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## Editorial

## Technology-enabled multi-sided platforms in B2B relationships: A critical analysis and directions for future research

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## ABSTRACT

The concept of Multi-Sided Platforms (MSPs) has significantly impacted the management field by facilitating interactions between distinct, interdependent groups, revolutionizing numerous industries. While extensive research has examined platform models, further exploration of MSPs in Business-to-Business (B2B) settings, particularly at the supply chain level, remains necessary. This paper critically examines the role of technology-enabled MSPs within B2B environments, highlighting their distinct challenges and opportunities for supply chain ecosystems. We review existing literature on B2B platforms, classifying studies according to the main platform typologies: transactional, innovation, and orthogonal. We identify three key roles these platforms play in supply chain management: enabling information sharing and collaboration, enhancing existing processes, and supporting transformation. Additionally, we investigate five central themes in B2B relationships: power dynamics and governance, resource allocation and optimization, communication dynamics, competence development and learning, and resilience and adaptability. The findings underscore the transformative potential of MSPs in B2B contexts, particularly in driving innovation, improving operational efficiencies, and creating new forms of value. These insights also serve to introduce the eight papers in this special issue and frame three propositions for future research.

## 1. Introduction

The concept of Multi-Sided Platforms (MSPs) gained significant traction in management following Parker et al.'s *Platform Revolution* (Parker et al., 2016), which built upon a decade of prior research (Parker & Van Alstyne, 2005). This work underscored platforms' transformative potential across industries, illustrating their ability to create value by facilitating interactions between interdependent groups, typically consumers and producers. The widespread adoption of platform mechanisms has reshaped business models and catalyzed new economic activities (Kenney et al., 2021).

Platform evolution extended into the engineering-technology domain with the emergence of innovation platforms. Gawer and Cusumano (2014) described these as technology-based foundations that foster innovation by enabling firms to build complementary products and services. Simultaneously, the economic concept of two-sided markets, advanced by Rochet and Tirole (2003) and Parker and Van Alstyne (2005), emphasized how platforms facilitate interactions between distinct user groups, generating network effects that enhance platform value as user participation increases.

The refinement of these concepts led to a deeper understanding of two-sided platforms, as defined by Hagi and Wright (2015) and Tauscher and Laudien (2018). These platforms enable direct interactions between separate user groups, where each group's involvement amplifies the platform's overall value. Contemporary MSPs build on this foundation, requiring multiple interconnected customer groups that

generate cross-side network externalities, fostering growth and innovation (Trabucchi & Buganza, 2022, 2023).

The significance of platforms has surged with the rise of digital services, as evidenced by Uber and Airbnb (Parker et al., 2016), which have transformed traditional service sectors via digital interfaces that connect users directly with service providers. This shift has broadened platform studies, emphasizing the critical role of user interface design and experience in the success of platform-based ventures (Trabucchi et al., 2022, Trabucchi et al., 2024). In this editorial, we refer to MSPs as 'platforms,' encompassing all platform types that cater to at least two distinct customer groups, thereby creating various cross-side network externalities (Trabucchi & Buganza, 2022, 2023).

In recent years, there has been an increasing focus on business-to-business (B2B) MSPs, which differ substantially from business-to-consumer (B2C) MSPs. Research by Jovanovic, Sjödin, and Parida (2022) and Shen et al. (2024) explores how platform-based interactions evolve when both participants are businesses rather than individual consumers. These studies suggest that B2B platforms typically involve more complex interactions, longer sales cycles, and higher-stakes transactions, necessitating distinct strategic approaches compared to B2C platforms. A recent manifesto on B2B platforms highlights transactional platforms and underscores the unique aspects of the B2B environment (Meier et al., 2024).

Emerging technologies that support the adoption of platform models across various industries further underline the importance of B2B platforms. Innovations such as artificial intelligence, blockchain, and the

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Internet of Things facilitate the development of B2B platforms, enhancing efficiency and innovation within supply chain ecosystems (Pereira et al., 2019; Trabucchi et al., 2020; Jovanovic, Kostić, et al., 2022). These advancements enable better integration, real-time data sharing, and advanced analytics, which are essential for the effective functioning of B2B platforms.

Supply chains can derive significant benefits from the implementation of B2B platforms (Culotta, Blome, & Henke, 2024). Research has shown that these platforms can optimize supply chain operations by improving coordination among suppliers, manufacturers, and distributors (Chen et al., 2024; Patrucco et al., 2023; Scuotto et al., 2017). Additionally, platforms enhance transparency, and traceability, reduce transaction costs, and enable more agile supply chain management practices (Ivanov et al., 2022).

Despite the extensive research on platforms within innovation and marketing, there remains a limited understanding of their role in supporting supply chain relationships. Supply chain ecosystems involve multiple actors with competing priorities (Song et al., 2022). While platforms offer opportunities to enhance these relationships for better outcomes, key questions remain inadequately addressed in the literature: *What are the roles and strategic applications of platforms in SCM and B2B relationships?*

This editorial and special issue aim to address these questions by linking the literature on MSPs in supply chain networks. By examining the operation of different platforms in a business context, we seek to identify the challenges and opportunities that B2B platforms present within supply chain ecosystems and how they can enhance supply chain relationships.

This paper is organized as follows: First, we review the existing literature on platforms and MSPs, with an emphasis on their B2B applications. We then examine the specific role of platforms in SCM through a systematic review of studies on platform models in supply chain studies. Finally, we identify potential research opportunities presented by B2B platforms in the supply chain domain, aligning them with the papers included in this special issue.

## 2. What is a platform?

The term “platform” has become increasingly fragmented, losing cohesive meaning due to varied interpretations (Jacobides et al., 2024; Trabucchi & Buganza, 2023). To avoid overgeneralizing platforms as merely digital services, it is crucial to distinguish among the different types, each with unique features (Trabucchi & Buganza, 2022). This paper examines three key MSP types: innovation platforms, transactional platforms, and orthogonal platforms.

### 2.1. Innovation platforms

Gawer and Cusumano (2014) describe innovation platforms as technology-based foundations that enable external innovators to develop complementary products and services. These platforms provide a stable core upon which other firms can build, creating a diverse innovation ecosystem. Examples include operating systems like iOS and Android, which allow third-party developers to create applications that enhance the platform's value.

The concept of innovation platforms extends from Meyer and Lehnerd's (1997) idea of product platforms—standard components or processes that form a stable foundation for derivative products. In innovation platforms, developers (or complementors) create new applications or services that increase the platform's overall value (Chen et al., 2022). This model fosters a cycle of innovation and value creation, as more developers create applications, thereby attracting more users to the platform.

Research on innovation platforms primarily focuses on three areas: complementor behavior, platform openness dynamics, and competition between platforms. Studies on complementor behavior explore

developer interactions with the platform, including incentives, barriers, and strategies for success (Tiwana, 2014; Ghazawneh & Henfridsson, 2013). Research on openness dynamics investigates the balance between openness and control, determining how much freedom to grant complementors while maintaining platform integrity (Boudreau, 2010). Competition studies analyze how platforms compete for users and developers, the role of network effects, and strategies for market dominance (Cusumano et al., 2019).

Although innovation platforms have been predominantly studied in mobile contexts, such as iOS and Android, they also have significant implications for B2B environments. For example, Cisco's platform facilitates application development within its ecosystem, serving business customers on both the supply and demand sides (Khanagha et al., 2022). This example underscores the potential for innovation and value creation through business-oriented innovation platforms.

### 2.2. Transactional platforms

Transactional platforms, originally termed “two-sided markets,” enable direct transactions between two interdependent groups. Rochet and Tiole (2003) laid the foundational concepts, expanding on the network externalities initially examined by Katz and Shapiro (1985). Platforms like credit card systems link cardholders (demand) with merchants (supply) through providers such as Mastercard or Visa, fostering bidirectional cross-side network effects: increased merchant acceptance enhances card value for consumers and vice versa (Parker & Van Alstyne, 2005).

Hagiu and Wright (2015) later redefined these as two-sided platforms, highlighting their role as a business model choice (Trabucchi & Buganza, 2022). This category includes platforms such as Airbnb, Uber, Spotify, eBay, and Amazon Marketplace.

Research on transactional platforms has addressed several key areas: pricing dynamics, design, user engagement, and the challenges of platform creation. Parker and Van Alstyne (2005) examined cost balancing to maximize participation and value. Design studies have focused on structural efficiency and strategic choices for long-term success (Muzellec et al., 2015; Trabucchi et al., 2022). User engagement research, particularly in crowdfunding, explores how platforms attract and retain active users from both market sides (Belleflamme et al., 2014).

One significant challenge is the “chicken-and-egg” paradox, where the platform's value depends on attracting a critical mass of users on both sides simultaneously. Caillaud and Jullien (2003) proposed strategies to overcome this initial hurdle (Stummer et al., 2018).

Transactional platforms are not limited to B2C contexts. Prominent B2B marketplaces, such as XOM Materials by Klockner, connect businesses within specific industries (Joachimsthaler, 2020). Research distinguishes B2B transactional platforms from their B2C counterparts, emphasizing B2B's focus on quality, specialization, and adaptation rather than quantity, generalization, and disruption (Culotta et al., 2024; Meier et al., 2024).

### 2.3. Orthogonal platforms

Orthogonal platforms, initially termed “audience makers” by Evans (2003), create large communities on one side and monetize access to this audience through advertising mechanisms. Examples include newspapers and television networks, which build substantial user bases and sell advertising space to businesses.

Filistrucchi et al. (2014) examined these “non-transactional platforms,” distinguishing them from transactional platforms by their lack of direct user transactions. Instead, they offer content or services at minimal or no cost, monetizing through targeted advertisements.

Despite their significance, orthogonal platforms have been somewhat overlooked in the literature. Luchetta (2014) argued that these platforms do not fit traditional platform definitions due to the absence of

direct transactional facilitation. However, advancements in smartphones and digital services have opened new research opportunities. [Trabucchi and Buganza \(2022\)](#) distinguish orthogonal platforms from transactional ones, noting that they do not enable direct transactions but still exhibit the three defining characteristics identified by [Evans \(2003\)](#): multiple customer sides, a platform provider, and cross-side network externalities.

[Trabucchi et al. \(2017\)](#) discussed traditional advertising-based mechanisms, labeling them as “client as a target” strategies. These platforms offer low-cost or free services, gather user behavior data, and sell it to advertisers. They generate revenue through unidirectional cross-side network externalities, where advertiser value grows with the user base ([Katz & Shapiro, 1985](#)). Social media platforms like Facebook exemplify this model by using user data for targeted ads.

The “client as a source” strategy, on the other hand, collects user data but sells insights to a different audience. For instance, Strava Metro uses data from Strava users to provide city planning insights to municipalities, while Twitter sells tweet data to research centers.

Research on orthogonal platforms has explored their development and the importance of business model transparency. [Trabucchi and Buganza \(2019\)](#) emphasized the need for building a strong user base and effective data monetization strategies. Transparency is crucial, as highlighted by [Trabucchi et al. \(2023\)](#) and [Betzing et al. \(2020\)](#), who study how these platforms maintain user trust, adhere to data privacy regulations, and monetize user data.

[Table 1](#) summarizes the main definitions with key references and

examples of consumer-related MSPs and B2B platforms.

### 3. What is a platform in supply chains and B2B networks? An overview of existing research

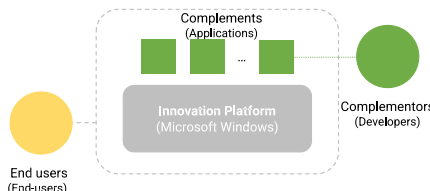
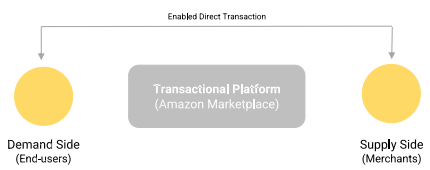
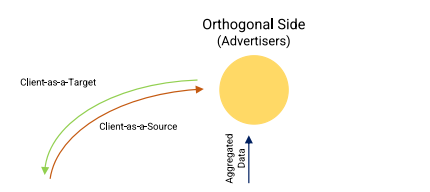

Supply chain managers are increasingly turning to digital platforms for their potential to streamline and enhance various SCM tasks. These platforms, by leveraging digital technologies, efficiently organize and facilitate complex supply chains, thereby improving operational efficiencies ([Ivanov et al., 2022](#)). The digitalization of supply chains and monetization of data through these platforms offer significant benefits ([Gerrikagoitia et al., 2019](#)).

However, digital platforms in industrial and B2B contexts face unique challenges that limit their effectiveness compared to those in B2C or C2C settings ([Anderson et al., 2022](#); [Durach et al., 2021](#)). These platforms must navigate high operational complexity, a lack of standardization, mistrust among partners, and stringent legal and regulatory constraints. Additionally, digital compatibility and varying levels of technological competency among partners complicate platform adoption and implementation ([Winkelhaus & Grosse, 2020](#)).

Despite their potential, successful B2B platform implementations are rarer than those of their B2C or C2C counterparts ([Eloranta & Turunen, 2016](#)). This rarity highlights the significant challenges firms face when developing platform business models in complex supply chain contexts ([Anderson et al., 2022](#)). The inherent complexity of supply chains requires different approaches compared to end-customer segments ([Hein](#)

**Table 1**

Platform typologies: definitions and examples (**Note:** please consider B2B as referring to a platform where both sides are businesses, C2C as platforms where both sides are consumers, and B2C-or possibly C2B-platforms where one side is made up of businesses and the other consumers.).

Label	Definition	Key references	ExampleS (B2C or C2C)	EXAMPLES (B2B)
 <p>Innovation Platform</p>	<p>Products, services, or technologies that act as a foundation upon which external innovators, organized as an innovative business ecosystem, can develop their own complementary products, technologies, or services.</p>	<a href="#">Gawer &amp; Cusumano, 2014</a>	Windows, iOS	AWS
 <p>Transactional Platform</p>	<p>Products or services where two or multiple groups of customers get together through a platform that internalize indirect network externalities, enabling a direct transaction (one-to-one, which can be a physical product, a money transaction, a digital service, or whatever that flows from one side to the other) between demand and supply sides.</p>	<a href="#">Rochet &amp; Tirole, 2003</a> ; <a href="#">Hagiu &amp; Wright, 2015</a> ; <a href="#">Tauscher &amp; Laudien, 2018</a>	Uber, Airbnb	Alibaba B2B, SAP Ariba
 <p>Orthogonal Platform (Client-as-a-Target)</p>	<p>Products or services where two or multiple groups of customers are gotten together through a platform that internalize indirect network externalities, where one side (the orthogonal) exploit the presence of the other (first) side, in terms of eyeballs or attention, being a target.</p>	<a href="#">Rochet &amp; Tirole, 2003</a> ; <a href="#">Evans, 2003</a> ; <a href="#">Trabucchi et al., 2017</a>	New York Times, Commercial television	LinkedIn (advertising part)
 <p>Orthogonal Platform (Client-as-a-Source)</p>	<p>Products or services where two or multiple groups of customers are get together through a platform that internalize indirect network externalities, where one side (the orthogonal) exploit the data generated by the other (first) side, the value is in the aggregation of the data generated, being a source.</p>	<a href="#">Rochet &amp; Tirole, 2003</a> ; <a href="#">Evans, 2003</a> ; <a href="#">Trabucchi et al., 2017</a>	Strava, Twitter, Facebook	Siemens Mindsphere, GE Predix

et al., 2019). Moreover, the theoretical framework surrounding the implementation and impact of digital B2B platforms in SCM is still developing, leaving substantial gaps in both academic and practical understanding.

To address this gap, we conducted a systematic review to consolidate existing knowledge, identify prevailing challenges, and uncover opportunities for further research on digital platforms in SCM. Following the approach in similar review studies (e.g., Bhandal et al., 2022; Culotta et al., 2024), we identified 49 articles with a primary focus on digital platforms in supply chain and B2B networks.

These articles were analyzed and classified based on three dimensions:

1. *Type of Platform*: Platforms were categorized into transactional, innovation, orthogonal, or hybrid types.
2. *Platform Functions in Supply Chain Operations*: The specific functions of platforms in each study were examined from an SCM perspective, such as enabling information sharing, process improvement, and supporting transformational activities.
3. *Platform Influence on B2B Relationships*: The B2B relationship themes addressed in each study were identified, including power dynamics and governance, resource allocation and optimization, communication dynamics, competence development and learning, and resilience and adaptability.

For a detailed description of the literature review methodology, including the article classification process and the complete list of references, please refer to Appendix A in the supplementary materials document.

### 3.1. Types of platforms in previous supply chain research

Table 2 summarizes the classification of SCM studies linking different platform typologies to B2B relationships.

Previous research has predominantly focused on transactional platforms, with 32 studies emphasizing their role in facilitating transactions and integrating resources within supply chains. Transactional platforms are central to supply chain operations, enabling direct exchanges between interdependent groups, such as buyers and suppliers, which enhances efficiency and market operations. For instance, Lu et al. (2024) discuss platforms that provide financing to farmers, ensuring they receive the necessary funds. Similarly, Cui et al. (2023) highlight how livestream e-commerce platforms reduce product-fit uncertainty through real-time consumer-seller interactions, leading to improved sales outcomes. Surucu-Balci et al. (2024) explore platforms that support digital information sharing in maritime supply chains, enhancing data exchange and processing.

In contrast, innovation platforms have received less attention, with only seven studies exploring their potential. These platforms serve as a foundation for firms to develop complementary products and services, fostering a diverse innovation ecosystem within supply chains. Ivanov et al. (2022) examine third parties' roles in 'supply-chain-as-a-service,' while Chen et al. (2024) discuss platforms that promote co-development and collaboration. Wohlleber et al. (2022) analyze how these platforms enhance dynamic capabilities for digital transformation in maritime container shipping, helping firms adapt to changing environments. Innovation platforms are crucial for driving resource integration and innovation, enabling supply chains to meet emerging challenges.

Orthogonal platforms, which are even less studied with only three papers, offer primary services to one group while monetizing through another, such as advertisers or data buyers. These platforms leverage user engagement to create value through secondary monetization mechanisms. Behl et al. (2024) illustrate how gamification on such platforms promotes sustainable practices while generating revenue. Sun (2023) examines traditional advertising roles within these platforms, and Boukhatmi et al. (2023) discuss opportunities for data aggregation

**Table 2**  
Platform classification in SCM research.

Classification	Description	References Examples
Transactional	Platforms facilitate direct transactions between interdependent groups like buyers and suppliers or service providers and customers, enhancing exchanges (products, services, or knowledge), increasing efficiency, and ensuring smooth market operations.	Amaral & Orsato, 2023; Banker et al., 2011; Camel et al., 2024; Ciulli et al., 2020; Lu et al., 2024; Pessot et al., 2024; Reza-Gharehbagh et al., 2021; Wang, Li, He, & Zhou, 2024
Innovation	Platforms offer a stable foundation for other firms to develop complementary products and services, fostering a diverse innovation ecosystem. They facilitate resource integration, co-development, and drive innovative solutions within supply chains.	Bhatti et al., 2022; Chen et al., 2024; Ivanov et al., 2022; Simoni et al., 2022; Yin et al., 2024
Orthogonal	Platforms offering primary services to one group while monetizing through another, like advertisers or data buyers, leverage user engagement to create value via secondary monetization mechanisms.	Behl et al. (2024); Boukhatmi et al., 2023; Sun, 2023
Hybrid	General reference to digital platforms/MSPs without specifying the platform types under scrutiny or encompassing multiple typologies in the research scope.	Chari et al., 2023; Das & Dey, 2021; den Hartigh, Stolwijk, Ort, & Punter, 2023; Hein et al., 2020; Jovanovic, Sjödin, & Parida, 2022

and sharing within specific industries. Although orthogonal platforms are underexplored in SCM, they present a compelling model for value creation and engagement through indirect monetization.

Additionally, 9 studies focus on hybrid platforms, which address various platform typologies without specific definitions, often referring to 'digital platforms' in general terms. These studies acknowledge the multifaceted nature of platforms in supply chains but lack a clear categorization, reflecting the complexity and evolving understanding of platform roles within SCM.

### 3.2. Platform functions in supply chain operations

Digital platforms play a critical role in supply chain management (SCM) by providing various functions that enhance operational efficiency, transparency, sustainability, and innovation. The literature identifies three primary roles of platforms within SCM: facilitating information sharing and collaboration, improving existing processes, and supporting transformational efforts. These roles – outlined in Table 3 – are integral to optimizing supply chain operations and adapting to evolving market demands.

One of the key functions of digital platforms is facilitating information sharing and collaboration among supply chain partners. This role includes enabling financing and cost-sharing mechanisms, which are vital for business stability and efficiency. For example, Lu et al. (2024) discuss how platforms provide loan services and digital tools to empower farmers, thereby improving their financial stability and operational efficiency. Similarly, Reza-Gharehbagh et al. (2021) highlight the role of multi-sided crowdfunding platforms in supply chain finance, enabling businesses to access necessary funds and share costs effectively. In addition to financial services, platforms also enhance information sharing and processing, which are essential for transparency and efficiency within supply chains. Surucu-Balci et al. (2024) demonstrate how digital platforms improve data exchange and processing capabilities in maritime supply chains, leading to better overall



**Table 3**  
Platform functions in supply chain operations.

PLATFORM FUNCTIONS	Description	References Examples
Sharing information and collaboration	Facilitating financing and cost-sharing	Providing financial services and cost-sharing mechanisms to enhance business stability and efficiency
	Enabling information sharing and processing	Improving data exchange, processing capabilities, and overall transparency in supply chains
	Facilitating knowledge sharing and collaboration	Promoting collaboration and knowledge exchange among supply chain partners
Improving existing processes	Supporting resource orchestration and integration	Enabling the effective management and utilization of resources through advanced digital capabilities
	Enhancing transparency and efficiency	Increasing visibility and operational efficiency through real-time tracking and data visibility
	Reducing product-fit uncertainty	Mitigating uncertainty in product fit through real-time consumer interactions and feedback
Supporting transformation	Managing perishability and advertising strategies	Optimizing strategies for managing perishability and advertising of digital content
	Promoting sustainability and goal commitment	Encouraging sustainable practices and ensuring alignment with sustainability goals
	Enhancing dynamic capabilities for digital transformation	Supporting adaptive and transformative capabilities essential for digital evolution
	Supporting green technology and green product development	Enabling the development and financing of green technologies and products

management. Yan et al. (2024) further discuss how platforms can enhance data analysis, thereby improving supply chain transparency and decision-making processes. Additionally, platforms facilitate knowledge sharing and collaboration, which are crucial for effective supply chain management. Chakraborty et al. (2024) illustrate how knowledge-sharing platforms enhance collaboration in supplier selection within the automotive industry, leading to improved decision-making. Lehner and Elbert (2023) examine how platforms support pallet exchange and connectivity in circular supply chains, further enhancing collaboration and efficiency.

Beyond information sharing, digital platforms are essential for improving existing processes within supply chains. One significant function is supporting resource orchestration and integration, which is crucial for managing the complexities of modern supply chains. Wang et al. (2024) explore how platforms facilitate resource orchestration in industrial internet contexts, enabling firms to manage and utilize resources more effectively. Similarly, Jovanovic, Sjödin, and Parida (2022) discuss how industrial digital platforms support platform architecture, services, and governance, thus enhancing resource management and integration. Another critical function of platforms is enhancing transparency and operational efficiency. Li et al. (2023) show how blockchain platforms improve transparency and efficiency in food supply chains through real-time tracking and data visibility. Choudhury et al. (2023) investigate a blockchain-based trucking marketplace in India, which enhances transparency and efficiency in logistics operations. Platforms also play a role in reducing product-fit uncertainty, particularly in e-commerce contexts. Cui et al. (2023) demonstrate how livestream e-commerce platforms reduce uncertainty for consumers by facilitating real-time interactions with sellers, thereby boosting consumer confidence and improving sales outcomes. Hu et al. (2023) present strategies for managing coupon distribution and coordination between digital platforms and merchants, further reducing uncertainties. Additionally, platforms manage the perishability of digital content and optimize advertising strategies. Sun (2023) examines how digital content platforms handle perishability and advertising to maximize resource investment and profitability, ensuring that digital content remains relevant and effectively monetized. Peng et al. (2023) address digital piracy and explore how platforms can protect content and revenue through enhanced management strategies.

Finally, digital platforms are pivotal in supporting transformational efforts within supply chains, particularly in promoting sustainability and fostering innovation. Platforms encourage sustainable practices and ensure alignment with broader sustainability goals. For instance, Behl et al. (2024) demonstrate how gamification on digital platforms

promotes sustainability in green SCM, while Amaral and Orsato (2023) show that digital platforms help reduce food waste and improve food distribution efficiency. Furthermore, platforms enhance the dynamic capabilities necessary for digital transformation. Wohlleber et al. (2022) explore how platforms strengthen these capabilities in maritime container shipping, aiding firms in adapting to changing market conditions. Das and Dey (2021) discuss the integration of platform ecosystems with Industry 4.0 in global manufacturing value networks, highlighting the role of platforms in driving digital transformation. Lastly, platforms play a crucial role in supporting the development and financing of green technologies and products. Reza-Gharehbagh et al. (2023) highlight how platforms support green product development through sustainable supply chain finance, while Camel et al. (2024) examine the role of blockchain-enabled platforms in supporting green product development and stakeholder engagement in the agri-food sector.

### 3.3. The influence of platforms on B2B relationships

The integration of digital platforms into supply chain management (SCM) has a profound impact on various aspects of B2B relationships, including power dynamics, resource allocation, communication, competence development, and resilience. These influences – summarized in Table 4 – shape how supply chains operate and evolve, with significant implications for efficiency, collaboration, and adaptability.

Digital platforms notably reshape power dynamics and governance structures within supply chains. By centralizing control and introducing new governance models, these platforms alter the power balance among supply chain partners. Jovanovic, Sjödin, and Parida (2022) discuss how these governance structures influence the development and management of industrial digital platforms, affecting decision-making and control mechanisms. Similarly, Hein et al. (2019) explore the impact of governance and ownership models within digital platform ecosystems, highlighting how these structures influence value creation and the autonomy of ecosystem participants. While the centralization of control can enhance equity and efficiency, it also necessitates careful management to prevent conflicts and ensure alignment among partners.

Resource allocation and optimization are other critical areas where digital platforms play a vital role. By improving coordination and resource utilization, platforms enhance performance and generate cost savings. Wei and Pardo (2024) examine how platforms increase resource density in supply networks, thereby facilitating value co-creation. Ivanov et al. (2022) focus on the integration of physical and digital assets in the “Supply chain-as-a-service” model, which optimizes network design

**Table 4**  
Influence of platforms on B2B relationships.

Relationship theme	Type of influence	Examples
<b>Power dynamics and governance</b>	Platforms alter power dynamics and governance structures within supply chains, centralizing control and creating new models of governance.	Jovanovic, Sjödin, and Parida (2022); Hein et al. (2020); Yan et al. (2024)
<b>Resource allocation and optimization</b>	Platforms optimize resource allocation, enhancing efficiency and performance through better coordination and utilization of resources.	Wei and Pardo (2024); Hong et al. (2021); Ivanov et al. (2022)
<b>Communication dynamics</b>	Platforms facilitate effective information sharing and processing, improving transparency, decision-making, and coordination among supply chain partners.	Surucu-Balci et al. (2024); Ivanov et al. (2022); Hong et al. (2021)
<b>Competence development and learning</b>	Platforms contribute to competence development and continuous learning, enabling businesses to develop new skills, adapt to technological advancements, and stay competitive.	Wohlleber et al. (2022); Jensen, Kristensen, Christensen, & Waehrens, 2024; Bhatti et al. (2022)
<b>Resilience and adaptability</b>	Platforms enhance supply chain resilience and adaptability, providing tools for better planning, risk management, and adaptive responses to disruptions.	Suali et al. (2024); Yan et al. (2024); Chari et al. (2023); Joglekar et al. (2022); Wohlleber et al. (2022)

and dynamic service provision. Hong et al. (2021) study the impact of supply chain service platforms on the performance of catering companies, demonstrating how platforms provide tools and frameworks that lead to more efficient resource management.

Communication dynamics are also significantly influenced by digital platforms, which are essential for transparency and operational efficiency in supply chains. Platforms enhance these dynamics by enabling real-time data exchange and improving communication channels among partners. Surucu-Balci et al. (2024) illustrate how platforms facilitate digital information sharing in maritime supply chains, thereby enhancing data exchange and processing. Ivanov et al. (2022) discuss cloud supply chains that integrate physical and digital assets to improve information sharing, while Hong et al. (2021) show how supply chain service platforms enhance organizational performance in the catering industry through better information management. Improved communication not only leads to more informed decision-making but also enhances coordination and transparency across supply chain operations.

Platforms also play a crucial role in competence development and learning, enabling businesses to acquire new skills, adapt to technological advancements, and maintain competitiveness. Chakraborty et al. (2024) highlight how knowledge-sharing platforms facilitate collaboration between academia and industry, improving decision-making in supplier selection and fostering more effective approaches. Jensen et al. (2024) examine how digital product passports in lifecycle management enhance understanding of resource use and sustainability in circular supply chains. Bhatti et al. (2022) emphasize the role of big data analytics platforms in boosting innovation and performance in MSMEs, demonstrating how data-driven insights contribute to competence development. These platforms ensure continuous access to knowledge and learning, which are essential for building the skills needed to thrive in a dynamic market environment.

Finally, digital platforms significantly enhance resilience and adaptability in supply chains, especially in the face of disruptions. They provide tools for improved planning, risk management, and adaptive

responses, which are crucial for maintaining stability and performance. Suali et al. (2024) and Yan et al. (2024) explore factors that influence digital platform implementation, emphasizing their role in boosting resilience and sustainability in manufacturing supply chains. Chari et al. (2023) identify how digital and physical infrastructure platforms support supply chain resilience and promote continuous improvement. Joglekar et al. (2022) discuss how platforms enhance dynamic capabilities for digital transformation in maritime container shipping, enabling firms to adapt and thrive in changing environments. By strengthening risk management and adaptive capabilities, platforms help organizations navigate uncertainties and maintain operational stability.

#### 4. Platform thinking in supply chains and B2B relationships: papers in the special issue

As previously discussed, while the literature on digital platforms in SCM and B2B is comprehensive and advancing, research on multi-sided platforms (MSPs) within these contexts remains in its early stages. Although MSPs are not new, their significance in the digital economy has grown with advancements in internet technology and industry digitization.

In B2B, MSPs are defined as “all forms of networked business where multiple suppliers and customers interact for economic purposes within one or among multiple tiers in economic value chains” (Alt & Zimmermann, 2014, p. 162). These platforms, centered around a provider, facilitate transactions, innovation, or indirect relationships (orthogonal) between multiple sides, reducing transaction costs and enhancing economic interactions.

Integrating MSPs into supply chains offers significant opportunities to improve the efficiency and effectiveness of managing B2B relationships. Technological innovations like additive manufacturing, FinTech solutions, and blockchain increasingly rely on platform-based business models (Pereira et al., 2019). These platforms are essential for fostering new industrial collaborations, generating substantial data, and enhancing supply chain visibility and integration (Ozalp et al., 2022).

MSPs are reshaping value chain networks and B2B relationships among various supply chain actors, including suppliers, manufacturers, retailers, IT providers, and governments. To explore technology-enabled MSPs and ecosystems comprehensively, we initiated a 2022 call for papers titled “Technology-enabled multi-sided platforms in B2B settings: challenges and opportunities for supply chain ecosystems” in *Industrial Marketing Management*. This call aimed to deepen understanding and expand knowledge of MSPs in supply chains. From 16 submissions, eight papers were selected for this special issue after a thorough review. Table 5 summarizes these papers, which collectively offer critical insights into MSPs' roles in B2B supply chains, covering theoretical frameworks, technological integration, sustainability, strategic transformation, and performance enhancement.

Marzi et al. (2023) explore the factors driving adoption of two-sided digital platforms in SMEs and large firms, highlighting that SMEs value network flexibility while large firms prioritize efficiency and security. Their study, using fsQCA, offers insights into the barriers and benefits influencing platform adoption across firm sizes. Franzò and Urbinati (2023) propose a taxonomy of MSPs in circular supply chains, identifying six clusters based on resource loops. Their study offers practical guidance for leveraging MSPs to enhance sustainability and inter-organizational collaboration in B2B contexts. Ma et al. (2023) assess how MSP development affects ESG performance in B2B firms. Analyzing data from 213 Chinese firms, they find that digital operations improve all ESG dimensions, with larger firms benefiting more from technology sharing and flat management practices. Principato et al. (2023) investigate the development of a digital MSP for redistributing food surplus, balancing economic, social, and environmental sustainability. They highlight the role of platform leaders in driving sustainable business model innovation.

**Table 5**  
Characteristics of papers included in the special issue.

Authors	Type of MSPs Included in the Study	Role of MSPs in Supply Chain	B2B Themes
Marzi et al. (2023)	Transactional	Facilitating Financing and Cost-Sharing	Resource Allocation and Optimization
Franzò and Urbinati (2023)	Transactional	Promoting Sustainability and Goal Commitment	Competence Development and Learning
Ma et al. (2023)	Transactional	Promoting Sustainability and Goal Commitment	Power Dynamics and Governance
Principato et al. (2023)	Transactional	Managing Perishability and Advertising Promoting Sustainability and Goal Commitment	Resilience and Adaptability
Micallef et al. (2023)	Transactional	Enhancing Transparency and Efficiency	Resource Allocation and Optimization Communication Dynamics
Mancuso et al. (2024)	Hybrid	Facilitating Knowledge Sharing and Collaboration	Communication Dynamics
Budde et al. (2024)	Transactional	Promoting Sustainability and Goal Commitment	Resilience and Adaptability; Competence Development and Learning
Heikinheimo et al. (2024)	Transactional	Supporting Resource Orchestration and Integration	Resource Allocation and Optimization

Micallef et al. (2023) examine MSP adoption strategies in the Australian residential building industry, identifying three strategies—network shaping, optimization, and expansion. The study reveals both positive and negative impacts on network actors. Mancuso et al. (2024) study value creation in data-centric B2B platforms, offering a model based on case studies of MindSphere, Skywise, and Open-es. They contribute to understanding how data management and governance mechanisms drive value creation in these platforms. Budde et al. (2024) explore the transformation of a traditional B2B company into an MSP, focusing on a recycling firm. Using Moore's ecosystem lifecycle framework, they provide a process model for SMEs transitioning to MSPs. Heikinheimo et al. (2024) investigate how B2B service suppliers transition from linear value chains to networked value creation through digital MSPs. They provide a framework for understanding the strategic shifts required for effective network management.

These papers collectively reflect the themes highlighted in the literature review, particularly in relation to platform typology. Seven of the eight papers focus on transactional platforms, while Mancuso et al. (2024) uniquely explore both transactional and orthogonal characteristics from a data-centric perspective. Marzi et al. (2023) and Heikinheimo et al. (2024) contribute to discussions on resource allocation and competence development, while Franzò and Urbinati (2023) and Ma et al. (2023) explore sustainability and governance in MSPs. Principato et al. (2023) and Mancuso et al. (2024) discuss business model evolution and value creation, emphasizing resilience and data management. Micallef et al. (2023) focus on MSP adoption dynamics, and Budde et al. (2024) provide insights into the transformative potential of MSPs for established firms. Together, these studies enhance our understanding of MSPs' role in improving supply chain performance and sustainability, outlining current and future trends in the field.

## 5. Future directions for platforms and B2B relationships?

This article inaugurates a special issue on technology-enabled MSPs in the B2B sector, following an extensive review of key contributions in supply chain journals. Our analysis reveals several critical insights. B2B platforms, though essential, are significantly understudied compared to B2C and C2C platforms, particularly from an SCM perspective, which underscores the need for more focused research. Many existing studies lack a clear, shared definition of platforms, often broadly categorized as 'digital platforms.' However, closer examination shows that most studies implicitly focus on transactional platforms (Rochet & Tirole, 2003; Cusumano et al., 2019). This ambiguity highlights the importance of a more precise and unified understanding of platform typologies (Trabucchi & Buganza, 2022).

Our review also identifies the diverse functions that platforms play in supply chain evolution and their potential impacts on B2B relationships, emphasizing their transformative potential beyond mere transactional functions. These themes are summarized in Fig. 1.

Our analysis suggests three key research directions, summarized in the following propositions, to guide scholars and practitioners in advancing the understanding and application of platforms in B2B relationships.

**Proposition 1.** Platforms are not merely digital tools; platform literature can help examine broader uses, opportunities, and challenges within the platform ecosystem.

B2B literature often refers to 'digital platforms' with classifications based on their role rather than their mechanisms (Jovanovic, Sjödin, & Parida, 2022). Typically, studies focus on transactional platforms or digital tools that lack essential MSP characteristics like dual sides and network externalities (Evans, 2003). Properly defining and applying MSP concepts can help scholars adopt broader perspectives. For example, understanding dual value propositions (Muzellec et al., 2015) and the crucial roles of data (Trabucchi et al., 2017; Trabucchi & Buganza, 2019) underscores the need for accurate platform assessment in B2B contexts.

Research questions for this direction include:

- How can precise MSP definitions enhance platform implementation in B2B supply chains?
- What are the unique challenges and advantages of adopting well-defined MSPs in various B2B contexts?
- How do different MSP types affect the dynamics and performance of B2B relationships?

**Proposition 2.** Platforms transcend mere marketplaces—innovation and orthogonal platforms provide research and practical opportunities.

Platforms are often viewed as facilitators in transactional roles (Evans & Schmalensee, 2016), but they can also support innovation (Gawer & Cusumano, 2014) and utilize idle assets to uncover new business opportunities (Trabucchi et al., 2020). Innovation platforms, for instance, engage complementors to enhance technological functionalities (Cenamor, 2021). Exploring these opportunities in B2B contexts can reveal distinct benefits and challenges, offering substantial theoretical and managerial insights.

Research questions for this direction include:

- How can innovation platforms be effectively implemented in B2B supply chains to promote co-development and technological advancements?
- What are the main differences in the benefits and challenges of transactional versus innovation platforms in B2B contexts?
- How can data-centric orthogonal MSPs transform decision-making and strategic initiatives within B2B supply chains?



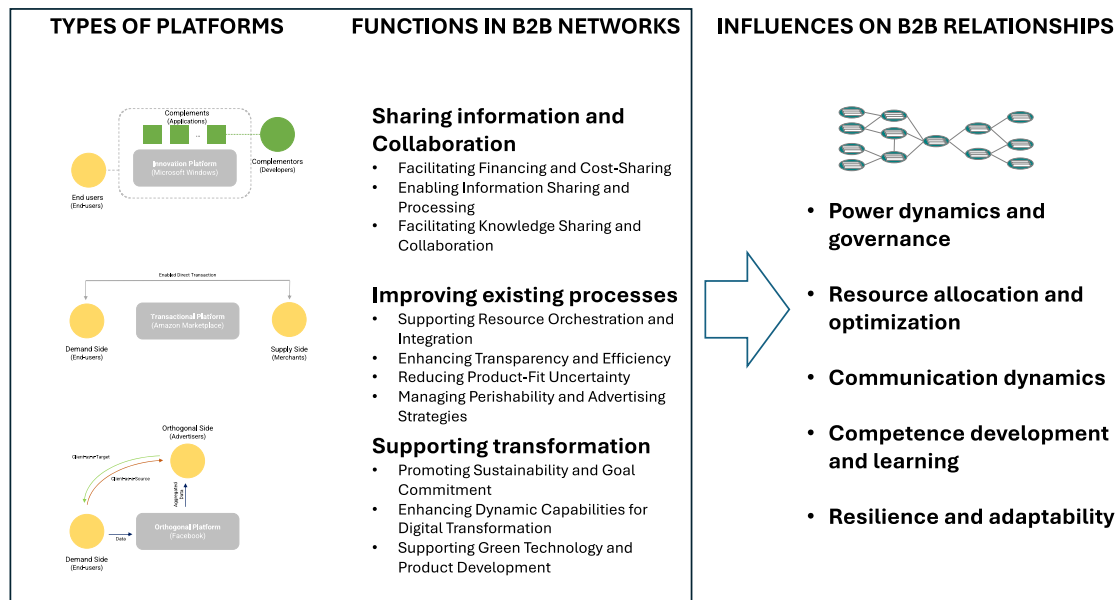


Fig. 1. Types, functions, and influence of MSPs on B2B relationships.

**Proposition 3.** Platform thinking promotes innovation in the B2B sector by reimagining existing assets, supporting business-level innovation, and facilitating sustainable transformation.

Platform thinking leverages platform-based mechanisms to identify innovation opportunities, often by utilizing idle assets or current resources (Trabucchi et al., 2020). Established firms increasingly adopt platform thinking to creatively revise business models (Dell'era et al., 2021; Joachimsthaler, 2020). Understanding how platform thinking operates in B2B relationships offers significant research potential, especially as recent studies link platforms to sustainability and their role in supporting sustainable transformation (Ritala, 2024).

Research questions for this direction include:

- How can B2B firms integrate platform thinking into strategic planning to drive innovation and business model transformation?
- How can platform thinking support sustainable transformation and address grand challenges in supply chains?
- What factors influence the successful implementation of platform thinking in B2B supply chains?
- How can established firms use platform thinking to enhance resilience and adaptability in dynamic markets?

This special issue contributes to the ongoing debate through eight papers that provide valuable insights and stimulate further reflection. Each paper offers unique perspectives and findings, collectively enriching our understanding of B2B platforms and their transformative potential. We hope this issue will ignite continued interest and further research in this critical area, exploring the intersection between platforms and supply chain ecosystems.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.indmarman.2024.08.012>.

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