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Article — Published Version

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Journal of Business Logistics

Provided in Cooperation with:

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Suggested Citation: Schilling, Lara; Pournader, Mehrdokht; Seuring, Stefan (2025) : Rethinking Blockchain and Power Dynamics in Supply Chains: A Critical Discourse Analysis, Journal of Business Logistics, ISSN 2158-1592, Wiley, Hoboken, NJ, Vol. 47, Iss. 1, <https://doi.org/10.1111/jbl.70047>

This Version is available at:

<https://hdl.handle.net/10419/335593>

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ORIGINAL ARTICLE OPEN ACCESS

Rethinking Blockchain and Power Dynamics in Supply Chains: A Critical Discourse Analysis

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Received: 5 November 2024 | **Revised:** 16 September 2025 | **Accepted:** 20 October 2025

Keywords: blockchain | buyer–supplier relationship | critical discourse analysis | performative power | posthumanism | power dynamics | supply chain

ABSTRACT

Despite a generally positive discourse on blockchain technology in academic literature, firms have struggled to implement it in their supply chains. In this article, we are deconstructing the typically positive perception of blockchain in the literature through a provocative style of theorizing and critical discourse analysis. Based on our analysis of the discourse, we challenge the traditional view of power, which posits that it is concentrated in dominant actors and exercised over others. Instead, we consider power from a performative perspective and show how blockchain functions as a non-human actor that connects supply chain participants, translates their interactions, and fosters the emergence of new socio-technical networks. This perspective gives managers practical tools to move beyond firm-centered control, address power imbalances, and create more equitable, value-generating supply chains.

1 | Introduction

For many years, the discourse in the supply chain literature has promised that blockchain technology will revolutionize global supply chains and solve societal grand challenges (Gaur and Gaiha 2020). Blockchain is argued to make supply chains more efficient (Schmidt and Wagner 2019), safe (Behnke and Janssen 2020), and sustainable (Saberli et al. 2019). These potentials are built upon the assumption that blockchains can increase trust and transparency in supply chains and facilitate information exchange (Durach et al. 2021; Gligor et al. 2022; Wang et al. 2025). Such a take on blockchain's advantages for supply chains has yielded thousands of journal articles, with an ever-increasing interest in the topic. The narrative framing blockchain as a solution to grand societal challenges has recently been extended to other Industry 4.0 technologies in supply chains, such as artificial intelligence, Internet of Things, and Big Data Analytics (Pessot et al. 2023).

Yet, the initial enthusiasm for blockchain in supply chains has slowly faded (Lustenberger and Spychiger 2025). High-profile failures of blockchain adoption, such as Maersk's Tradelens or Walmart's Foodtrust (Bousquette 2022) underscore significant hurdles in blockchain adoption. This becomes particularly prevalent when centralized oversight by leading firms creates adoption costs that discourage smaller suppliers, as seen in efforts to combat misleading Environmental, Social, and Governance (ESG) disclosures (Zhu et al. 2025). Blockchain adoption often poses a quandary to small suppliers with low transaction volumes due to high governance costs (Marques et al. 2024; Tuladhar et al. 2024). Many corporate-designed blockchains are centralized around powerful focal companies or a consortium of large organizations to maintain control, traditional governance mechanisms, and the privacy of sensitive information (Goldsby and Hanisch 2022; Lumineau et al. 2021), which constrains blockchain from being decentralized with little to no hierarchical control mechanisms. Centralized blockchain designs

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by powerful focal companies or consortia, such as those maintaining traditional governance, constrain decentralization and inclusivity, as blockchain's enabling and constraining effects on supply chain performance reveal trade-offs in power distribution (Hald and Kinra 2019). Given these challenges, more critical work has recently been published, challenging blockchain's trust-building mechanisms (Lustenberger and Spychiger 2025) and transparency for society (Marques et al. 2024).

Building on initial early critical studies, we argue that it is essential to examine the role of blockchain in academic discourse, connecting the long-standing and still persistent enthusiasm in scholarly work with the realities of ongoing challenges in real-world blockchain applications. To understand why these visions often fail to materialize, it is essential to examine the assumptions underlying them, as language and discourse shape what is perceived as "truth" in the field (Hardy 2022). Influenced by Foucault (2010), we are adopting critical discourse analysis (CDA) in this study, which has historically enabled researchers to uncover hidden assumptions (Hardy and Thomas 2015). This approach has been particularly useful in challenging traditional views of power that emphasize control by a central firm and support centralized governance structures. CDA has recently been introduced to the supply chain literature as an emerging methodology (Hardy, Bhakoo, and Maguire 2020). In CDA, it is assumed that language and text not only describe but actively shape what is perceived as external social reality (Gond et al. 2016; Hardy 2022) and can thereby reinforce dominant ideologies, that is, norms and values (Glover and Touboullic 2020; Touboullic et al. 2020). Through CDA, we aim to analyze how and why academic narratives overly rely on blockchain's advantages, manifesting as operational efficiency and transparency.

To understand this manifestation, the concept of power plays a crucial role. Traditional views of power in supply chain management emphasize control by a central firm. This is naturally in contrast with blockchain's decentralized peer-to-peer structure (Goldsby and Hanisch 2022; Naef et al. 2024), which gives rise to a centralization-decentralization paradox (Hanisch et al. 2025). On the one hand, the literature in supply chain management assumes that the focal company holds legitimate power to enforce centralized control, focusing on the technology and its structural functionalities rather than its relationship with supply chain actors (Bailey et al. 2022). Thus, a powerful blockchain founder making centralized decisions promotes fast implementation (Zhan et al. 2025). On the other hand, Zhan et al. (2025) acknowledged that this restricts inclusivity and collaboration, as in line with Goldsby and Hanisch (2022). This contradiction is also evident in markets with polarized consumer trust, where the value of blockchain varies by production or retail stage, complicating network-wide adoption (Liu et al. 2025). Therefore, it holds important implications for supply chain management in the Industry 4.0 era, which requires a transition from closed, firm-centric management to models based on openness, sharing, cooperation, and mutual benefit, ultimately enhancing the overall value of the ecosystem (Wang et al. 2025). Hence, we propose the research questions (RQs) below:

1. How is the concept of power constructed in academic discourse on blockchain technology within supply chain contexts?

2. How can blockchain in supply chains be reimagined through an alternative conceptualization of power?

The findings of our CDA are based on three levels of analysis: (1) the text dimension, (2) the discourse dimension, and (3) the social context dimension (Phillips et al. 2008). The three levels of analysis enable us to examine the textual production and narratives, the distribution, consumption, and interpretation of academic articles, as well as their relationship to external discourses from broader social contexts. Guided by these levels, we adopt three approaches to collect and analyze the data. These approaches are well-suited to identify authoritative narratives within academic texts. They reveal how dominant understandings of power are established by referencing authoritative texts that legitimize the claims made. Building on the insights of the three levels of analysis, we propose an alternative understanding of power relations in the supply chain to foster decentralization and network-wide blockchain adoption.

Through a theoretical provocation (Cornelissen et al. 2021), our study challenges the literature's dominant centralized framing of blockchain from the viewpoint of the focal companies. We show that the academic discourses surrounding blockchain's (potential) use in supply chains are built on a humanist understanding of power relationships (Reimann and Ketchen 2017). Humanism assumes power is centralized around the human subject, possessed by hegemonic actors, and exercised over others (Rosenau 1992). This understanding does not accommodate a decentralized approach to blockchain, which disrupts traditional hierarchies through new conceptualizations of governance problems (Lumineau et al. 2021). We question such centralized framing as it promotes hierarchies and does not encompass the interests of all supply chain actors (Marques et al. 2024), hindering the network-wide adoption of blockchain technology (Jovanovic et al. 2022). As an alternative, and building on Sternberg et al.'s (2021) inter-organizational setting of blockchain adoption, we propose a posthumanist view of *performative power* based on a *relational, heterogeneous, and performative* understanding of supply chains (Hald and Spring 2023; Morlacchi 2021). Posthumanism views power as a relational process where boundaries between human and non-human actors are increasingly blurred (Braidotti 2016). Thus, we emphasize the role of blockchains as a non-human actor in forming supply chain relations and encourage viewing power and performativity as co-emerging dynamics that foster convergences in socio-technical networks to leverage blockchain's advantages beyond the perspective of the focal firm.

We propose that CDA offers a novel, timely, and essential lens that enriches the supply chain and logistics literature by introducing alternative perspectives, such as posthumanist views, that prioritize relational and dynamic power structures. This will ultimately encourage more inclusive approaches to adopting decentralized blockchain systems (Treiblmaier 2018). This shift is crucial for addressing the tension between centralized and decentralized models and for promoting a deeper understanding of Industry 4.0 technologies within supply chains. Moreover, academic discourses must be critically examined, as texts that construct scientific knowledge shape broader societal debates (Maguire 2004), and legitimize organizational behavior (Busse et al. 2016). As academic texts are built upon prior

research and shape future research agendas, they reinforce certain ways of thinking.

For practitioners, our study primarily offers practical guidance aimed at tempering inflated expectations about blockchain adoption in supply chains. With blockchain adoption expected to expand, potentially covering over 30% of agricultural supply chains for traceability by 2025, managers require well-grounded advice to steer clear of such challenges, combat fraud, and promote sustainable practices (Future Market Insights 2025). By questioning narratives that prioritize control by dominant firms, this study supports the creation of collaborative governance models that encourage participation from diverse stakeholders, mitigate power imbalances, and drive value creation across the entire supply chain ecosystem (Liu et al. 2025).

In the following, we first present the contextualization of this study, which is informed by contrasting humanist and posthumanist notions of power and performativity. Based on the posthumanist view of power, we borrow Hald and Spring's (2023) and Morlacchi's (2021) notions of *relationality*, *heterogeneity*, and *performative power*. These notions set the stage for challenging the humanist-dominated discourse of blockchain in supply chain literature. After critically analyzing the academic literature on text, discourse, and social context as levels of analysis, we propose a posthumanist perspective on blockchain in supply chains, based on the identified shortcomings of the current humanist perspective.

2 | Contextualization

2.1 | Blockchains in Supply Chain Management

Blockchain offers features that can be applied in various areas of supply chains, including transaction recording, information sharing, and smart contract execution (Durach et al. 2021). Beyond this, blockchain is increasingly used for ESG reporting (Zhu et al. 2025), transparency around corporate social responsibility (CSR) commitments (Uvet et al. 2025), and digital product passports (Xia et al. 2025), which provide verifiable information about a product's origin, materials, and sustainability throughout its lifecycle. The core features of blockchain technology encompass the utilization of cryptography-based distributed ledgers, facilitating the storage and dissemination of immutable data contingent upon the consensus reached by a (de)centralized peer-to-peer network (Falcone et al. 2021). Blockchains can exhibit different types of permission and consensus characteristics. The rights of the users determine the degree of (de)centralization, which refers to the (non-)existence of central authorities controlling the network (Behnke and Janssen 2020). In many corporate-designed blockchains, a small group of consortia, often including one orchestrator (e.g., Walmart in the IBM Food Trust network), develops the blockchain ecosystem and allocates decision-making authority (Wang et al. 2019). The existence of central actors in consortium blockchains, such as those in contract farming supply chains, often reproduces power asymmetries, as focal platforms may push blockchain adoption but face increased financing costs that deter smaller cooperatives (Guo et al. 2025). However, when internally developed, orchestration across organizations becomes challenging, as centralized

leadership by the focal company contradicts the initial idea of blockchain as a decentralized consensus mechanism to ensure agreement and compliance, and to facilitate cooperation and coordination (Lumineau et al. 2021; Naef et al. 2024). It is essential to distinguish between various blockchain consensus mechanisms, including proof-of-work (PoW), proof-of-authority (PoA), Practical Byzantine Fault Tolerance (PBFT), Raft, and other non-PoW, non-energy-intensive protocols. While PoW systems, such as Bitcoin, are associated with high energy consumption, most supply chain applications rely on permissioned or consortium blockchains that use energy-efficient consensus mechanisms like PBFT or PoA (Lumineau et al. 2021; Naef et al. 2024). As such, critiques of PoW's environmental burden (Rao et al. 2021) are less applicable to the enterprise blockchain systems typically examined in SCM contexts.

The decentralizing functionalities of blockchains appear to be contrary to the centralized construction of supply chains prevalent in the literature (Hanisch et al. 2025). However, agency theory reveals that blockchain designs in food supply networks vary by opportunism risk, necessitating adjustments in inter-organizational governance (Danese and Romano 2025). The supply chain management literature focuses on the firm-based decisions of central, powerful actors that can influence their supply chain partners' decisions, neglecting the interconnect-edness of supply chains (Harland 2021). Prominent network actors may have the power to push suppliers to adopt the blockchain, but this comes at the cost of supplier buy-in and network diffusion (Naef et al. 2024), and reproduces the power asymmetries that the technology is intended to mitigate (Hanisch et al. 2025). For example, discrepancies in blockchain adoption levels, as observed in Chinese listed firms from 2007 to 2022, reduce financial performance unless synchronized across partners, highlighting the need for cooperative governance (Gu et al. 2025). To overcome this, the peer-to-peer structure necessitates that the blockchain be managed in inter-organizational settings (Sternberg et al. 2021). This also implies fairness considerations in the distribution of benefits and the contribution of supply chain actors, which drives the actors' willingness to use blockchain (Falcone et al. 2021). Governing such a system is challenging since established power structures are shifting, and hierarchies are losing their meaning (Roeck et al. 2020). Goldsby and Hanisch (2022) argued that blockchain applications require unique coordination and control mechanisms that match the characteristics of the network.

Given that blockchain's degree of (de)centralization affects the actors' rights to coordinate and control transactions (Goldsby and Hanisch 2022), it offers the potential to reduce or reproduce the power asymmetries between small suppliers and focal firms (Hanisch et al. 2025; Tuladhar et al. 2024). Such decentralization also potentially reduces power asymmetries by limiting opportunism and uncertainty, yet centralized governance often persists in practice (Schmidt and Wagner 2019). Consequently, it is vital to identify the underlying power assumptions of blockchain in supply chains. Since the way "we understand power is connected to how we see the social world, (...) how we think and act" (Morlacchi 2021, 1864), we will relate humanist and posthumanist notions to the understanding of power in the supply chain literature and apply these understandings to the blockchain discourse in the subsequent analysis.

2.2 | From Humanist to Posthumanist Perspectives on Power

We will utilize Simpson et al.'s (2021) categorization of humanist, anti-humanist, and posthumanist perspectives on power, which is grounded in earlier works by Braidotti (2016, 2019), to categorize different understandings of power in the supply chain literature. Supply chain literature discusses power from various perspectives (Reimann and Ketchen 2017). While some scholars view the resource superiority and related power of one firm over the other as an advantage of the powerful firm (Benton and Maloni 2005; Maloni and Benton 2000), others perceive these hierarchies as a threat to the supplier's agency and independence (Glover and Touboulis 2020), particularly for lower-tier suppliers (Choi et al. 2021). These understandings of power are informed by either a humanist or an antihumanist perspective. We propose an alternative posthumanist perspective on power, offering a relational and processual view on (non-)human networks, building on Hald and Spring (2023) as well as Morlacchi's (2021) concept of *performative power*. *Performative power* is a form of power that stems from the relation and integration of differences and can create new shared spaces. The concept of *performative power* offers a posthumanist perspective on blockchain in supply chains, providing an alternative framework to the existing dominant discourses in the literature, which are based on humanist notions of power.

According to the humanist perspective, power is a property that can be exerted over others. Power is attributed to the humanist ideal of "man," often employed to rationalize Western hegemony and cultural imperialism (Braidotti 2019; Rosenau 1992). Relating this understanding of power to the supply chain literature, the focal company is the central player in the supply chain, with power over its suppliers and the ability to control them and set the rules (Chae et al. 2017). This power manifests itself in forms of mediated power, such as *rewards* or *coercion*, or non-mediated power, such as the dependence on the powerful focal company as an *expert*, a *referent*, or a *legitimate* entity (French and Raven 1959; Maloni and Benton 2000). While power asymmetry can promote a supplier's adaptive and socially responsible behavior (Hoejmose et al. 2013; Nyaga et al. 2013), it hinders collaboration and commitment (Brito and Miguel 2017; Touboulis et al. 2014). Also, buyers with highly dependent suppliers perform worse (Schwieterman et al. 2020). Thus, Longoni et al. (2019) and Wilhelm and Villena (2021) contested the humanist perspective on power, arguing that excessive forms of power undermine suppliers' needs and perspectives, proposing relational capabilities to convey buyers' and suppliers' conflicting goals. This is particularly important in the management of extended supply chains, as power gaps and related exploitation are most evident (Choi et al. 2021). In line with this, Mollenkopf et al. (2024) argued that transformative supply chain research for well-being needs to rethink supply chains in terms of power sharing and empowerment.

Challenging the notion that a small elite possesses power, the anti-humanist concept of power, as outlined by Foucault (2019), advocates for deconstructing human identity and its associated hierarchies. Power is not a static human property, but rather it evolves unconsciously within social relationships (Simpson et al. 2021). This relational perspective aligns with

Foucault's (2010) concept that power flows through individuals rather than being imposed on them. Adopting this stance in the supply chain literature, Glover and Touboulis (2020) used a critical power lens to reveal the power-laden relationship between large multinational firms and farmers in food supply chains. They challenged the hypocrisy of large firms based on a hierarchical understanding of power, building on a relational rather than an operational perspective of supply chain management (Touboulis and Walker 2016).

While anti-humanism often critiques existing structures and human-centric narratives, posthumanists seek to construct new performative realities that integrate human and non-human elements. In the posthumanist understanding, human subjectivity is neither central, as in humanism, nor denied, as in anti-humanism (Braidotti 2016, 2019; Rose 2017). Posthumanism is based on a processual and relational ontology that stresses the importance of the dynamics of human and non-human relations (Braidotti 2016; Morlacchi 2021).

Consequently, posthumanists see power as a lived, multi-layered phenomenon that can be restrictive and empowering (Braidotti 2019). Power co-evolves with *performativity* in light of complex interactions between humans, technology, and the environment (Simpson et al. 2021). *Performativity* can be interpreted in several ways (Gond et al. 2016). We refer to it as a means to constitute reality through actors' practices, which aligns with Latour's (1996, 2005) actor-network theory. Morlacchi (2021, 1864) introduced the idea of *performative power* "that emerges from relating and integrating differences in organizational situations that are experienced as conflicts by people involved."

2.3 | A Posthumanist Perspective on Power in Supply Chains

In line with the concept of *performative power*, Hald and Spring (2023) proposed an alternative view of power in supply chain management, focusing on dynamics and processes. They built on Latour's (1996, 2005) seminal work on actor-network theory and related the core principles of *relationality*, *heterogeneity*, and *performativity* to the supply chain context. The following section introduces the core principles and explains their relationship to posthumanist framing and their relational process ontology. We will build on this in the analysis to develop our proposed posthumanist perspective of blockchain in supply chains based on Morlacchi (2021) and Hald and Spring (2023).

Relationality refers to the fundamental assumption that actors unfold meaning while interacting with each other (Latour 2005). Thus, their characteristics cannot be determined ex-ante as stable functionalities. Instead, characteristics, including the relational functionalities of non-human actors (Bailey et al. 2022), evolve based on the actor's relations to other actors (Ishfaq et al. 2022). This logic is closely related to Braidotti's (2016) post-human ontological relationality, which perceives the connection between actors rather than the actors themselves as the generative sources.

Building on the principle of *relationality*, the principle of *heterogeneity* assumes that agency is distributed among

heterogeneous actors. This implies that, on the one hand, no actor can act alone, and on the other hand, both human and non-human actors possess potential agency (Hald and Spring 2023). Agency describes the ability to act and impact broader social relationships or structures while attributing accountability for the consequences. Agency exists not simply, but is revealed when actions influence another actor or relationship (Latour 2005). While human and non-human actors possess potential agency, they take on different roles (Hald and Spring 2023). Non-human actors, such as blockchain technology, cannot be determinative. However, in line with posthumanist framings, technologies can influence other actors and mediate their connections (Rose 2017). Rather than seeing technologies as isolated objects, the focus is on the co-creation of technology and the various organizational processes in which it is involved (Bailey et al. 2022).

The principle of *performativity* assumes that relations among actors only become meaningful when performed in the form of (trans)actions (Hald and Spring 2023). Morlacchi (2021, 1866) classified this as a processual ontology, understanding actors as “beings and things that emerge from, or are constituted through, [transactions] as ongoing accomplishments and provisional effects.” Based on the assumption of *relational* and *heterogeneous performativity*, the translation process relates previously unrelated actors to each other and creates shared meanings among them (Callon 1984; Hald and Spring 2023). A successful translation process creates a shared space where agreement and consensus are established, and a sense of homogeneity emerges. However, if the translation fails, communication breaks down, and the participants drift into separate spaces without common ground (Callon 1984, 1990). The creation of convergences and homologies among diverse actors relates to the idea of *performative power* that aims to integrate and relate differences to overcome conflicts (Morlacchi 2021). The concept of *performative power* builds on the primacy of processes and relations (Morlacchi 2021). In line with posthumanist approaches, power is understood as a dynamic process of (non-)human relations.

2.4 | Linking Blockchain in Supply Chains to Power Perspectives and CDA

This research aims to encourage academics to adopt new research practices in pursuit of emancipation (Cornelissen et al. 2021, 2024). The previously introduced elements—blockchain, supply chains, and perspectives on power—converge in this provocative style of theorizing. Challenging current perspectives is essential, as technologies are often conceptualized as isolated objects with stable structural functionalities (Bailey et al. 2022), which can improve operational supply chain performance (Hald and Kinra 2019; Touboulie and Walker 2016). The literature regards decentralization as a structural function of blockchains, while their actual relational function and value may differ among the members and thus need special consideration. A relational functionality would emphasize how human and non-human actors interact with and through blockchain rather than merely acknowledging the existence of a decentralized relationship between actors (Bailey et al. 2022). As blockchain’s decentralized nature challenges

the centralized operational perspectives prevalent in existing supply chain management literature (Harland 2021), we see the risk that decentralization remains a structural functionality sustaining a centralized system without considering the dynamics of inter-organizational relations. Thus, we present various interpretations of power, ranging from hierarchical humanist to posthumanist relational and performative forms, within the organization and supply chain literature, to support our analysis of how academics view the relationship between blockchain and supply chain actors. With these interpretations, we follow Mollenkopf et al. (2024) in their call for transformative supply chain research that moves beyond theories rooted in economics toward a more holistic approach, focusing on societal issues.

The tradition of provocative theorizing implies that scholars are active members of society who challenge dominant discourses that systematically uphold existing structures (Cornelissen et al. 2021, 2024). Conversely, scholars’ active participation also means they contribute to developing discourses (Hardy 2001). Academic discourses are influential as they are designed to contribute to a body of scientific knowledge and influence discourses outside of science (Maguire 2004) and legitimate organizational behavior (Busse et al. 2016). Thus, pursuing a CDA of the academic discourse on blockchain in supply chain management enables challenging dominant concepts and provoking the reader. The assumptions and execution of this approach will be explained further in the subsequent section.

3 | Methodology

3.1 | Philosophical Assumptions

This section will explain how the ontological understanding of the nature of blockchain in supply chains and the epistemological assumptions are linked to our methodological choice (Figure 1). We adopt an anti-realist ontology and social constructionist epistemology, assuming a constructive role of language in the production of inter-organizational phenomena (Phillips and Oswick 2012). In this context, construction implies that discourses create what we perceive as reality rather than merely mirroring or depicting reality (Hardy, Bhakoo, and Maguire 2020). This perspective underscores the influential nature of discourses in shaping perceptions and interpretations, whereby the perceived reality emerges as a product of the discourse (Hardy and Thomas 2015; Phillips and Oswick 2012; Touboulie et al. 2020). Discourses induce a hegemony of specific ways of thinking and silence marginalized voices (Hardy 2022).

We follow Fairclough’s (2003) critical approach to discourse analysis, combining textual aspects with the social context, as done by Clarke et al. (2024) and many more. This approach helps analyze how normalized economic and social structures legitimize prevailing themes and power relations (Gramsci 1971). Foucault (2003) considers three levels of analysis: (1) the text dimension, (2) the discourse dimension, and (3) the social context dimension (Fairclough 2003; Phillips et al. 2008). These levels determine how texts and discursive practices are shaped by the broader social context, considering their intertextuality and interdiscursivity (Phillips et al. 2008). While intertextuality

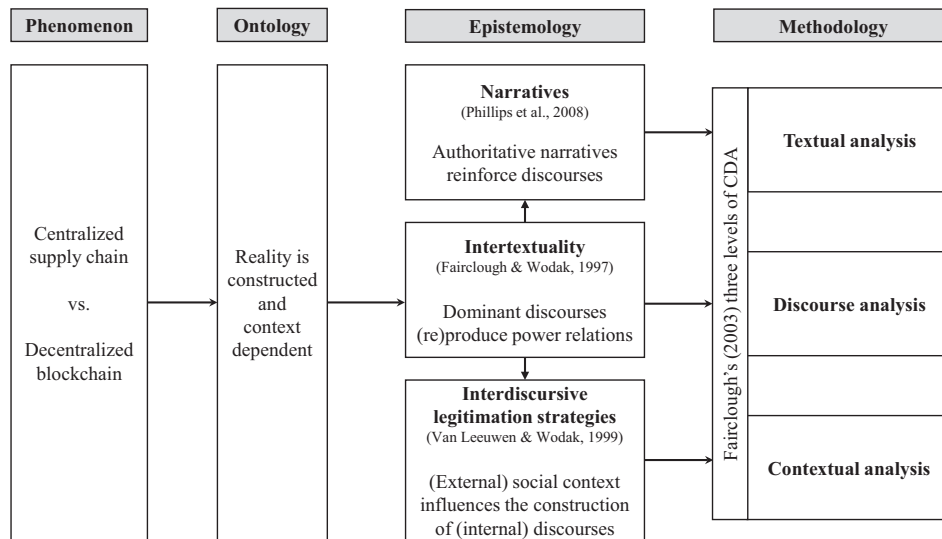


FIGURE 1 | Research framework linking the ontological assumptions to our methodological choices.

describes how texts refer to each other, the relation between diverse discourses is called interdiscursivity (Fairclough 2003).

Despite a common social constructivist understanding, the three levels of CDA are based on different epistemological distinctions that describe what knowledge is and inform how knowledge can be acquired (Phillips and Oswick 2012; Phillips et al. 2008). On the discourse level, it is assumed that discourse encompasses interconnected texts that systematically construct and shape the object they refer to, which is described by Fairclough and Wodak (1997) as intertextuality. Texts drawing on each other convergently reproduce power relations and create dominant ways of thinking (Hardy 2022). We analyze the intertextual construction of meanings and their effects through a discourse analysis to identify dominant discourses. At the textual level, dominant discourses are constructed on authoritative narratives that silence alternative perspectives (Phillips et al. 2008). Narratives refer to the way ideas are presented in a text, including word choice, sequence, and tone. Thus, textual analysis can identify authoritative narratives to understand how linguistic sentiments and semantics build the foundation of dominant discourses.

Discourses shape and can be shaped by the broader social context referred to as interdiscursivity (Phillips et al. 2008). Authorities and organizations use social contexts to legitimize their decisions through language (Barros 2014; Vaara and Tienar 2008). We apply the logic of discursive legitimation to academic research to explain how language constructs legitimacy to reach persistence over time (Amis et al. 2020). van Leeuwen and Wodak (1999) proposed four types of discursive strategies of legitimation, which Barros (2014) and Vaara and Tienar (2008) took up in an organizational research context. Following their argumentation, discourses are legitimized by reference to the broader social context, such as the authority of tradition, custom, law, and persons (*authorization*), institutionalized value claims (*rationalization*), specific value systems (*moralization*), and narratives (*mythopoesis*) (Vaara and Tienar 2008). The legitimation process stimulates gradual changes so that the fundamental power relations in society favor the dominant group (Gramsci 1971).

The ontological and epistemological assumptions underlying these three levels of analysis (Figure 1) distinguish our CDA from integrative, problematizing, or critical literature reviews. Like CDA, the aforementioned types of literature reviews challenge existing assumptions through theoretical provocation. However, they do not assume a constructivist effect of the language used in academic discourses. In line with Hardy, Bhakoo, and Maguire (2020), Maguire and Hardy's (2009), and Maguire's (2004) investigations of academic discourses, we uncover how reality is constructed through the generation of texts and their dissemination and consumption (Hardy et al. 2001) rather than interpreting social reality as it exists. Thus, the ontological assumptions are crucial in positioning our study relative to other methods of analyzing academic texts (Hardy and Grant 2012).

3.2 | Research Approach

We selected academics as the discourse creators of interest for three main reasons. First, academics produce texts and engage in discursive practice to shape concepts, objects, and subject positions (Phillips et al. 2008). They aim to advance knowledge that contributes to the academic discourse and influences other commercial, public, and political discourses that consume and draw on academic discourses (Maguire 2004). Second, an exclusive network of academics, editors, reviewers, and journals generates, disseminates, and consumes published papers, the product of research, representing a power-laden context (Hardy et al. 2001). The ability of discourses to silence marginalized voices stresses the need to analyze them and their underlying legitimation strategies (McCarthy et al. 2018). Third, blockchain in supply chains has been attracting increasing attention in academic research. In contrast, the promised transformations have not yet been achieved in practice (Supply and Demand Chain Executive 2024).

Since discourse influences the process of theorization (Touboulie et al. 2020), this research aims to provide a theoretical provocation (Cornelissen et al. 2021). We do so by questioning existing

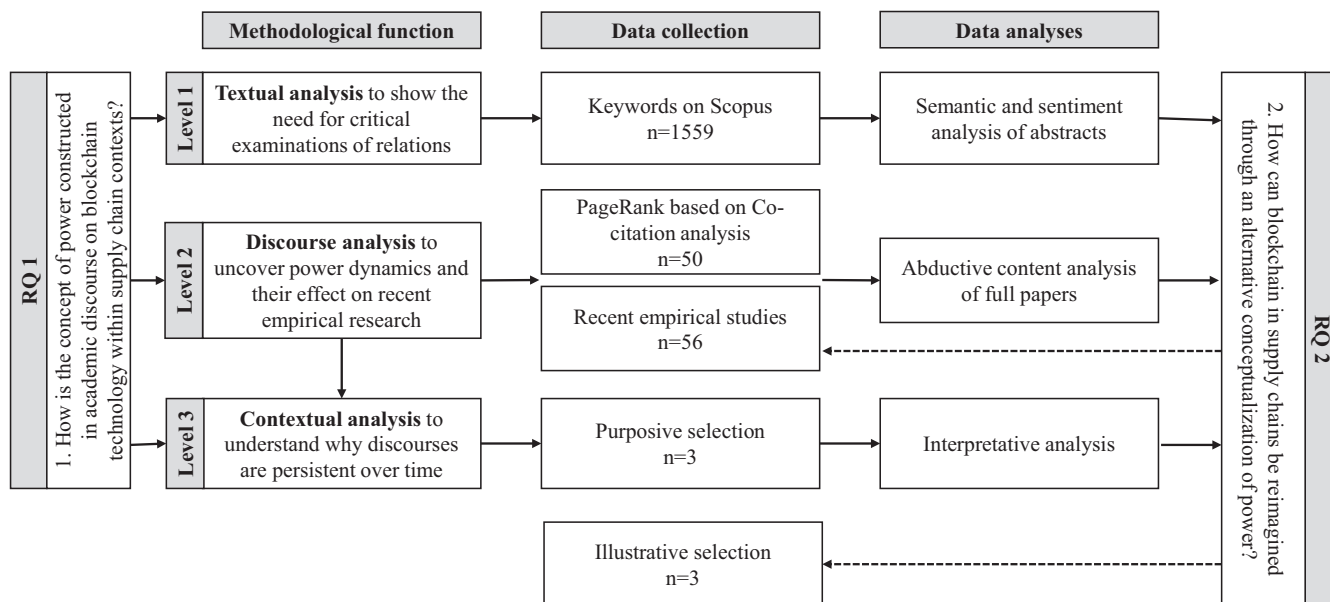


FIGURE 2 | The three levels of CDA, their operationalizations, and related RQs.

ways of theorizing the power relationships in the blockchain and supply chain discourse. Given the interconnection between academic and research subjects, examining how prevailing debates influence the theorizing process is vital. This also includes reflections on the role of academics, including ourselves, in shaping discourses that influence and are influenced by the broader social context (Hardy 2001).

Figure 2 builds upon the three epistemological and methodological levels presented in Figure 1, illustrating how the methodological functions of the textual, discourse, and contextual levels inform the methods employed to answer RQ 1. It should be noted that for addressing RQ1, the second level is the most central. However, the analysis would be incomplete without the textual and contextual levels. The epistemological assumptions suggest that the narratives within the text and the social context that supports the discourse must be investigated. Otherwise, the research will not meet Fairclough's (2003) combinatorial goal of comprehensively understanding the production of complex social phenomena (Phillips et al. 2008). As the methodology specifies how the understanding behind narratives, discourses, and contexts can be obtained, it directs how the RQ can be addressed. The textual level analyzes authoritative narratives produced to support a dominant discourse. At the discourse level, the discourse itself and its effects are explored by focusing on the underlying power assumptions in blockchain applications within supply chains. The subsequent contextual analysis explains the persistence of these discourses, drawing on discourse outside the scholarly blockchain and supply chain discourse. Based on textual, discursive, and contextual analysis, RQ 2 aims to explore a posthumanist vision of blockchain in supply chain management, serving as a theoretical reference point (Cornelissen et al. 2024). To answer RQ 2, we draw on posthumanist elements considered in recent empirical studies and gray literature around our illustrative cases. In the following section, we will describe the data collection and analysis.

TABLE 1 | Identification of academic texts.

Step	Description
Search string	Title, abstract, and keywords: "Blockchain*" AND "Supply chain*" <ul style="list-style-type: none"> - "Blockchain" based on Lim et al. (2021) - "Supply chain" based on Pournader et al. (2021) "Buyer-supplier" OR "supply network" did not add any articles
Inclusion criteria	Type: Articles Language: English Field: Decision sciences; business, management, and accounting; social sciences
# of articles (years)	1559 (2017–mid 2024)

3.3 | Data Collection and Analysis

Following Hardy and Grant's (2012) recommendation, the data collection was guided by the specific RQs and our underlying ontological and epistemological assumptions. Those assumptions led to three methodological approaches that required different data collection methods (Phillips et al. 2008). In the first stage, our CDA focused on the linguistic analysis of texts (Fairclough 2003) to analyze how academics use language to convey the adoption of blockchains. To do so, we identified relevant texts published by academics who are the social agents of interest in this study. Academic journal articles are essential in discourse development as they are written to advance knowledge and are consumed by other academics and actors who draw upon scientific knowledge (Maguire 2004). We selected relevant articles using a keyword search on Scopus, following the protocol outlined in Table 1. The search string was determined through an iterative keyword application process,

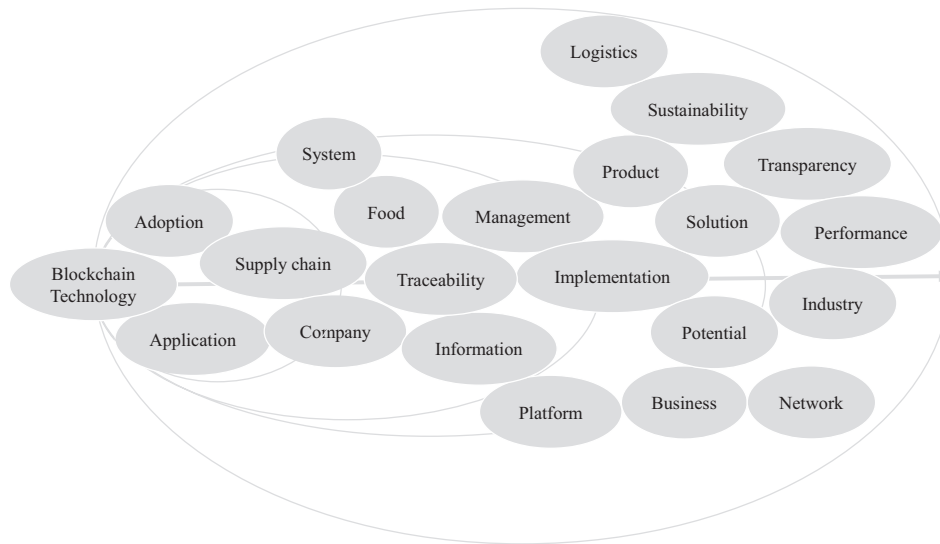


FIGURE 3 | Set of relationships between actors retrieved from Tropes.

which involved reviewing the relevance of the resulting articles (Hardy, Maguire, et al. 2020).

We identified 1559 articles and analyzed their abstracts using semantic word analysis with the data mining software Tropes US V844 (<https://www.tropes.fr/download.htm>), which enabled us to cluster words and identify their positioning (Rodrigues et al. 2016). We then analyzed the distance and orientation of word classes that were most frequently connected to the words “technology” or “blockchain” in the abstracts of the articles (Figure 3). Each oval in Figure 3 represents a word class closely linked to the central class “blockchain” or “technology.” The proximity between classes indicates the number of relations they share. In other words, if classes are situated close to each other, it signifies a higher level of shared relations. The arrangement of the classes adheres to a sequential order, with the triggering actors shown on the left-hand side and the effects on the right-hand side of the figure (Tropes 2014). For example, blockchain adoption in supply chains (Figure 3, left-hand) influences sustainability, transparency, and performance (Figure 3, right-hand).

To understand whether the influence of blockchain technology is framed as positive, negative, or neutral, we conducted a sentiment analysis (Figure 4). We extracted the Valence Aware Dictionary for sEntiment Reasoning (VADER) compound sentiment score using the data mining software Orange 3.33.0. (<https://orangedatamining.com/download/>). VADER is a lexicon and rule-based sentiment analysis tool for several domain contexts (Hutto and Gilbert 2014). It is constructed from a generalizable, valence-based, human-curated sentiment lexicon and requires no training data (Hutto and Gilbert 2014). VADER scoring results in four scores for each abstract (positive, negative, neutral, and compound), where the compound score is the normalized sum of the positive, negative, and neutral scores, ranging from -1 (most negative) to $+1$ (most positive). A compound score of less than -0.05 is classified as negative, and greater than 0.05 as positive (Hart et al. 2020). These quantitative linguistic test analyses helped us gain an initial understanding of the discourse’s main narratives and related tonalities. Figure 4

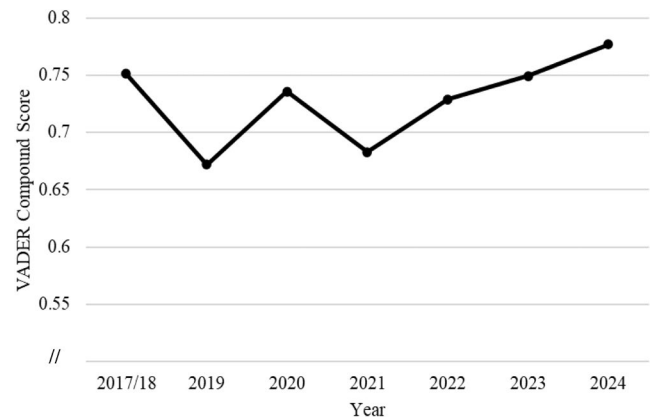


FIGURE 4 | VADER compound sentiment score.

shows that the score fluctuates but is always above 0.5, indicating a positive tonality. The positive tonality reflects the hype surrounding blockchain’s transformative potential, especially in recent years, as noted in reviews that identify opportunities, such as enhanced safety and sustainability, despite the immature practice (Cole et al. 2019). More details are provided in the results section.

In the second stage, our analysis moved beyond the textual level and shifted toward examining how texts derive meaning through their connections and references to other texts (Phillips and Oswick 2012). We conducted a co-citation analysis to identify widely distributed texts that are frequently cited together in the initial sample of 1559 articles, thereby laying the foundation for dominant discourses in the literature on blockchain in supply chains. The rationale for this co-citation-based selection approach is based on the understanding that “the more that texts draw on one another in well-established ways and the more they converge in their explanations of social reality, the more dominant the discourse” (Hardy 2022, 6).

We identified the co-citation network using the Biblioshiny application, which is based on the bibliometrix package version

4.1.2 of the R programming package (<https://www.bibliometrix.org/home/>). The R-based software package was chosen due to its flexibility, rapid upgradability, and ease of integration, making it highly beneficial for dynamic contexts (Aria and Cuccurullo 2017). The most influential texts from the co-citation network were determined based on their related PageRank (Fahimnia et al. 2015) and are provided in Appendix A (Table A1). PageRank measures popularity and prestige while considering the number of citations and the number of citations gained via highly cited articles (Fahimnia et al. 2015). We analyzed the 50 most popular and prestigious texts as they showed only minor fluctuations, signaling their relevance and endurance over time. The most popular and prestigious texts do not necessarily fulfill the criteria of Table 1, as the co-citation analysis considers the relationship between the references and not the articles themselves.

Each of the 50 academic texts represented a discursive unit (Hardy 2022). In line with Barros (2014), we analyzed the text using a qualitative content analysis based on an abductive approach, which involves moving back and forth between theory and data. We initially adopted an inductive approach by conducting a thematic analysis to identify the dominant discourses and their underlying notions of power (Simpson et al. 2021). Subsequently, we applied deductively established constructs of those notions of power based on the work of French and Raven (1959). The data was coded manually using the software MAXQDA 2022. Figure 5 shows the data structure of the qualitative content analysis, which facilitated the identification of the power relationships constructed in the discourse. Anchor quotes, capturing the comprehensiveness and vividness of the codes, are provided for the main categories in the main text and for the subcategories in Appendix A (Table A2).

In addition, in the second stage of analysis, we analyzed how recent empirical studies refer to the dominant discourses

identified based on the co-citation PageRanks, as dominant discourses determine how a topic can be meaningfully discussed, argued, and implemented (Hardy, Maguire, et al. 2020). Hardy (2022, 125) emphasized that it is crucial “to investigate the patterns of consumption in order to avoid the pitfall of glorifying agency.” To prevent this pitfall, we examined how recent empirical studies in top journals engage with dominant discourses. We limited the sample in Table 1 to studies published from 2020 onward in journals rated at least category three in the Academic Journal Guide 2021, resulting in 336 articles. We manually screened the abstracts of those articles to identify the 126 studies within the sample that included at least an empirical component. From these studies, we selected and analyzed 56 articles (Table A3). Their content either supported (38 articles), identified shortcomings of (six articles), or extended (seven articles) the humanist view of the efficiency, safety, or sustainability discourses (Figure 5, second row). Five articles provided new avenues toward a posthumanist perspective, which will inform the second RQ later in the analysis.

In the third stage, we used an interdiscursive analysis to identify how the dominant discourses are anchored in the broader social context and better understand their emergence and persistence (Amis et al. 2020). Thus, we first identified authoritative texts from broader social contexts, which are widely disseminated and frequently referenced (Hardy 2022). To reveal the authoritative texts, we followed a purposive approach. We focused on the references in the articles of the dominant discourses that were used to construct legitimacy for these discourses (Vaara and Tienar 2008; van Leeuwen and Wodak 1999). These references were primarily provided to support the research motivation and the societal relevance of the article. We tracked the references back to their origin, where the core idea of the discourse first arose. For example, the article by Saberi et al. (2019) is a key reference in the sustainability discourse in blockchain and supply chain management. Their ideas originated from the concept

Popular and prestigious texts* (# refer to Table A1)	Recent empirical texts (# refer to Table A3)	Dominant discourses (Inductively identified)	Humanist sources of power (French & Raven, 1959; Maloni and Benton, 2000)
#3, #10, #12, #15, #16, #22, #30, #39, #44, #46, #50	<ul style="list-style-type: none"> Support: #55, #57, #63, #74, #79, #86, #91, #92, #94, #96, #101 Shortcoming: #52, #56, #99 Extension: #83, #97 		Legitimate power
#9, #13, #17, #21, #24, #29, #31, #33, #38, #40, #45	<ul style="list-style-type: none"> Support: #51, #53, #64, #66, #67, #77, #93, #98, #105 Shortcoming: #62 Extension: #59, #82 		Coercive power
#1, #6, #7, #8, #25, #28, #41, #47, #49	<ul style="list-style-type: none"> Support: #54, #58, #69, #73, #75, #76, #78, #80, #81, #84, #87, #88, #89, #90, #95, #100, #104, #106 Shortcoming: #60, #68, #99 Extension: #65, #70, #71 	<p>SSCM = Sustainable supply chain management</p>	Expert power

FIGURE 5 | The data structure of the abductive analysis.

of “Limits to Growth”, as presented by Meadows et al. (1972), which represents an authoritative text widely distributed across various disciplines. The authoritative texts identified and their relation to each dominant discourse were subsequently analyzed in an interpretive manner, revealing how academics draw upon broader contexts to legitimize the power dynamics within dominant blockchain discourses.

Building on these three stages of analysis, we propose a posthumanist perspective of blockchain implementation in supply chains to create “a normative vision of the future that can act as a theoretical referent, as well as a basis for action and change” (Cornelissen et al. 2024, 9). To inform RQ 2, we build on those articles, incorporating elements of a posthumanist understanding of power; however, without explicitly referencing the dominant discourses. Also, we used one illustrative case for each aspect of the framework to exemplify the proposed vision.

3.4 | Research Quality

Various measures have been undertaken to ensure the rigor of this research. We followed Fairclough’s (2003) three levels of CDA, as done by Phillips et al. (2008), and documented the execution of these steps carefully (Figure 2). Each data collection and analysis choice was matched with the methodological function of the respective CDA level and objectified by structured proceedings. Thereby, we faced various challenges. Data collection challenges relate to defining the boundaries of the academic discourse and considering the broader context (Hardy 2001). We addressed this issue on both the textual and discourse levels by utilizing large databases and software programs that enable the identification of relevant articles and mapping of relationships between them through co-citation analysis. To identify relevant social contexts without straying too far from the discourse, we focused on references to other contexts within the dominant discourse and traced them back to their origins. By considering three different levels of analysis, we established a connection between the individual texts and broader social contexts. Building on this, we developed the proposed posthumanist framework, on the one hand, by incorporating articles that incorporate elements of a posthumanist understanding of power, and on the other hand, by using one illustrative case to exemplify the proposed vision. Drawing on multiple sources of evidence enriches the study’s analysis by providing more depth.

The biggest challenge in analyzing the data was finding the balance between the depth and breadth of the three levels of analysis (Phillips et al. 2008). We applied quantitative analysis approaches at the text level and qualitative analysis at the discursive level. Using software programs in the text analysis phase helped ensure the study was conducted stringently. In the qualitative content analysis, we employed an abductive approach, allowing the data to speak for itself and ensuring the plausibility of the findings by applying established theoretical constructs (Mayring 2010). In line with the different methods of analysis, the discursive level is at the center of our investigations to balance the three levels. The textual and social context levels complement the discourse level in answering RQ 1, in line with our epistemological assumptions, and in building the foundation for answering RQ 2.

4 | Findings

4.1 | The Text Dimension

The existing literature views blockchain in supply chains as quite favorable, as it enables transparent transactions and traceable product flows, promoting sustainability. These *authoritative narratives* were identified by semantic words and sentiment analyses. The semantic analysis (Figure 3) shows that blockchain technologies are predominantly adopted and applied for information management and traceability in companies, supply chains, and (food) systems (#11 in Table A1). As a result, the sustainability, transparency, and performance of products, logistics, and networks are affected (#4 in Table A1). These effects are closely connected to the words “potential” and “solution,” indicating a promoting impact of blockchain technologies in industry.

The sentiment analysis supports the positive view of blockchain in the supply chain literature. The VADER compound sentiment score of the articles’ abstracts is highly positive, between 0.65 and 0.8 (Figure 4). It can be observed that there was a slight slump in 2019 and 2021. The first slump indicates a shift in the discourse from hypothetical adoptions and influences to the first empirical studies on the introduction of blockchain in supply chains (#32 in Table A1). The second slump reflects the desire for large-scale adoptions and the associated concerns about data protection and data control (#103 in Table A3).

The semantic word and sentiment analyses revealed how academics discuss blockchain in the supply chain. However, the assumptions underlying this positive view remained hidden in the narratives. Therefore, we took a closer look at the assumptions on a discursive level. Given the decentralized nature of blockchain and the centralized construction of supply chains, we focus on the assumptions regarding the (de)centralization of power in supply chains. The following section will address the construction of power relationships using a content analysis.

4.2 | The Discourse Dimensions

Blockchain’s positive effect on supply chains is largely constructed from a centralized perspective, which strengthens the agency and power of large organizations and consumers. The academic discourse views blockchain as a tool that can enhance transparency, accountability, and trust while not challenging the centrality of human agency and power dynamics in supply chains. This argumentation reflects a humanist notion of power that sees power as property possessed by an elite (Braidotti 2016). More precisely, we identified three main discourses where this notion became evident. Blockchains (1) decrease intermediation and increase efficiency, (2) ensure safety, and (3) improve the sustainability performance of focal companies (Table 2). To understand how these discourses influence current perspectives, we analyze recent empirical research in the context of these three discourses (Figure 5).

1. The efficiency discourse revolves around blockchains being employed as substitute trusted intermediaries, thus reducing transaction costs and streamlining supply

TABLE 2 | A humanist notion of power in the three main discourses.

	(1) Efficiency	(2) Safety	(3) Sustainability
Key references	Schmidt and Wagner (2019) (Table A1, #10)	Behnke and Janssen (2020) (Table A1, #13)	Saberi et al. (2019) (Table A1, #1)
Anchor quotes of discourses	“The technology reduces costs for gathering and processing information, drafting and negotiating contracts, monitoring and enforcing agreements, and managing relationships.” (Table A1, #10, p. 7)	“The increasing demand of consumers to get more transparency about the origins of ingredients will lead to different solutions on short term, of which BCT can be one of it. (...) It might result to an improvement in transparency for consumers and hopefully to a reduction of food safety incidents.” (Table A1, #13, p. 9)	“Blockchain technology has the potential to contribute to social supply chain sustainability. (...) Blockchain technology also aids in environmental supply chain sustainability.” (Table A1, #1, p. 2123–2124)
Humanist sources of power French and Raven (1959); Maloni and Benton (2000)	<i>Legitimate power</i> : Focal firms prescribe suppliers to use blockchains to reduce their transaction costs.	<i>Coercive power</i> : Blockchain-based traceability allows focal firms to enforce regulations along the supply chain in case of non-compliance.	<i>Expert power</i> : Focal firms can use their sustainability measurements and indicators to inform their suppliers of necessary actions.
Anchor quotes of power sources	“Some participants in a logistics chain would see no benefit in transparency of the data, and perhaps would put more emphasis on protecting their own data.” (Table A1, #22, p. 9)	“Enforce contractual compliance without any need for personal relationships.” (Table A1, #39, p. 555)	“Comparison between the performance before and after implementing a training program is possible on the blockchain. (...) Companies can ensure that they trade with suppliers that are involved in supplier development programs.” (Table A1, #49, p. 6)

chain processes (#10 and #22 in Table A1). Blockchain-enabled information sharing allows focal companies to identify inefficiencies in their supply chain beyond their tier-1 suppliers. It enables firms to mitigate disruptions and strengthen supply chain resilience (#16 in Table A1). These effects arise mainly in firms with “greater resources, greater volumes of transactions, (...) more geographically dispersed operations, more supply chain partners and/or more information to manage” (#4 in Table A1, p. 476). As the benefits increase with rising user numbers (#35 in Table A1), the effects on small suppliers with scarce financial resources must be carefully examined, as implementation costs rise with complexities stemming from a lack of standardization and interoperability (#21 and #27 in Table A1). Despite this ambiguity, the efficiency discourse assumes that focal firms have the *legitimate power* (i.e., a natural right) to prescribe to their suppliers the use of blockchain technology to address the focal firms’ inefficiency problems. In line with this, the focal company has the power to influence its suppliers and distributors to “lead the [blockchain technology] initiative and help its trading partners embrace [blockchain technology]” (#16 in Table A1, p. 39). What “the embrace” looks like is hardly considered and seems to depend on the goodwill of the focal company.

Recent empirical research supports humanist perspectives on the focal firm’s *legitimate power* by showing that the impact of blockchain technology on transaction-related efficiencies depends on the implementing firm’s position in the supply chain (#63 in Table A3). Firms closer to the end customer showed more positive effects. Blockchain strengthens the bargaining power of downstream companies by monitoring, controlling, and reducing information asymmetries (#92 in Table A3). Supporting this imbalanced value appropriation, only blockchains exist that focus on product-oriented efficiencies, enhancing the performance of focal firms (#94 in Table A3).

Setups concentrating on ecosystem flows do not exist, as the costs outweigh the efficiency benefits (#94 in Table A3). On the benefit side, improving the financial conditions of farmers while reducing inefficiencies in the current downstream process is a challenge, as both objectives require different solutions (#56 in Table A3). On the cost side, a more detailed analysis of blockchain’s implementation and operational costs shows that blockchains can be inexpensive relative to transaction values (#99 in Table A3). However, in the case of multiple smaller suppliers or an increasing number of private blockchains, complexities increase, resulting in higher audit and governance costs (#83 in Table A3), which often outweigh the benefits for small enterprises (#52 in Table A3). Thus, the transaction costs lens must be expanded from the dyad to the network level to consider governance costs, as complex governance produces unforeseen transaction costs, promotes suppliers’ resistance, and fosters unfair purchasing practices by focal firms (#83 in Table A3). Building on these findings, we propose the principle of *relationality* from a post-human perspective that relates the information silos of various

actors to create resilience, as argued in the context of disaster relief supply chains (#97 in Table A3).

2. Another widely held opinion in academic literature is that blockchains ensure safety and security, primarily in food and pharmaceutical supply chains, by ensuring the traceability and verification of products and providing customer-related information (#17 in Table A1). This discourse is driven by the “increasing demand of consumers regarding safety, quality, and sustainability” (#13 in Table A1, p. 1). Blockchain technology, such as the jointly developed Food Trust network by IBM and Walmart, aims to “address consumers’ concern about the source of their food and beverages” (#17 in Table A1, p. 85). It is assumed to enable focal firms to combat safety issues and counterfeit products, as well as manage related supply risks (#17 in Table A1). Yet, the safety discourse overlooks how suppliers can address the grievances that lead to these problems. On the contrary, focal firms enforce contractual compliance without developing collaborative relationships (#19 in Table A1). This argumentation assumes that focal firms have *coercive power* (i.e., the ability to punish). At the same time, suppliers are exposed to negative consequences once a food or drug safety issue happens, as the focal company can immediately take measures “to prevent the risk of hazard spreading” (#31 in Table A1, p. 585).

The humanist view on safety aspects is supported by recent empirical research; however, some challenging and expanding perspectives also arise. Focal companies utilize their coercive power through control measures to mitigate the risk of upstream and downstream counterfeiting, thereby gaining a competitive advantage (#64 in Table A3), which in turn positively affects consumer purchases (#105 in Table A3). As the primary advantage appears on the consumer side (#62 in Table A3), “applications at scale are most likely for products where the end consumer is prepared to pay the premium” (#93 in Table A3, p. 601). It remains to be seen how these premiums will be distributed along the supply chain, as the initial investment is particularly challenging for financially constrained small food suppliers (#62 in Table A3). In addition to this track-and-trace approach, blockchains are used to feed predictive analytics systems, but mainly for downstream firms. In contrast, smaller upstream partners use less advanced technologies for reactive mitigation strategies (#53 in Table A3). However, illustrative cases show how blockchain, through the execution of smart contracts, can balance the bargaining power and reduce the counterparty risk on the farmer’s cooperative side (#59, #82 in Table A3). While this approach is to be empirically investigated, smart contracts as non-human actors in relational settings will inform the development of the principle of *heterogeneity* in the post-human approach.

3. Academics promote the idea that blockchains positively affect sustainability. The primary consideration is that blockchains increase the transparency of sustainability indicators along the supply chain (#1 and #6 in Table A1). The concept of transparency is created from

the viewpoint of the focal company (#22 in Table A1). It helps focal firms to have “the required information readily available to the decision makers for developing sustainable supply chain strategies” (#9 in Table A1, p. 180). Based on this information, blockchains facilitate sustainable supply chain management practices, including supplier selection and development, monitoring, and certification (#49 in Table A1). Focal firms use quantified sustainability indicators to inform their suppliers about how they need to improve their sustainability performance, for example, regarding greenhouse gas emissions or child labor issues (#1, #35 in Table A1). Thus, focal firms are assumed to have *expert power* over their suppliers (i.e., knowledge and skills required by suppliers). However, improving the focal firms’ supply chain-wide sustainability indicators does not necessarily consider the sustainability perspective of the suppliers and their surrounding communities.

In recent empirical research, while also challenged and advanced, the *expert power* of focal companies unfolds in two ways. First, blockchain applications improve manufacturing firms’ sustainable supply chain performance indicators (#73 and #75 in Table A3). Second, blockchain helps to collect (voluntary) sustainability measures (#78 in Table A3) to respond to stakeholder pressures (#58 in Table A3) and increase buyers’ purchase intention (#100 in Table A3). These lines of argument demonstrate that blockchain provides sustainability-related records to mitigate information uncertainty in the supply chain. In addition to the focal companies’ role as experts in developing sustainability programs using the collected data, they are increasingly seen as enforcers, using the information to ensure compliance with mandatory supply chain regulations (#60 in Table A3).

However, either way, “the system solution does not currently address the wider challenge of (...) human rights abuses” (#99 in Table A3, p. 767). To improve the social sustainability of suppliers and farmers, blockchain providers and experts emphasized the importance of adapting to local conditions and building local relationships (#60 in Table A3), as well as overcoming ecosystem challenges and collaborative barriers (#68 in Table A3). One blockchain use case where local-level actions are successfully implemented in ecosystems is the use of incentives for waste collectors in reverse supply chains (#65, #70, and #71 in Table A3). We will build on the visibility of individual collectors in global recycling networks to develop the principle of *performativity* from the post-humanist perspective.

The three discourses argue from a humanist understanding of supply chain relationships. Blockchains are supposed to create *efficient, safe, and sustainable* supply chains. We identified that the reasoning for these improvements assumes that focal firms have a centralized, powerful position. Their right to influence, ability to punish, and expertise to inform (Table 2) are legitimized by accepted knowledge, authorities, or moral systems (Table 3). Anti-humanist notions that would question whether blockchain merely reinforces existing hierarchies and inequalities, or posthumanist notions that would analyze the performative aspects creating convergences and homologies in the supply chain, are barely

TABLE 3 | Social contexts underlying the three main discourses.

	(1) Efficiency	(2) Safety	(3) Sustainability
Legitimation strategies van Leeuwen and Wodak (1999)	<i>Rationalization</i> : Reference to the utility of blockchains for focal firms' transaction cost reductions	<i>Authorization</i> : Reference to food and drug regulations that hold the institutional authority	<i>Moralization</i> : Reference to value systems that provide the moral basis for sustainable behaviors
Anchor quotes of legitimation strategies	"With the development of Blockchain technology, the economics of the firm will be affected. For example, Coasian transaction costs (Coase 1937) may be reduced." (Table A1, #50, p. 25)	"A recent regulatory change in the EU, known as Good Distribution Practice of Medicinal Products for Human Use (GDP 2013/C 343/01) requires companies to report any deviations in temperature or other conditions to the distributor as well as the recipient of the affected medicinal products." (Table A1, #35, p. 84)	"The actions of supply chain partners can have a significant effect on focal firms; and this, coupled with stakeholder pressures, means large focal organizations are taking more interest in and responsibility for the actions of their suppliers." (Table A1, #4, p. 477)
Reference for legitimation	Accepted knowledge claim	Institutional authority	Moral basis/value system
Authoritative texts	Coase (1937)	FAO and WHO (1963) WHO (1999)	Meadows et al. (1972)
Social context	Economics	Public policy	System dynamics

considered. Thus, in the next step, we set out to understand why discourses based on humanist notions are rarely challenged in academic discourse, which requires an analysis of the social context.

4.3 | The Social Context Dimension

The use of legitimation strategies explains how the social context influences the persistence of the three main discourses on (1) efficiency, (2) safety, and (3) sustainability, built on humanist notions of power (Vaara and Tienar 2008; van Leeuwen and Wodak 1999). These legitimations are supported by referring to authoritative texts from diverse social contexts. Analyzing how the dominant discourse surrounding blockchain in supply chains is built upon those strategies and their respective references for legitimation enables us to comprehend how the positive discourse surrounding blockchain in supply chains is rooted in a humanistic interpretation of power, even though this construction runs counter to the inherently distributed nature of blockchains. Table 3 provides an overview of the legitimation strategies identified in the dominant discourse presented in Table 2, as well as the authoritative texts used as references for legitimation.

1. The efficiency discourse is *rationalized* by referring to the utility of blockchains for reducing transaction costs (#50 in Table A1). Blockchains replace intermediaries, thereby reducing ex-ante and ex-post transaction costs. This line of reasoning was first established by Coase's (1937) authoritative text about the economic perspective on the existence of firms, and taken up by Williamson (1981). The literature assumes a transaction cost-based logic, thereby legitimizing the discourse that blockchains will transform supply chains by making transactions more efficient.
2. The safety discourse is legitimized by reference to regulatory *authorities* (#35 in Table A1), mainly in the drug (WHO 1999) and food (FAO and WHO 1963) sectors. They demand compliance with quality standards to ensure consumers' safety. Blockchain's traceability empowers major purchasing organizations to oversee compliance with established standards and initiate related consequences of non-compliance. It helps prevent the spread of associated risks early and minimizes potential losses.
3. The sustainability debate originates in the observation of Meadows et al. (1972) that the earth will reach its growth limits due to ongoing trends in population growth, industrialization, and environmental pollution. Based on these limits, the use of blockchain technology for more sustainable performance of focal firms is *moralized* as consistent with established value systems. It is considered desirable that focal companies impose sustainability measures on their suppliers (#4 in Table A1).

While the sustainability discourse was initially based solely on the moral imperative for responsible supply chain practices, we have seen a shift in legitimizing the sustainability discourse by reference to legislative and regulatory authorities (#58 and #99 in Table A3). This shift reflects current developments in the regulatory environment, such as the European Union's Regulation on Deforestation-Free Products (European Commission 2023) or the European Supply Chain Due Diligence Act (European

Commission 2024). Since these are recent developments, no authoritative text has yet emerged. Although these legitimation strategies could be explored in greater depth, our focus remains on the discourses. Identifying these strategies is crucial for understanding their persistence and provides a foundation for challenging them with alternative perspectives.

4.4 | Proposing a Posthumanist Perspective of Blockchain Implementation in Supply Chains

The relational functionalities of blockchain technology can transform the constellation of supply chains by shifting the focus from focal organizations to the relationships between actors. We build this perspective on a posthumanist notion. Based on Hald and Spring (2023) and Morlacchi (2021), we develop the concept of performative power, grounded in the principles of *relationality*, *heterogeneity*, and *performativity* (Figure 6). A posthumanist approach considers the transformative potential of blockchain as a tool for reshaping supply chain relationships, decentralizing governance, and creating new socio-technical networks. We understand this in contrast to the humanistic perspective by questioning prevailing hierarchies and creating shared spaces where agreement and consensus are established through translation processes. The following illustrates how the principles of relationality, heterogeneity, and performativity transform the humanist notion of power in blockchain and supply chain discourses, creating convergences and homologies among supply chain actors. The three principles developed are intricately linked to the identified discourses. Firstly, we propose the principle of *relationality*, building on the expansion of the transaction costs lens from the dyad to the network level (#83 in Table A3), aiming to connect the information silos maintained by various actors and foster resilience through interconnectedness. Secondly, smart contracts, acting as non-human entities within relational frameworks (#59, #82 in Table A3), will inform the development of the principle of *heterogeneity* in the post-human approach. Lastly, by leveraging the visibility of individual collectors within global recycling networks (#65, #70, and #71 in Table A3), we will develop the principle of

performativity from a post-humanist perspective. These principles collectively underscore a paradigm shift toward understanding and harnessing relational, heterogeneous, and performative dynamics in post-human contexts.

From a posthumanist perspective, blockchain's distributed ledger system is understood as a decentralized, inclusive network that strengthens relations across widely distributed organizations, allowing for the reduction of transaction and governance costs for each organization, as well as independence from its role in the supply chain. Following the principle of *relationality*, blockchain-enabled supply chains comprise relationships among various actors. It implies that predetermined roles or identities, such as the focal companies acting as orchestrators and sponsors in a blockchain consortium, do not exist. As an alternative, network administrative or decentralized autonomous organizations could take on this role (#85 in Table A3). In addition, a governance ecosystem that considers interoperability across legacy systems and platforms could ensure a relational understanding for industry-wide adoption (#72 in Table A3), thereby strengthening the power of relationships rather than the organizations themselves. As a result, market transactions become more favorable for supply chain actors compared to centralized, hierarchical forms of transaction coordination.

In line with the principle of *heterogeneity* and the influential role of non-human actors, it is vital to consider the influential power of blockchain technology, as network decentralization comes at the cost of inefficient decision-making and high bureaucracy. The influencing power of blockchain technology can unfold, for example, in a blockchain-enabled data marketplace consisting of a processing and computing node that transfers the decision to the smart contract (#103 in Table A3), enabling the automatic execution of contracts, reducing counterparty risk, and facilitating contractual renegotiations (#61 in Table A3). Such a marketplace follows the logic of a crowdsourcing and sharing model where organizations do not act alone, but the value of the data emerges through relational efforts. These efforts promote

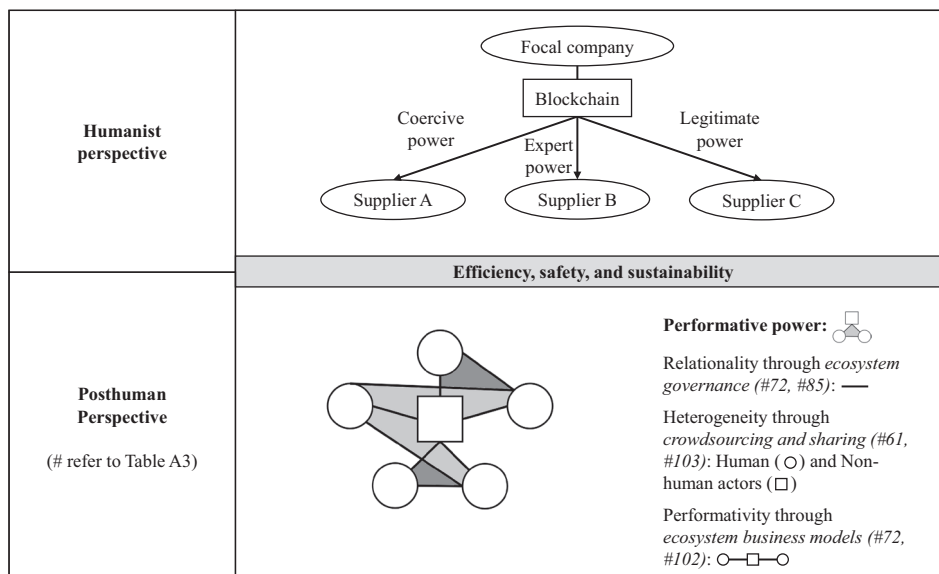


FIGURE 6 | Toward a posthumanist perspective of performative power.

up- and downstream information sharing rather than one-sided coercive measures, ensuring compliance with safety regulations.

Assuming that every organization could derive meaning through its connection to the network, then every organization should also have the chance to gain value from the blockchain network when implemented. The network's *performativity* unfolds through the relationship and translation between previously unconnected actors. Thus, the concept of value co-creation expands beyond organizational and consortial foci toward all related ecosystem actors (#72 and #102 in Table A3). Blockchain-based solutions could make the perspectives of unconnected actors visible, thereby overcoming the power of focal firms and ensuring that every actor gains value, as seen in the case of digital token systems for waste collectors in reverse systems. In addition, the visibility ensures that suppliers and workers are heard.

All three principles should be fulfilled simultaneously to unfold *performative power* that integrates and translates different understandings. Otherwise, predetermined roles and agencies can override the gained relevance of the supplier's perspective. Based on *relationality* and *heterogeneity*, *performativity* triggers translation processes, creating convergences between previously unrelated actors (Hald and Spring 2023). This translation process reflects Morlacchi's (2021, 1864) understanding of *performative power* that "emerges from relating and integrating differences in organizational situations." If all three principles are fulfilled, *performative power* triggers the integration of previously unconnected or meaningless actors, translating their differences into a common understanding. In the following, we provide a posthuman reimagination of (1) *efficiency*, (2) *safety*, and (3) *sustainability* discourses with illustrative examples of three cases: Choco4Peace (n.d.), Seedtrace (n.d.), and Diginex (n.d.).

1. Blockchain-based decentralized inclusive economic networks based on multi-institutional movements like Choco4Peace (n.d.) in the Colombian cocoa industry show how new forms of digital intermediation promote *efficiency* for all actors by reducing communication, negotiation, and coordination costs. The network was formed with the aim of disrupting markets in favor of farmers where governance and institutions encounter difficulties (Startups Magazine 2020). On the one hand, farmers gained access to international markets through new information and communication channels. On the other hand, the blockchain-based system brings together farmers, investors, and buyers to mitigate investment risks and support fair value distributions (United Nations Environment Programme 2024). In contrast to the failed case of Tradelens, which was built around Maersk's network, Choco4Peace (n.d.) has been designed to connect the most widely distributed actors (i.e., the farmers) across the sector.
2. The tech startup Seedtrace (n.d.) developed a blockchain solution in collaboration with Koa, a small cocoa pulp-buying company, to support a mutual exchange of information between the buyer and the farmer. The platform's core concept was to redefine transparency by shifting the focus from the customer's perspective toward the supply chain (Bloomberg 2024). While the buying company can see

from which farm the product comes, it also ensures that the farmer receives a record of payment via mobile money, preventing exploitation and counterparty risk to ensure food *safety* in the long term (Koa, n.d.). Although this does not yet create forward traceability along the whole value chain for farmers, blockchain technology helps reshape supply chain interaction patterns, which IBM's Food Trust has not been able to do. While, besides Walmart, other focal firms from the industry joined the platform, the information flows have remained directed toward the focal firm and the end consumer, following the logic of crowd-sourcing instead of establishing paths to suppliers or farmers, inspired by crowdsharing concepts.

3. For instance, the tech provider Diginex (n.d.) enables workers with their worker voice tool, diginexAPPRISE, to advocate for their needs, going beyond the top-down monitoring driven by focal firms' expert power and promoting worker-driven governance. With the platform's help, workers can share their experience of the hiring process and employment conditions (International Organization for Migration 2021). Providing suppliers and their workers with mechanisms for voicing their disagreements through active participation in Human Rights due diligence enables them to independently communicate local understandings of *sustainability* and report on compliance with those along the supply chain (Bonsucro, n.d.). Blockchain platforms that face problems connecting actors (e.g., Tradelens) or enabling crowdsharing (e.g., Food Trust) lack the foundation for successful translation processes among the actors.

5 | Discussion

5.1 | Theoretical Implications

Following a provocative style of theorizing, our study challenges the current understanding of academic literature, examining supply chain relations and related aspects of power in the context of blockchain. In the dominant academic discourses, blockchain applications are constructed from a humanist understanding of the *legitimate*, *coercive*, and *expert* power of focal firms in supply chains. Leveraging this power, focal firms become the primary value appropriators, benefiting from blockchain's *efficiency*, *safety*, and *sustainability*. However, the dominant discourses overlook the network's governance costs (Marques et al. 2024) and the distribution of benefits along the supply chain (Falcone et al. 2021; Sternberg et al. 2021), which is crucial for the managerial realization of the decentralized peer-to-peer structure of the blockchain (Hanisch et al. 2025). This calls for new perspectives beyond the operational focus of large, powerful firms, which often lack emphasis on relational aspects from an ecosystem perspective (C. Wang et al. 2025), as also emphasized by Glover and Touboulic (2020) and Ishfaq et al. (2022). Bringing forth these perspectives is especially relevant because humanistic understandings of power are firmly grounded in the supply chain literature (Benton and Maloni 2005; Maloni and Benton 2000), are frequently adopted (Chae et al. 2017), and are thus regarded as established. Our concept of *performative power* offers a transformative approach to supply chain management, which is essential for addressing the current socio-ecological

and geopolitical crises that society faces (Mollenkopf et al. 2024). This includes, in particular, rethinking the concept of power to address increasing power imbalances in extended supply chains (Choi et al. 2021).

To facilitate the evolution of an alternative conceptualization of power in supply chain management, we propose a posthumanist framework combining Morlacchi's (2021) comprehension of *performative power* at the organizational level with Hald and Spring's (2023) *relational*, *heterogeneous*, and *performative* principles to offer a complementary perspective on power in the context of blockchain adoption in supply chains. Performative power advances humanist understandings by shifting the focus from power as owned by focal firms to power as enacted in socio-technical networks, highlighting more distributed, emergent, and relational forms of coordination. Thus, the performative understanding of power provides a pathway to share the benefits and costs of blockchain among supply chain members, addressing fairness issues among actors, including organizations and individuals. Performative power emerges from integrating differences. In the case of transparency for CSR in risky supplier networks (Uvet et al. 2025) blockchain takes on a mediating role, creating shared spaces for accountability and collaboration. This shifts the managerial focus from individual firms to the relations between them, from static to continuously reproduced understandings of power. In doing so, it challenges conventional managerial dynamics in supply chain management that emphasize centralized control, firm-dominated governance, and linear authority structures.

We argue that the *power of performativity* can only unfold if all three principles are fulfilled simultaneously. *Relationality* shifts the focus from the organization to the constantly evolving relationships across organizations (Bailey et al. 2022). *Heterogeneity* grants blockchain technology the ability to influence the relationship between organizations through, for example, blockchain-enabled crowdsourcing and crowdsharing models. *Performativity* links previously unconnected supply chain actors and translates their demands through blockchain-enabled relational connections to facilitate value co-creation, which Jovanovic et al. (2022) consider essential for network-wide adoption. The adoption of technologies in supply chains should consider the competing demands of all affected firms; otherwise, the creation of convergences and homologies between actors in the supply chain, which ensures the joint development of power and performativity, will be missed (Morlacchi 2021). Hence, developing a radical relational epistemology that extends beyond established relational governance mechanisms in the supply chain literature is crucial for an enabling and decentralized understanding of blockchain in supply chains (Lumineau et al. 2021).

In the proposed posthumanist framework, blockchain technology becomes an active participant in a socio-technical network, where agency does not reside solely with human and organizational actors. Viewing blockchain's functions as emerging from the relationships between actors rather than as an instrument with inherent property provides a new understanding of technology's role in creating new socio-technical networks. Blockchain, as a non-human actor, mediates connections in heterogeneous networks. Its integration with digital product

passports enhances transparency and resource utilization in reverse supply chains (Xia et al. 2025), thereby fostering performative power. This also implies moving beyond the dual perspective (Sternberg et al. 2021) to a network-based approach to information asymmetry and sharing in multi-tier supply chains. Thus, we do not see that the consortium setup of critical network organizations proposed by Goldsby and Hanisch (2022) in a corporate setting can be readily translated to the complexities of multi-tier supply chains. Such a governance approach has three crucial challenges in supply chain management. First, critical network positions are not necessarily visible to the focal firm. Second, a single supplier may be critical to multiple focal firms, resulting in its membership in several consortia. Third, dynamic consortium compositions that reflect the network dynamics are necessary to create open, adaptive systems that address global crises.

In addition, this article makes a methodological contribution to the literature by employing CDA to analyze how academic articles perpetuate dominant discourses. CDAs traditionally focus on the public statements of organizations or managers. We provide a structural approach for applying CDA to academic discourses based on Phillips et al.'s (2008) three levels of discourse analysis. First, we illustrate the interplay between ontological and epistemological assumptions and the resulting methodological approaches (Figure 1). Second, we offer an orientation for selecting suitable methods to answer the RQs in line with the epistemological assumptions of discourse analysis that follow Fairclough's (2003) CDA (Figure 2). The three levels of CDA support the understanding of how discourses emerge and are disseminated as articles refer to other articles and how the social context affects academic narratives. Examining the text, discourse, and context levels encourages academics to reflect on their role in shaping research subjects and related discourses (Hardy et al. 2001).

5.2 | Practical Implications

Given that we rarely find instances where blockchains have created *efficient*, *safe*, and *sustainable* supply chains that extend beyond the focal company's horizon, this research encourages managers of focal firms to reconsider power dynamics within supply chains when considering blockchain adoption. Reinforcing power asymmetries is, in most cases, counterproductive, as it triggers supplier resistance (Wilhelm and Villena 2021), comes at the cost of supplier buy-in (Naef et al. 2024), and supply chain performance (Schwieterman et al. 2020). Creating socio-technical networks without the strategic positioning of a consortium of focal organizations as coordinators and controllers of the blockchain, as seen in Maersk's Tradelens or Walmart's Food Trust, promotes suppliers' participation, as there are no presumptions of hierarchy.

Reconsidering power dynamics is also key to promoting well-being outcomes that benefit society, beyond reinforcing *efficiency*, *safety*, and *sustainability* interests of multinational corporations as dominant actors in the supply chain. The core argument arising is that emerging technologies like blockchain cannot deliver on their promise of addressing grand societal challenges through decentralization if they are implemented within

traditional, centralized power structures (Choi et al. 2021), which reinforce power asymmetries (Hanisch et al. 2025). Beyond blockchain, this perspective has important implications for supply chain management in the Industry 4.0 era. It underscores the need to move away from closed, firm-centric models toward frameworks rooted in openness, collaboration, shared governance, and mutual benefit, ultimately enhancing value creation across the entire ecosystem (Wang et al. 2025). This relates to Gu et al. (2025) suggested “go-together” approach, which calls for synchronizing digital technology adoption between focal firms and their partners.

However, such joint efforts are challenging due to conflicts with competitive dynamics and the short-term focus of businesses. Thus, cross-organizational initiatives, such as industry alliances or roundtables that unite upstream and downstream actors across supply chains, can serve as a foundation for developing socio-technical networks that integrate the interests of various stakeholders. Intergovernmental organizations, like the United Nations-related International Organization for Migration (2021), can promote interoperability to prevent actors operating in different sectors or countries simultaneously from incurring increasing costs.

The core idea of such a socio-technical network would be to link the most widely distributed actors, typically upstream in the supply chain, independent of their relationship to a particular focal firm, to the blockchain. The relation between organizations would only be considered to exist at the moment of interaction. No actor will be defined as the source or recipient of information and value flows, as is currently the case in many customer-targeting applications. As every actor can become visible through their connection to the network, each actor is entitled to participate in the process of reaching an agreement and a consensus that unfolds, thereby exercising performative power. This way, the blockchain’s structural functionalities can unfold their relational meaning within the supply chain context. However, if that is not the intention, replacing many centralized blockchains with cloud-based solutions may be more beneficial.

5.3 | Critical Reflection, Limitations, and Future Research

This study is affected by our positioning in the scholarly debate (Fairclough 2001). As we emphasize the constructive effects of academic research (Hardy et al. 2001), we acknowledge that the study is itself constructive. However, alternative constructions help to challenge existing ones (Cornelissen et al. 2021, 2024). Thus, we see the study’s contribution in our alternative perspective on blockchains, which differs from the dominant discourses.

The constructive effects of academic research also imply that other established research practices may have unconsciously influenced this research. For example, we observed a prevalence of three-dimensional concepts in the literature, such as the three levels of CDA, which may have subconsciously influenced the three dominant discourses and related types of power we identified inductively. However, we have attempted to address this through a critical engagement with the roots of the identified

three-dimensional logic, ensuring that it accurately reflects the analyzed data.

While we illustrate the proposed posthumanist notion with practical examples, the constructions lack empirical evidence. Thus, future research must empirically validate the proposed co-evolution of power and performativity in blockchain-enabled supply networks. We believe unpacking processes is a promising research avenue that fits well with the processual and relational ontology on which posthumanism is based. Thus, methods such as process tracing or longitudinal studies may be suitable approaches for investigating the proposed posthumanist framework through its relations and processes in the empirical field. One challenging aspect will be getting access to the field, where data could be collected on multiple actors. Following the posthuman perspective, this would require that the blockchain is taken as a non-human actor in its own right, demanding that, for example, conventional forms of data collection via interviews with human actors and their respective organizations would be combined with getting access to track records of blockchain data, which could unveil how power is enacted. This links to the notion of performative power, where the conceptualization put forward in the existing paper informs the research design from the outset, allowing, for example, for deep insights into single case studies that can confirm or challenge the suggestions made in this paper. It might also be useful to look at sets of secondary data not often utilized so far (see e.g., Vakulenko et al. (2024)), which might allow alternative explanations.

From a theoretical perspective, future research could further explore the evolving dynamics of power and dependence. As originally conceptualized by Emerson (1962), these two constructs are inherently linked in opposite directions, with greater power arising from lower dependence. However, when viewed through a post-humanist lens, power emerges through networks of relations (Callon 1984; Hald and Spring 2023). This perspective raises the question of whether such a shift also redefines dependence, moving it toward a concept of interdependence. Supporting this idea, Touboullic et al. (2014) indicated a transition from dependence to interdependence as relationships progress to incorporate sustainability goals. This links further into performative power, as outlined by Morlacchi (2021), as it questions existing conceptualizations of power in supply chains, thereby warranting the need for future research.

Beyond this study’s analysis of blockchain in supply chain management, it will be interesting to follow how discourses on buyer–supplier relationships and power dynamics evolve for other Industry 4.0 technologies, such as artificial intelligence, big data, and cyber-physical systems. This is particularly relevant as the overly positive narrative of blockchain as a solution to grand societal challenges has recently been extended to other Industry 4.0 technologies in supply chains.

Acknowledgments

Open Access funding enabled and organized by Projekt DEAL.

Conflicts of Interest

The authors declare no conflicts of interest.

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Appendix A

TABLE A1 | 50 most popular and prestigious texts from the co-citation network (sorted by rank).

#	Text references	PageRank
1	Saberi, S., Kouhizadeh, M., Sarkis, J., & Shen, L. (2019). Blockchain Technology and Its Relationships to Sustainable Supply Chain Management. <i>International Journal of Production Research</i> , 57(7), 2117–2135.	0.043464324
2	Kamble, S., Gunasekaran, A., & Arha, H. (2019). Understanding the Blockchain Technology Adoption in Supply Chains-Indian Context. <i>International Journal of Production Research</i> , 57(7), 2009–2033.	0.024767009
3	Wang, Y., Singgih, M., Wang, J., & Rit, M. (2019). Making Sense of Blockchain Technology: How Will It Transform Supply Chains? <i>International Journal of Production Economics</i> , 211, 221–236.	0.023201232
4	Cole, R., Stevenson, M., & Aitken, J. (2019). Blockchain Technology: Implications for Operations and Supply Chain Management. <i>Supply Chain Management: An International Journal</i> , 24(4), 469–483.	0.020654342
5	Chang, Y., Iakovou, E., & Shi, W. (2020). Blockchain in Global Supply Chains and Cross Border Trade: A Critical Synthesis of the State-Of-The-Art, Challenges and Opportunities. <i>International Journal of Production Research</i> , 58(7), 2082–2099.	0.019881744
6	Bai, C., & Sarkis, J. (2020). A Supply Chain Transparency and Sustainability Technology Appraisal Model for Blockchain Technology. <i>International Journal of Production Research</i> , 58(7), 2142–2162.	0.019518239
7	Hastig, G. M., & Sodhi, M. S. (2020). Blockchain for Supply Chain Traceability: Business Requirements and Critical Success Factors. <i>Production and Operations Management</i> , 29(4), 935–954.	0.017855327
8	Kouhizadeh, M., Saberi, S., & Sarkis, J. (2021). Blockchain Technology and the Sustainable Supply Chain: Theoretically Exploring Adoption Barriers. <i>International Journal of Production Economics</i> , 231, 107831.	0.017573771
9	Kamble, S. S., Gunasekaran, A., & Sharma, R. (2020). Modeling the Blockchain Enabled Traceability in Agriculture Supply Chain. <i>International Journal of Information Management</i> , 52, 101967.	0.017314071
10	Schmidt, C. G., & Wagner, S. M. (2019). Blockchain and Supply Chain Relations: A Transaction Cost Theory Perspective. <i>Journal of Purchasing and Supply Management</i> , 25(4), 100552.	0.016981824
11	Wang, Y., Han, J. H., & Beynon-Davies, P. (2019). Understanding Blockchain Technology for Future Supply Chains: A Systematic literature Review and Research Agenda. <i>Supply Chain Management: An International Journal</i> , 24(1), 62–84.	0.016208531
12	Dolgui, A., Ivanov, D., Potryasaev, S., Sokolov, B., Ivanova, M., & Werner, F. (2020). Blockchain-Oriented Dynamic Modeling of Smart Contract Design and Execution in the Supply Chain. <i>International Journal of Production Research</i> , 58(7), 2184–2199.	0.016043579
13	Behnke, K., & Janssen, M. F. W. H. A. (2020). Boundary Conditions for Traceability in Food Supply Chains Using Blockchain Technology. <i>International Journal of Information Management</i> , 52, 101969.	0.01540711
14	Ivanov, D., Dolgui, A., & Sokolov, B. (2019). The Impact of Digital Technology and Industry 4.0 on the Ripple Effect and Supply Chain Risk Analytics. <i>International Journal of Production Research</i> , 57(3), 829–846.	0.013834889
15	Dubey, R., Gunasekaran, A., Bryde, D. J., Dwivedi, Y. K., & Papadopoulos, T. (2020). Blockchain Technology for Enhancing Swift-Trust, Collaboration and Resilience Within a Humanitarian Supply Chain Setting. <i>International Journal of Production Research</i> , 58(11), 3381–3398.	0.013481503
16	Min, H. (2019). Blockchain Technology for Enhancing Supply Chain Resilience. <i>Business Horizons</i> , 62(1), 35–45.	0.013309069
17	Bumblauskas, D., Mann, A., Dugan, B., & Rittmer, J. (2020). A Blockchain Use Case in Food Distribution: Do You Know Where Your Food Has Been? <i>International Journal of Information Management</i> , 52, 102008.	0.013129552
18	Nakamoto, S. (2008). Bitcoin: A Peer-To-Peer Electronic Cash System. <i>Decentralized business review</i> .	0.012953219
19	Queiroz, M. M., Telles, R., & Bonilla, S. H. (2020). Blockchain and Supply Chain Management Integration: A Systematic Review of the Literature. <i>Supply chain management: An international journal</i> , 25(2), 241–254.	0.012874589
20	Kumar, A., Liu, R., & Shan, Z. (2020). Is Blockchain a Silver Bullet for Supply Chain Management? Technical Challenges and Research Opportunities. <i>Decision Sciences</i> , 51(1), 8–37.	0.012574583
21	Feng, H., Wang, X., Duan, Y., Zhang, J., & Zhang, X. (2020). Applying Blockchain Technology to Improve Agri-Food Traceability: A Review of Development Methods, Benefits and Challenges. <i>Journal of Cleaner Production</i> , 260, 121031.	0.012133442
22	Tönnissen, S., & Teuteberg, F. (2020). Analyzing the Impact of Blockchain-Technology for Operations and Supply Chain Management: An Explanatory Model Drawn From Multiple Case Studies. <i>International Journal of Information Management</i> , 52, 101953.	0.012035927
23	Swan, M. (2015). <i>Blockchain: Blueprint for a New Economy</i> . O'Reilly Media.	0.011785162

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TABLE A1 | (Continued)

#	Text references	PageRank
24	Zhao, G., Liu, S., Lopez, C., Lu, H., Elgueta, S., Chen, H., & Boshkoska, B. M. (2019). Blockchain Technology in Agri-Food Value Chain Management: A Synthesis of Applications, Challenges and Future Research Directions. <i>Computers in Industry</i> , 109, 83–99.	0.011762565
25	Yadav, S., & Singh, S. P. (2020). Blockchain Critical Success Factors for Sustainable Supply Chain. <i>Resources, Conservation and Recycling</i> , 152, 104505.	0.011533322
26	Pournader, M., Shi, Y., Seuring, S., & Koh, S. L. (2020). Blockchain Applications in Supply Chains, Transport and Logistics: A Systematic Review of the Literature. <i>International Journal of Production Research</i> , 58(7), 2063–2081.	0.011373844
27	Wong, L. W., Tan, G. W. H., Lee, V. H., Ooi, K. B., & Sohal, A. (2020). Unearthing the Determinants of Blockchain Adoption in Supply Chain Management. <i>International Journal of Production Research</i> , 58(7), 2100–2123.	0.011234158
28	Di Vaio, A., & Varriale, L. (2020). Blockchain Technology in Supply Chain Management for Sustainable Performance: Evidence From the Airport Industry. <i>International Journal of Information Management</i> , 52, 102014.	0.011039247
29	Wamba, S. F., & Queiroz, M. M. (2020). Blockchain in the Operations and Supply Chain Management: Benefits, Challenges and Future Research Opportunities. <i>International Journal of Information Management</i> , 52, 102064.	0.010504725
30	Hughes, L., Dwivedi, Y. K., Misra, S. K., Rana, N. P., Raghavan, V., & Akella, V. (2019). Blockchain Research, Practice and Policy: Applications, Benefits, Limitations, Emerging Research Themes and Research Agenda. <i>International Journal of Information Management</i> , 49, 114–129.	0.010336961
31	Azzi, R., Chamoun, R. K., & Sokhn, M. (2019). The Power of a Blockchain-Based Supply Chain. <i>Computers & Industrial Engineering</i> , 135, 582–592.	0.010205038
32	Queiroz, M. M., & Wamba, S. F. (2019). Blockchain Adoption Challenges in Supply Chain: An Empirical Investigation of the Main Drivers in India and the USA. <i>International Journal of Information Management</i> , 46, 70–82.	0.009866351
33	Galvez, J. F., Mejuto, J. C., & Simal-Gandara, J. (2018). Future Challenges on the Use of Blockchain for Food Traceability Analysis. <i>Trends in Analytical Chemistry</i> , 107, 222–232.	0.009610829
34	Wong, L. W., Leong, L. Y., Hew, J. J., Tan, G. W. H., & Ooi, K. B. (2020). Time to Seize the Digital Evolution: Adoption of Blockchain in Operations and Supply Chain Management Among Malaysian SMEs. <i>International Journal of Information Management</i> , 52, 101997.	0.009383121
35	Kshetri, N. (2018). 1 Blockchain's Roles in Meeting Key Supply Chain Management Objectives. <i>International Journal of information management</i> , 39, 80–89.	0.009358876
36	Francisco, K., & Swanson, D. (2018). The Supply Chain Has No Clothes: Technology Adoption of Blockchain for Supply Chain Transparency. <i>Logistics</i> , 2(1), 2.	0.00920749
37	Dutta, P., Choi, T. M., Somani, S., & Butala, R. (2020). Blockchain Technology in Supply Chain Operations: Applications, Challenges and Research Opportunities. <i>Transportation Research Part E: Logistics and Transportation Review</i> , 142, 102067.	0.009110551
38	Sander, F., Semeijn, J., & Mahr, D. (2018). The Acceptance of Blockchain Technology in Meat Traceability and Transparency. <i>British Food Journal</i> , 120(9), 2066–2079.	0.008794412
39	Treiblmaier, H. (2018). The Impact of the Blockchain on the Supply Chain: A Theory-Based Research Framework and a Call for Action. <i>Supply chain management: An international journal</i> , 23(6), 545–559.	0.008716745
40	Choi, T. M. (2019). Blockchain-Technology-Supported Platforms for Diamond Authentication and Certification in Luxury Supply Chains. <i>Transportation Research Part E: Logistics and Transportation Review</i> , 128, 17–29.	0.008576642
41	Kamble, S. S., Gunasekaran, A., & Gawankar, S. A. (2020). Achieving Sustainable Performance in a Data-Driven Agriculture Supply Chain: A Review for Research and Applications. <i>International Journal of Production Economics</i> , 219, 179–194.	0.008286215
42	Hald, K. S., & Kinra, A. (2019). How the Blockchain Enables and Constrains Supply Chain Performance. <i>International Journal of Physical Distribution & Logistics Management</i> , 49(4), 376–397.	0.008272352
43	Helo, P., & Hao, Y. (2019). Blockchains in Operations and Supply Chains: A Model and Reference Implementation. <i>Computers & Industrial Engineering</i> , 136, 242–251.	0.008235919
44	Chod, J., Trichakis, N., Tsoukalas, G., Aspegren, H., & Weber, M. (2020). On the Financing Benefits of Supply Chain Transparency and Blockchain Adoption. <i>Management Science</i> , 66(10), 4378–4396.	0.00823036
45	Montecchi, M., Plangger, K., & Etter, M. (2019). It's Real, Trust Me! Establishing Supply Chain Provenance Using Blockchain. <i>Business Horizons</i> , 62(3), 283–293.	0.008026966

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TABLE A1 | (Continued)

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46	Christidis, K., & Devetsikiotis, M. (2016). Blockchains and Smart Contracts for the Internet of Things. <i>IEEE Access</i> , 4, 2292–2303.	0.007935287
47	Abeyratne, S. A., & Monfared, R. P. (2016). Blockchain Ready Manufacturing Supply Chain Using Distributed Ledger. <i>International journal of research in engineering and technology</i> , 5(9), 1–10.	0.007646321
48	Morkunas, V. J., Paschen, J., & Boon, E. (2019). How Blockchain Technologies Impact Your Business Model. <i>Business Horizons</i> , 62(3), 295–306.	0.00761854
49	Kouhizadeh, M., & Sarkis, J. (2018). Blockchain Practices, Potentials, and Perspectives in Greening Supply Chains. <i>Sustainability</i> , 10(10), 3652.	0.007530718
50	Babich, V., & Hilary, G. (2020). OM Forum—Distributed Ledgers and Operations: What Operations Management Researchers Should Know About Blockchain Technology. <i>Manufacturing & Service Operations Management</i> , 22(2), 223–240.	0.007506786

TABLE A2 | Anchor quote for each discourse sub-category.

Discourse	Category	Anchor quote
(1) Efficiency	Disintermediation	“Blockchain technology with its peer-to-peer network and distributed data management can lead to an elimination of intermediaries, also known as disintermediation.” (Table A1, #22, p. 2)
	Information sharing/visibility	“Technically, the Blockchain supports the storage and use of the information about the [supply chain]. This includes data about the assignment of [supply chain] operations to firms, the sequences of operations execution, and the scheduled timing of the operations execution which are written in the communication protocols using special patterns and aligned with the firms in the form of transactions which define the operations execution at the firms.” (Table A1, #12, p. 2150)
	Automation	“Smart contracts are becoming a desired functionality due to their flexibility and power to include business logic under certain conditions, thus removing costs and time from the supply chain via automation and self-execution.” (Table A1, #3, p. 230)
(2) Safety	Product verification	“A blockchain serves as an audit trail to verify provenance, say, in the food or the drug supply chains.” (Table A1, #20, p. 31)
	Product information	“Information of farming origins, lot numbers, quarantine date, factory and processing details, transportation information, storage data (storage temperature, humidity, gas, time, operator) and shelf-life could be entered into the blockchain at each step of the production process.” (Table A1, #21, p. 10)
	Track & Trace	“Blockchain will enable the tracking of pharmaceutical raw materials and finished goods, making it easier to detect fakes.” (Table A1, #11, p. 72)
(3) Sustainability	Transparency	“The importance of achieving transparency and sustainability goals requires supporting performance measurement systems for organizations seeking to invest in blockchain technologies.” (Table A1, #6, p. 2144)
	Sustainable supply chain management practices	“Blockchain helps to track the historical sustainability performances of suppliers, execute supplier development and remove intermediaries.” (Table A1, #37, p. 13)

TABLE A3 | Recent empirical articles supporting or expanding the identified dominant discourses.

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57	Brookbanks, M., & Parry, G. (2022). The Impact of a Blockchain Platform on Trust in Established Relationships: A Case Study of Wine Supply Chains. <i>Supply Chain Management: An International Journal</i> , 27(7), 128–146.
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