I6 named Finland as a technological forerunner for textile recycling, creating conditions for the further development of companies with strong technological capabilities. However, Finnish businesses and research institutions are not only developing their own technologies but also purchasing ready-made solutions from other countries (e.g. recycling company C1), thus facilitating international collaboration in the domain of recycling. Currently, textile circulation in Finland generally occurs at the local level. As noted by the manager of C3, the industry is becoming "smaller but wiser". Local recycling is already a valid solution for textiles to be recycled to satisfy one country's needs and also decreases its reliance on international supply chains. Nevertheless, "the textile industry in Finland is now living in a new era" (C7) that is causing further CE markets, technologies and collaborations to emerge.

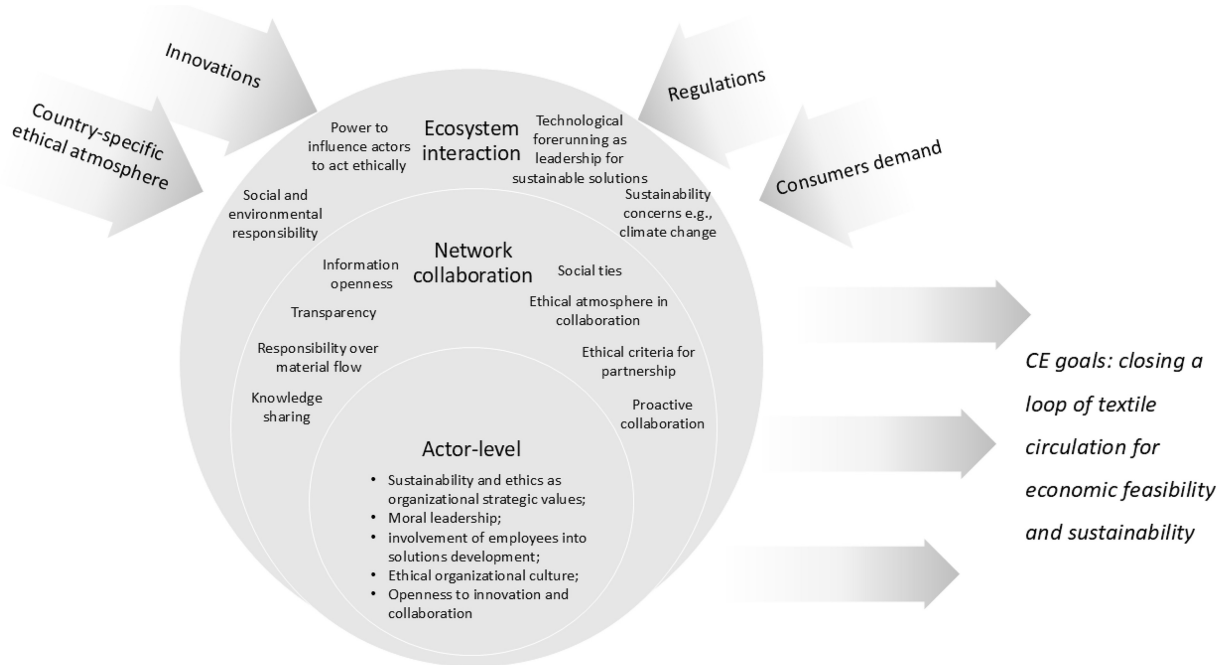
Consumer involvement is also a vital part of the CEE's ethical atmosphere, as mentioned by the respondent from C5, as consumers may influence the demand for sustainable solutions and ethical consumption (Desore and Narula, 2018; Gardetti, 2017). According to the companies engaged in the production and resale of fashion clothing in this study, consumers need to feel a part of the solution – both as consumers of CE solutions and as producers of raw materials. In addition, using second-hand clothing becomes a "source of pride" (C4) and can be viewed as a driver for circularity in B2C markets. Nevertheless, the recycling of consumer textiles remains limited, as there is a lack of actors facilitating efficient textile circulation infrastructure, and technological difficulties remain in the recycling of complex fibre composition. I5 is attempting to solve the latter challenge via research projects on textile composition recognition innovations.

5. Discussion

This study conceptualises ethical value co-creation in the CEE of textile industry and how it advances economic value creation in the ecosystem and solves sustainability challenges through diverse innovations. The interaction of business and institutional actors for ethical value co-creation is viewed from the level of the actors as well as from network collaboration and ecosystem interaction perspectives. This structural exploration of actors' ethical embeddedness allows us to capture how ethical value is unfolded within interactions and contributes to CEE development. The main findings of this study are summarised in Figure 4. The figure represents ethical values, sustainability concerns and specifics of interaction, whereas regulations, consumer demand for sustainable solutions, innovations and ethicality in a country context are depicted as external factors influencing the ecosystem.

According to the findings, the Finnish textile industry CEE shares characteristics with a circular business ecosystem aiming to facilitate business relationships (Aarikka-Stenroos *et al.*, 2021), a circular industrial ecosystem focused on closing a loop of material flow (Phillips and Ritala, 2019; Korhonen, 2001) and a circular innovation ecosystem due to the development of new circular business models and innovations of business activities (e.g. Oskam *et al.*, 2021). The meaning of a textile industry CEE is generally manifested as resource recovery, which can make resource access economically feasible when

Figure 4 Ethical value co-creation for a CE in the textile industry



Source: Authors own work

implemented within a country. According to the circularity strategy categories developed by Potting *et al.* (2017), textile companies, whatever their size, engage in different levels of circularity by aiming at the useful application of materials through recycling, recovery and reduction or the optimisation of product manufacturing whereas companies providing supportive CE services are more focused on extending the lifespan of products through reuse, repair and resale. While the optimisation of materials application requires more technological advancement, textile reuse or resale requires a shift away from traditional business models towards novel managerial approaches to organising.

Textile circulation responds to environmental and social concerns about overproduction and unsustainable consumption (Fontell and Heikkilä, 2017; Niinimäki *et al.*, 2020). However, the results indicate that the circularity of textiles remains a priority for the industrial actors so they can close a textile material flow in B2B markets. Companies still find it hard to implement the CE in business processes without the support of non-market actors, such as governmental institutions, NGOs, or consumers, whose interaction is at the core of this study (Uusikartano *et al.*, 2020; Aarikka-Stenroos *et al.*, 2021). This interaction has a strategic purpose, namely, to develop a value co-creation system that aims to innovate and respond to market demand (Ander, 2017; Möller *et al.*, 2020). As the circularity of textiles is a novel business, particularly in countries with small textile industries, such as Finland, the development of social ties among actors is vital (Pérez and Cambra-Fierro, 2015; Oskam *et al.*, 2018), as there is a lack of established business interaction within the ecosystem. Such interpersonal interaction conventionally involves ethical considerations as well as the individual ethics of the managerial actors (McClaren and Vocino, 2017), whereas actors' ethical embeddedness reflects their attitude to ethical and economic value co-creation in the ecosystem (see Lindfelt and Törnroos, 2006).

In this study, ethics manifested in the motivation of business actors to implement the CE and hence to build a bridge between business and society through ethical business behaviour (e.g. Islam and Greenwood, 2021). According to the findings, companies' sustainability strategies and ethical considerations are often closely interrelated, showing that companies play proactive roles in sustainability. These strategies may influence the selection of business partners who are committed to ethical business conduct and can enable the transition to a CE. Basing their interaction on ethical concerns can also help actors to maintain sustainability branding. Organisational ethical culture is also important for these processes, as employees need to share an understanding of environmental and social goals. The findings also emphasise the importance of consumers' involvement in the development of CE solutions, as this makes consumers feel they are contributing to a sustainable future, reflecting the emotional involvement in a noble cause or pride that is typical of emotional ethical networks (Melé, 2009). Managerial motivation to lead a business ethically may also be rooted in the psychological pressure from businesses and society to produce environment-friendly products, and the textile industry has been strongly criticised for the lack of such products (Dziubaniuk *et al.*, 2024; Jia *et al.*, 2020; Niinimäki, 2015; Rovanto and Finne, 2022). Companies also make the transition to a CE because policies at the local and EU levels are

becoming more stringent. The EU Strategy for Sustainable and Circular Textiles can be considered among the policies that directly support the textile industry's transition towards circularity in the EU (European Commission, 2022). To overcome regulatory and market uncertainty, business and institutional actors collaborate through research projects to develop CE innovations and new business models.

Business ethics plays an important role in value co-creation and managing actors' interactions (Brennan, 2021). This study shows that teamwork and collaboration based on ethical principles are important for interactions aiming for new business process development. Trust and the pursuit of common goals help engage business and institutional actors in CE innovation development. An ethical atmosphere characterised by trust and a common vision of sustainable development also creates favourable conditions for actors' interactions, and the values of trustworthiness, fairness and sticking to one's promises do indeed characterise Finnish business ethics (Kujala, 2004; Grennes, 2011). This study also indicates the openness of various actors to collaboration and networking that is predominant in the Finnish business environment, which favours networking and the pursuit of common interests over hard competition (Dziubaniuk and Ivanova-Gongne, 2021). Complete transparency regarding CE business ideas had not yet been achieved in the Finnish textile CEE due to companies' pursuit of the economic potential of circularity. However, business actors should be able to share information among networked parties, trusting that others will not only exploit the information but that the knowledge will produce value for all actors in the ecosystem.

Large companies often have more power in business relationships (Pedersen *et al.*, 2018), which helps them develop better sustainable solutions but may also cause abuse of power. However, small businesses, such as recycling companies, in the circular ecosystem of the textile industry may gain stronger positions due to innovations and the scarcity of such services on the market. An actor's power depends on their capabilities and business and technological expertise, which may shape their position in the network (Abrahamsen *et al.*, 2012; Möller *et al.*, 2020). Thus, whatever a company's size, actors may use their positions to develop and influence emerging norms and regulations, set standards on markets and promote ethical consumption. At the current stage of development of the textile industry CEE, textile companies whatever their size rely strongly on interaction with institutional organisations to access knowledge and innovations. This illustrates that a holistic approach is needed to involve a variety of actors to create efficient circular value and supply chains and consequently industrial ecosystems (e.g. Parida *et al.*, 2019; Ranta *et al.*, 2020). Interaction with institutional organisations supporting CEE development may make it easier to share information, knowledge and insights and to find business partners following ethical principles. This CEE organisation resembles ethically managed virtuous networks (Melé, 2009) in which actors proactively act to benefit each other to achieve common goals, such as sustainability.

6. Conclusions and implications

This study applied the IMP perspective to actors' interactions and conceptualised how business ethics are involved in the value co-creation process to ensure the economic and sustainable feasibility of the CEE of the textile industry nationally. The research results indicate that an efficient CEE should be grounded on the ethical premises of trust, a spirit of teamwork, the pursuit of common interests and a shared understanding of sustainability goals. The involvement of various actors in sustainable solutions development addressing CE goals is important to fill gaps in knowledge and innovations. Thus, collaboration among business and institutional actors can also help to overcome textile markets' uncertainty regarding future regulatory changes and changes in consumers' and business customers' demand for sustainability.

6.1 Conceptual and managerial implications

As regards conceptual implications, this research responds to a call for studies on value co-creation for sustainability goals (Almeida *et al.*, 2021). Specifically, this study adds to the industrial marketing and management literature by conceptualising value co-creation through actors' interactions at the actor, network and ecosystem levels (Lacoste, 2016; La Rocca *et al.*, 2017; Möller *et al.*, 2020; Parida *et al.*, 2019). This research adds to the literature on value creation in B2B interaction (Storbacka, 2019) by specifically exploring ethics in the business relationship management domain. It also extends our limited knowledge of how business ethics are embedded in business relationships and network management within IMP research (Halinen and Jokela, 2016; Dziubaniuk and Ivanova-Gongne, 2021). This study unfolds the significance of business ethics for the CE transition, which is little discussed in the business literature despite the obvious connection between ethics and sustainable development (Dziubaniuk *et al.*, 2024; Murray *et al.*, 2017; Rovanto and Finne, 2022; Perna *et al.*, 2022; Velenturf and Purnell, 2021). The findings of this study extend the conceptualisation of CEEs (Parida *et al.*, 2019; Aarikka-Stenroos *et al.*, 2021; Trevisan *et al.*, 2022; Kanda *et al.*, 2021; Harala *et al.*, 2023) explored in the context of the textile industry and indicate ethical principles that may be involved in ecosystem actors' interactions. This contribution adds to our understanding of CEE orchestration that aims to achieve environmental sustainability as well as the utilitarian exploitation of innovations and the circular principles of business activities to obtain economic benefit.

As regards managerial contributions, this study has implications for companies and policymakers. The findings indicate that companies willing to engage in the CE are not alone in value co-creation but can find support through collaboration with research institutions and other business entities. Institutional organisations set targets to promote the CE to the public and can help businesses develop and commercialise innovations. CE principles help business organisations benefit from a wider range of opportunities in the long term, such as obtaining economic value from new business models, an enhanced reputation and ethical or sustainable branding development. The involvement of consumers in sustainable solution development may have two-sided benefits by influencing ethical consumption choices in society and bringing novel CE ideas to businesses. Regulatory policies are already contributing to the strategic CE orientation of business actors, but they could also be directed at promoting cross-sector collaboration and making systemic changes to

achieve the CE. Moreover, despite policymakers' intentions to align regulations to support sustainable development across the EU, the specific circumstances of each country must be considered when planning regulations to avoid placing an unbearable financial burden on companies. Incentives and support for actors' collaboration may have more favourable effects on the industrial CE transition.

6.2 Limitation and future research avenues

The study has several limitations that could be addressed in future research. First, it explores a textile CEE at the national level, whereas comparative cases adopting an international perspective on actors' interactions can extend our knowledge of CE processes across countries. Second, the study delimits the focal ecosystem in the CE transition of the textile industry. However, CE research would benefit from more cross-sector research about, for example, the application of recycled or re-used textiles and fibres in other industries to examine how CEEs can cross industries and are not limited to a single industry. Third, the Finnish CEE for textile circulation investigated in this study has a limited number of actors, although the national-level ecosystem includes a greater variety of actors, who were omitted from this study due to limited access to the empirical data and emerging stage of textile circularity in the country. An exploration of a wider variety of actors can contribute to a more accurate illustration of actors' ecosystem interactions and value co-creation. In addition, business ethics were regarded in this research as business conduct at the organisational level, and the individual perspectives of business executives are only briefly mentioned. Individual ethical value exploration may unfold an understanding of motivation and attitudes as a background to a CE (Rovanto and Finne, 2022) especially in relation to small companies and entrepreneurs. Fourth, this research is conceptually focused on the limited studies of business ethics that have applied the IMP approach to B2B interaction and business networks (Dziubaniuk and Ivanova-Gongne, 2021; Halinen and Jokela, 2016; Lindfelt and Törnroos, 2006) and industrial ecosystems (Korhonen, 2001), and more studies on ethical values could be conducted in different kinds of circular ecosystems (Parida *et al.*, 2019; Aarikka-Stenroos *et al.*, 2021; Trevisan *et al.*, 2022; Kanda *et al.*, 2021; Harala *et al.*, 2023). Fifth, this study concerns general sustainability goals that are mostly related to the environmental sustainability of textile circulation. However, more research is still needed to address business ethics in CE implementation management in connection to social sustainability (Murray *et al.*, 2017). Finally, this study only partly discusses a consumer market of textile products, whereas a critical perspective on CE practices such as the reuse and resale of used textile items should be promoted in the marketing and management fields. Despite targeting sustainability goals, these business activities may have rebound effects, as the demand for and consumption of rented or recycled textile products may increase which, in turn, may increase unsustainable consumption.

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