



ESG and supply chain finance to manage risk among value chains

Nishant Agrawal^a, Sachin Modgil^b, Shivam Gupta^{c,*}

^a ICFAI Business School, Opp. Annapurna Dham, Por, Adalaj Koba Road, Ahmedabad, 382421, India

^b Department of Operations Management & Quantitative Techniques, International Management Institute, Kolkata, 2/4 C, Judges Ct Rd, Alipore, Kolkata, West Bengal, 700027, India

^c Department of Information Systems, Supply Chain Management & Decision Support, NEOMA Business School, 59 Rue Pierre Taittinger, 51100, Reims, France

ARTICLE INFO

Handling Editor: Jing Meng

Keywords:

Systematic literature review (SLR)

ESG

Value chain

Supply chain finance

PRISMA

ABSTRACT

The purpose of this research is to systematically review the state-of-the-art literature on Supply Chain Finance (SCF) and Environmental, Social, and Governance (ESG) and Value Chain within the supply chain management domain. We meticulously screened closely related themes through a systematic literature review of selected fifty-one manuscripts using the PRISMA method. Three-phase approach of planning, conducting and reporting is considered in this review. The outcomes of our review demonstrate the contributions of SCF to decision-making within the supply chain domain. This review highlights synergies, distinctions, and intersections in SCF, ESG, and value chain. Based on themes, the study led to four propositions to develop a comprehensive framework. Additionally, the literature is elucidated based on the approaches employed for SCF development, accompanied by the underlying theories. The categorization primarily separates the literature into two main groups: one focused on theory development, and the other on practical applications, revolving around SCF, ESG, and the value chain. Professionals in corporate settings and academic scholars will likely derive significant value from this review. The study thoroughly reviews, categorizes, and analyzes existing research and offers an integrated framework on SCF, ESG, and the value chain, which can be helpful for professionals. This is the first research that uses a structured approach to analyze studies on a novel topic and propose a framework for SCF, ESG, and value chain.

1. Introduction

In the last twenty years, a notable pattern has surfaced in the realm of corporate sustainability. This trend encompasses a range of initiatives, from mandates that encourage voluntary commitments to sustainable practices (Freeman et al., 2010; Wang et al., 2016; Aragón-Correa et al., 2020; Fiandrino et al., 2022; Agrawal et al., 2023). Thus, along with sustainability strategies companies have also started sharing information about environmental, social, and governance (ESG) matters (Baid and Jayaraman, 2022; Asif et al., 2023; Kumar et al., 2024). Sustainability and ESG have attracted significant importance in the business landscape. Business need to incorporate these revolutionary changes to comply to emerging business environment. ESG captured the interest of various stakeholders such as scholars, governments, and enterprises through a report published by United Nations in 2006 (Atkins, 2020; Clément et al., 2023; Wang et al., 2023a,b). In 2021, ESG-focused portfolios accomplished nearly \$40 trillion in assets further expecting a 30% increase by 2025 (Bloomberg Intelligence, 2021). This brought

transparency in all the activities that could impact the environment. Exposure by social media and non-government firms led to an increase in global SC visibility (Clarke and Boersma, 2017; PRI, 2020; Saini et al., 2022; Fiandrino et al., 2022; Agrawal and Jain, 2022; Agrawal et al., 2024).

The global financial crisis of 2008–2009 witnessed increase in research on Supply Chain Finance (SCF) (Kaur et al., 2023). This crisis revealed that companies and their SC faced cash flow constraints and challenges in securing financing from banks. These difficulties were often attributed to a lack of understanding of liquidity and working capital management (Caniato et al., 2016; Baid and Jayaraman, 2022; Huang et al., 2022; Rijanto, 2024). Since then, SCF has progressively evolved as a crucial tool for tackling these challenges. The primary focus of SCF revolves around "planning, managing, and controlling SC cash flows," as Wuttke et al. (2013) emphasized. According to Jia et al. (2020), aims to help companies fulfill their daily financing needs, optimising cash flow at the inter-organizational level. The concept of SCF is a recent development as compared to equity financing or

* Corresponding author.

E-mail addresses: nishant4uagr@gmail.com (N. Agrawal), sach.modgil@gmail.com (S. Modgil), shivam.gupta@neoma-bs.fr (S. Gupta).

<https://doi.org/10.1016/j.jclepro.2024.143373>

Received 2 January 2024; Received in revised form 3 July 2024; Accepted 8 August 2024

Available online 14 August 2024

0959-6526/© 2024 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

mortgages and it faces numerous challenges, as emphasized (More and Basu, 2013; Joshi et al., 2024). It is evident that number of start-ups are also emerging in SCF space to facilitate businesses in their transactions. Emerging approaches in SCF include purchase order financing (Reindorp et al., 2018) and inventory financing (Yan and Sun, 2013). As SCF garners increasing attention, the volume of literature in this area is also rising (Gomm, 2010; Elliot et al., 2020; Jia et al., 2020; Medina et al., 2023). However, investigation on SCF or the convergence of finance and operations is yet in its early stages, primarily because of its innovative nature. As per the PRI (2020), adeptly managing ESG factors in SCF can yield a range of short-term and long-term financial benefits.

Developing and developed nations are strategically aligning through rapidly developing global value chains, opting not to invest extensively in creating their own. This approach saves both time and money while providing access to cutting-edge technological innovations. (Clarke and Boersma, 2017; Kumar et al., 2022; Hoang et al., 2023). The ongoing debate centers on developing and expanding global value chains by established economies and its significance for emerging ones (Cuervo-Cazurra and Pananond, 2023). Critics sometimes argue that this expansion is prone to neglecting environmental concerns, demonstrating environmental irresponsibility, fostering employee vulnerability, reducing wages and work conditions, and giving growth to ethical problems (Clarke and Boersma, 2017; Davidson, 2023).

To align the objectives of this study and set our study apart from existing research, we initially conducted a systematic literature review (SLR), identifying a total of 51 papers published until May 15, 2023. Subsequently, we performed a descriptive analysis, taking into account journal characteristics. We then investigated deeper into content analysis to gather in-depth insights by reviewing related journal manuscripts. Due to its sizable repository having peer-reviewed journals, conference database, and manuscript proceedings, Scopus is considered as compared to other databases. To safeguard the quality of the journals we referenced, we consulted the SCOPUS database, as suggested by Agrawal and Jain (2021) and Negri et al. (2021). Our paper contributes to the theory by synthesizing the concepts of SCF, value chains, and ESG. Furthermore, compared to previous literature reviews, our work offers a comprehensive exploration of all aspects of SCF, value chains, and ESG rather than focusing on a narrow domain, especially over the last decade. As a result, not only experienced researchers can examine the latest advancements in SCF, value chains, and ESG, but young researchers can also gain a foundational understanding of the concepts by following our recent framework, detailed methodology and future pathway. Furthermore, the insights developed from our research can prove valuable for industry practitioners who are interested in the practical applications of SCF, value chains, and ESG. By taking a cross-disciplinary approach and assessing ESG through the perspectives of SCF and value chains, the motivation of this research is to facilitate a more profound integration that assists organizations in reaching their objectives. We opted for a systematic review methodology instead of other surveyor review methods due to its replicable and transparent process, which aids in reducing bias in the outcomes (Cerchione and Esposito, 2016). Another aim is to pinpoint research gaps within the existing literature and formulate suitable research questions to address them. These research inquiries serve as potential avenues for enhancing the understanding of ESG and value chain within the supply chain domain.

By looking at the potential of the SCF, value chains, and ESGs, we study literature review in the given domain. The rationale for conducting only a literature review at this stage: (a) ESG has gained considerable momentum and is a vital driver in the business world, and (b) Focus on integrating ESG and SCF into value chains.

Hence, we stage the following research objectives.

1. To showcase the latest developments in the field of ESG and SC finance and value chain

2. To gain insights into the perspectives offered by organizational theories and
3. To outline the potential areas for future investigation within the ESG, SC finance and value chain

This research contributes to the literature in three ways. First to develop a conceptual framework among ESG, SC finance and value chain. When discussing ESG in the context of finance and the value chain, companies may consider how their supply chain practices impact environmental, social, and governance factors. Second to get interesting insights of various organizational theories in the area of supply chain. The third contribution is to study the concept of ESG, SC finance and value chain and report future scope of research.

The remaining sections are structured as follows: Section 2, highlights the concepts of ESG, SCF and VC, and a structured process of review is presented in Section 3. Propositions and frameworks derived from the findings are presented in Section 4. Implications for theory and practice in presented in Section 5. To end this, we conclude and present the future directions of the research in Section 6 comprising ESG, SCF and VC mapped to organizational theories.

2. Background of the study

2.1. ESG

According to a JP Morgan report from 2022, S&P-500 companies have witnessed a substantial increase in their allocation towards ESG considerations (Chaudhry et al., 2023). This allocation has surged from 20% in 2011 to 85% in 2022. Investors primarily focus on ESG factors, with financial incentives playing a significant role in their investment decisions (Baid and Jayaraman, 2022; Liang et al., 2022). Empirical evidence suggests that companies disclosing their ESG measures tend to outperform others by mitigating risks and improving their economic performance, though outcomes may vary (Mangla et al., 2014; Sardannelli et al., 2022; Kumar et al., 2024). ESG measures provide economic benefits and motivate sustainable production by a value-enhancing SC mechanism (Dai and Tang, 2022; Saini et al., 2022; Gedam et al., 2023). Baid and Jayaraman (2022) emphasize the role of social responsibility within SCF to advance the inclusion of the "S" (social) dimension in ESG investing while also showcasing the crucial approaches used to evaluate and quantify social impact.

2.2. Supply chain finance

By fostering relationships between buyers and suppliers, SCF pertains to providing solutions for optimising and balancing working capital within SC (Bals, 2019; Gelsomino et al., 2016; Lou et al., 2024; Phraknoi et al., 2024; Alora and Gupta, 2024). SCF has grown into a tool for helping risk management and got importance after the 2008 financial crisis as a means to manage working capital within SC (Caniato et al., 2016; Hübel and Scholz, 2020; Chaudhry et al., 2023; Joshi et al., 2024) and sustainability (Jia et al., 2020; Fiandrino et al., 2022; Liang et al., 2022) within supply chains. There is an opportunity for logistics service providers to create value for their customers by providing SCF, particularly in the form of inventory finance, this was pointed out in four case studies by Elliot et al. (2020).

Hence, adopting an integrated approach involving ESG, SCF, and value chain management within a company can be seen as a novel methodology that can yield greater tangible and intangible advantages for the firm than in the past. Previous studies have shown that effective SCM plays a crucial role in driving the execution of ESG policies (Dai et al., 2021).

2.3. Value chain

The main objective of a value chain analysis is to categorize the

activities to create high value for an organisation and its customers to gain a competitive advantage (Taylor, 2005; Chatterjee et al., 2024). Inbound and outbound logistics, inventory, cash-to-cash cycle, etc., are essential components of a value chain analysis. Regarding the capital market, three criteria are essential for shareholder value (Gomm, 2010). 'Future orientation' denotes the necessity for a company to enhance its value, considering short-term gains and long-term sustainability. This dynamic perspective distinguishes shareholder value by static assessment based solely on previous performance. "Risk adjustment" implies the need to factor in the risks and uncertainties associated with activities and their impact on returns during the evaluation process. "Market orientation", in this context, goes beyond addressing the demand market; instead, it compares a company's or project's performance to others in the market, often through benchmarking processes (Gomm, 2010; Grimm & Walz, 2024). A reduction in fixed capital costs through SCF, all other things being equal, augments shareholder value. Therefore, value chain analysis is a dynamic process often used as a strategic management tool to guide decision-making, optimize processes, and enhance overall competitiveness in the market.

3. Review methodology

This Section reviews the existing literature on the application and relationship of value chain, ESG and SCF using PRISMA provided by Moher et al. (2009). Our approach for the review is primarily based on automated searches through SCOPUS. In this study, we have adopted the methodology and literature review process proposed by Wamba (2020) and Gupta et al. (2022). So, we used a three-stage procedure to address the research objectives (Palmatier et al., 2018). The primary objective of the PRISMA statement is to assist researchers and practitioners in effectively completing a transparent literature review report (Liberati et al., 2009). Further, our study is inspired by Dubey et al. (2017b) and Tranfield et al. (2003) to shape our methodology in three parts as follows.

- (i) Review Planning
- (ii) Review conduction and
- (iii) Review reporting

The methodology employed closely mirrors the basic management model of input to output. The three stages are elaborated in detail in the next sub-sections regarding VC, SCF and ESG concepts. Section 3.1 outlines and deliberates the approach adopted during the literature review (review planning), while Section 3.2 highlights the classification of the literature review and Section 3.3 highlights the notions used in the past research, and Section 3.4 highlights the underpinning theories.

3.1. Literature review procedure

3.1.1. Review planning

Setting objectives and a protocol is crucial in secondary studies like literature reviews. The development of a protocol serves to mitigate bias during the review process. Subsequently setting precise objectives and research questions, our research approach employs the advanced search features of scientific databases to explore a strategy and methodology. Following this initial step, selecting appropriate keywords became imperative. Careful consideration was given to choosing keywords for querying journal manuscripts in search engines. In this assessment to determine the keywords, we adhered to a systematic procedure of conducting separate searches, initially using Scopus, focusing on the value chain, SCF, and ESG, respectively. In the initial iteration, we filtered keywords with the highest occurrence, focusing on those carefully linked to their respective fields, to classify a set for the value chain, SCF, and ESG. This procedure yielded 28 unique keywords. We sought input from three academics and two professionals in the second phase. Based on their recommendations, we excluded single words such as

"value," "SC," "environment," etc., removing seven keywords and incorporating three closely related suggested keywords. This method aimed to ensure objectivity in keyword selection. We employed the "and" operator in Scopus for a unified outcome, establishing boundary conditions concerning publication years, language, and article identification via the DOI. Our plan involved using "and" and "or" operators to obtain a precise intersection of the value chain, SCF and ESG.

Additionally, we intended to further improve the search parameters within the field of business management and accounting by including "article, article in press, review paper". We planned to include only journal papers in the search to maintain paper quality. We searched Scopus to identify documents conforming to these keyword combinations in the value chain, SCF and ESG domains. This three-stage search protocol led to the 51 documents for further analysis.

3.1.2. Conducting a review

During this stage, our focus was on identifying primary studies. To accomplish this, we employed the Scopus database (accessible at <https://www.scopus.com>) to conduct a comprehensive literature search aligned with the scope of this study. Due to its sizable repository having peer-reviewed journals, conference databases, and manuscript proceedings, Scopus is considered as compared to other databases. It has previously been a valuable resource for SLR in various research endeavors and employed by researchers (Agrawal and Jain, 2021). Scopus deals with journal publications spanning numerous disciplines, including health sciences, life sciences, social sciences, physical sciences, and interdisciplinary research. The need for an interdisciplinary research approach drove our study's decision to utilize the Scopus database. The performance dimensions of the firm under investigation encompass multiple disciplines. Our review topic encompasses a broad spectrum of cross-disciplinary research. Consequently, opting for Scopus as our primary source for article exploration proved to be a judicious choice. While other databases such as World Cat to Web of Science exist, Scopus boasts a more extensive collection than any other database.

Our study comprises three autonomous concepts: one from the environment management discipline (ESG), one from the finance management discipline (SCF) and another from SC management discipline (Value Chain). Table 1 showcases the search keywords used for each of the three topics. Each concept was individually queried using the "or"

Table 1
Keywords used in this research.

Keywords					
ESG		Supply Chain Finance and Risk Management		Value Chain	
ESG Rating	or	working capital	or	supply chain management	or
ESG investing	or	risk assessment	or	supply chain system*	or
environmental sustainability	or	risk factor	or	supply management	or
socially responsible investing	or	risk reduction	or	value chain	or
sustainable investing	or	financial risk	or	sustainable supply chain	or
environmental protection	or	supply chain financing	or	supply chain network	or
environmental performance	or				
governance approach	or				
corporate governance	or				
environmental, social, and governance	or				
ESG score	or				
ESG reporting	or				

Source: Compiled by authors

operator within the Scopus database, incorporating all the keywords outlined in Table 2. Following this, the three notions were integrated with the "and" operator in the Scopus database. It is significant to note that the number of journal manuscripts and documents within the Scopus undertake consistent updates regularly. For this research, data was gathered through the Scopus database and we performed the search on, May 15, 2023. Therefore, the collection of journal papers in this study serves as a representative snapshot of the data available as of May 15, 2023. The search procedure using the PRISMA method in this study is shown in Fig. 1.

The search process was conducted in several stages: (i) We initially conducted a search using ESG-related keywords as outlined in Table 1. This search produced a total of 6630 hits. (ii) Subsequently, we conducted a second-stage search using SC finance and risk management-related keywords, resulting in 5,276,973 documents. (iii) In the third stage, authors performed a search for value chain-related keywords, which yielded 89,939 hits. (iv) Moving to the fourth stage, we focused on the intersection of ESG, SCF, RM, and VC, resulting in 308 hits. (v) In the fifth stage, we refined our search criteria to focus on journal papers, including those in the press, and review manuscripts solely within the areas of business management, decision sciences and accounting. We restricted our selection to papers written in English, resulting in the identification of 57 relevant journal papers. Since academic publications in journals are typically given preference over conference proceedings (Derntl, 2014), we chose only journal articles. (vi) Finally, in the sixth stage, we meticulously reviewed the selected papers to verify abstracts and the presence of a digital object identifier (DOI). This led to the retention of 51 relevant journal manuscripts for the research. These 51 research papers accurately reflect the scale of various academic areas (Fig. 2). The concept of ESG has prominently emerged in 2018 from the corporate to academic field (see Fig. 3). This comprehensive search and selection process ensured the inclusion of high-quality and pertinent

Table 2
Search syntax on Scopus.

Source	Search syntax
Search Syntax (Search Executed on 15th May 2023 on www.scopus.com)	((SRCTITLE ("ESG") OR TITLE-ABS-KEY ("ESG rating") OR TITLE-ABS-KEY ("ESG investing") OR TITLE-ABS-KEY ("environmental sustainability") OR TITLE-ABS-KEY ("socially responsible investing") OR TITLE-ABS-KEY ("sustainable investing*") OR TITLE-ABS-KEY ("environmental protection") OR TITLE-ABS-KEY ("environmental performance") OR TITLE-ABS-KEY ("governance approach") OR TITLE-ABS-KEY ("corporate governance") OR TITLE-ABS-KEY ("environmental, social, and governance") OR TITLE-ABS-KEY ("ESG Score") OR TITLE-ABS-KEY ("ESG Reporting")) AND ((SRCTITLE ("supply chain finance*") OR TITLE-ABS-KEY ("working capital") OR TITLE-ABS-KEY ("risk assessment") OR TITLE-ABS-KEY ("risk factor*") OR TITLE-ABS-KEY ("risk reduction*") OR TITLE-ABS-KEY ("risk*") OR TITLE-ABS-KEY ("financial risk") OR TITLE-ABS-KEY ("supply chain financing*")) AND ((SRCTITLE ("Supply Chain*") OR TITLE-ABS-KEY ("Supply chain management") OR TITLE-ABS-KEY (" supply chain system*") OR TITLE-ABS-KEY ("supply management") OR TITLE-ABS-KEY ("value chain") OR TITLE-ABS-KEY ("sustainable supply chain") OR TITLE-ABS-KEY ("supply chain network")))) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (LANGUAGE, "English")) AND (EXCLUDE (EXACTSRCTITLE, "International Journal Of Supply Chain Management"))

Source: Compiled by authors

research papers in the review.

In Appendix A, you will find a list of all the journals where the 51 articles included in this study have been published. Furthermore, Appendix C provides insights into the most prominent journals in terms of the number of published articles, with "Journal of Cleaner Production", "International Journal of Production Economics", and "Transportation Research Part E Logistics and Transportation Review" emerging as the top three journals with a high volume of published articles. Interestingly, within the SC Finance and Risk Management domain, there are a few specialized journals, such as the Journal of Risk Finance and Risk and Uncertainty. Notably, none of the papers meeting our search criteria were discovered within these publications. However, as depicted in Fig. 3, the number of papers has grown increasingly in the last five years. This trend became particularly noticeable from 2018 onwards, indicating the increasing importance of this research area within the academic field.

For further insights, Appendix B provides an overview of the citations for the top 10 cited manuscripts among the 51 selected for this research. Additionally, Appendix C presents information on the top 10 journals regarding the number of manuscripts, Appendix D showcases the top 10 institutions contributing to these papers, and Appendix E highlights the top 10 countries associated with these publications. Lastly, Appendix F showcases a complete list of the 51 papers considered in this study.

3.1.3. Review reporting

In this Section, a synthesis of the review is presented, organizing findings depending on the following criteria: (1) Publication year, (2) source of publication, (3) research institution, (4) methodological procedure, and (5) foundational theory. The arrangement of this review summary adheres to the framework established by Baryannis et al. (2019). 51 papers from 35 journals addressing the intersection of SCF, value chain, and ESG in decision-making have been identified and listed.

Publication year The data in Fig. 3 illustrates a noticeable upward trend in research related to the value chain, SCF and ESG, particularly after 2010–2011. This trend reflects an increase from 1 study in 2018 to an average of 6–10 studies per year from 2021 to 2022.

Fig. 4 highlights the **publication sources**, showcasing the top ten journals ranked based on contributions to the nominated studies for this review. As anticipated, the most substantial contributions are derived from journals specifically focused on SCF and ESG. Additionally, noteworthy journals in the list encompass publications such as the "Journal of Cleaner Production (JCP)," "International Journal of Production Economics (IJPE)," and "Business Strategy and the Environment (BSE)."

Institutions involved in research It is noteworthy, as indicated in Appendix E, that China and the United Kingdom emerge as prominent contributors to the value chain, SCF, and ESG research. Additionally, countries including the United States, Canada, Iran, Italy, and Australia are actively researching these domains. Institutions such as Islamic Azad University, Islamic Azad University, Damavand Branch, and CIBC Global Markets are leading the way in this research field.

Methodological approach: The research was categorized according to their research methodology. The predominant approach was the contribution to model development with empirical research, followed by case studies and MCDM. Classification also highlights the scarcity of critical reviews conducted in the value chain, SCF, and ESG (Fig. 5).

3.2. Classification of literature

In this study, the articles under consideration have been categorized using two different approaches: organizational theories and a building block scheme.

Organizational Theories: Some articles have been classified based on organizational theories, as evidenced by the works of Sarkis et al. (2011), Arumugam et al. (2014) and Gupta et al. (2019). Building Blocks Scheme: Another classification method employed is the building blocks

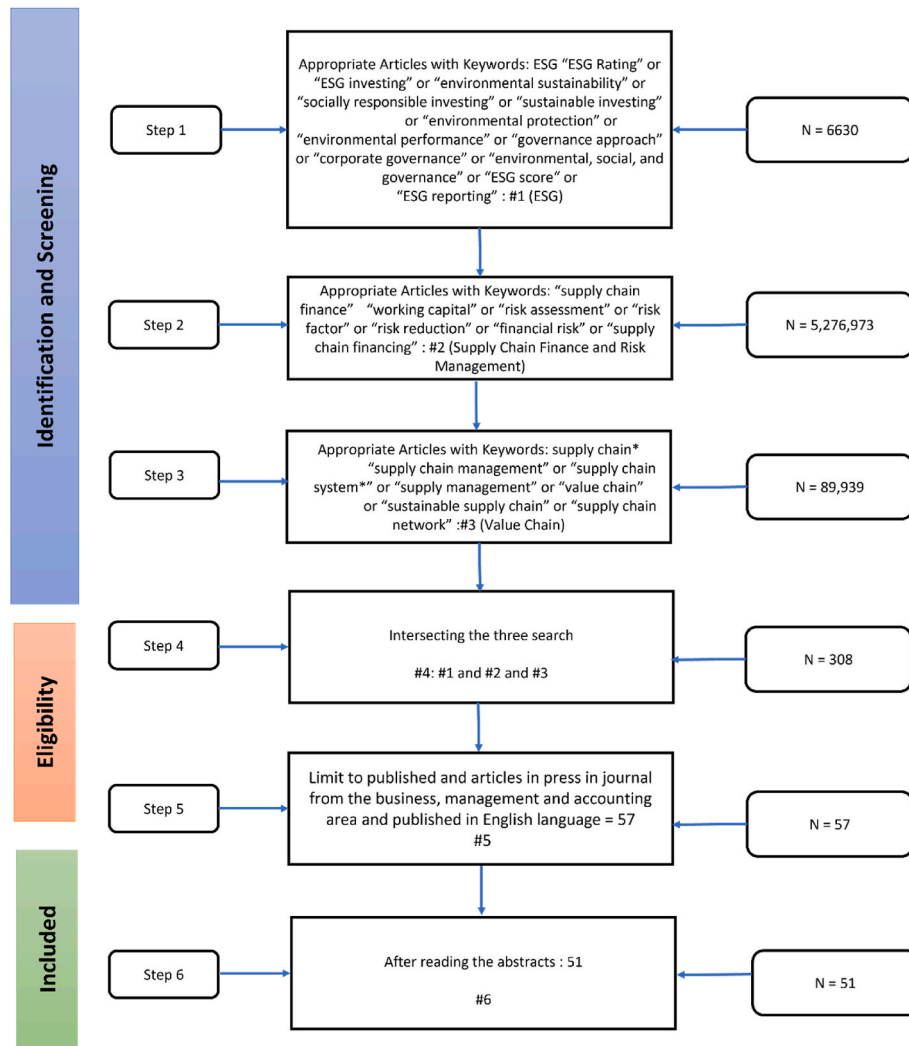


Fig. 1. Data collection approach using the PRISMA method. (Source: Scopus Database, May 13, 2023. Source: Compiled by authors)

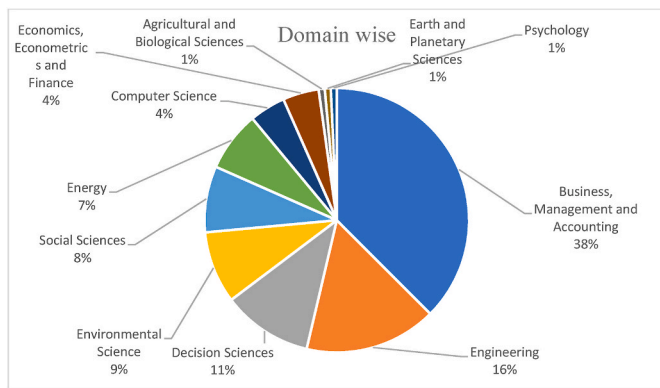


Fig. 2. Domains of manuscripts after phase 6. (Source: Compiled by authors)

scheme, as exemplified by the contributions of Melnyk et al. (2014). In this research, the classification scheme aligns with the methodology employed by Dubey et al. (2017a). Dubey et al. (2017a) framework, which builds upon the foundational contributions of Gunasekaran and Spalanzani (2012), serves as the basis for the classification approach. It is noteworthy that the classification scheme is inspired by Dubey et al.

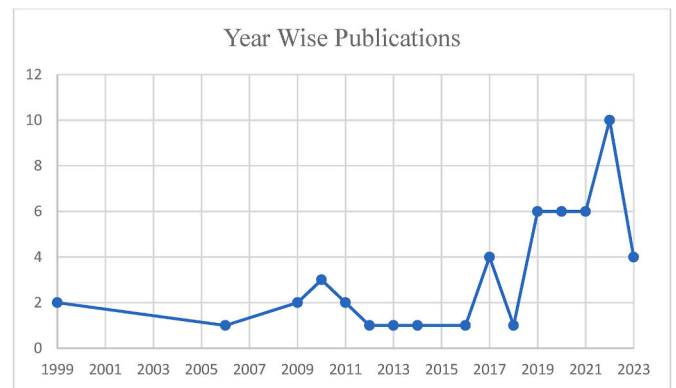


Fig. 3. Year wise number of publications (Source: Compiled by authors).

(2017a), which is influenced by the works of Sutton and Staw (1995). Fig. 3 (showing the number of articles) and Fig. 5 (illustrating the scheme) have been provided to represent this classification visually. Journals with top contributions are showcased in Fig. 4.

The literature, containing 51 manuscripts, is mainly categorized into (i) Theory Building and (ii) Application-Based papers. Theory Building category focuses on documenting manuscripts that contribute to the



Fig. 4. Journals with the top contribution (Source: Compiled by authors).

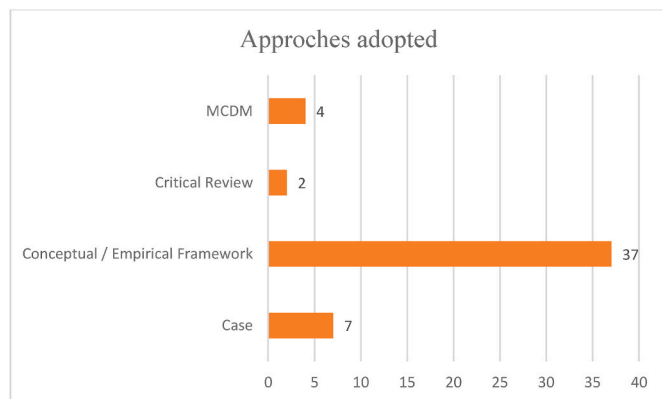


Fig. 5. Classification of the research as per approach adopted (Source: Compiled by authors).

enhancement of current theories. These contributions may involve extending, supporting, or critiquing established theories. The theory-building category is further categorized into Alternative Methods and Rationalist Approaches. Within the Rationalist Approach, manuscripts are assessed based on their contributions to theories and the advancement of ongoing research. This is accomplished through the development of critical review papers. On the other hand, the Alternative Methods Section encompasses articles that introduce conceptual frameworks and validate them through empirical studies or case studies. At a broader level, Application-Based Research is in the second category, where papers in this category focus on actual case studies conducted across industries. The representation of this literature classification is

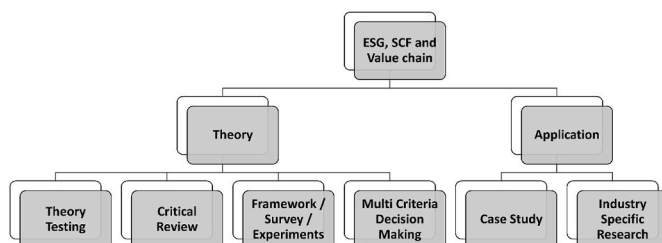


Fig. 6. Classification of literature (Adapted from Dubey et al., 2017b).

illustrated in Fig. 6.

3.3. Understanding the notions used in the research

We have identified various factors that enable SCF and ESG based on the analysis of 51 research articles. This comprehensive review contributes to a deeper understanding of the subject matter. We have compiled the relevant concerns and enabling factors to examine how SCF can contribute to ESG objectives. To grasp the concept of SCF, analyzing which elements or assets in a SC are financially supported by different stakeholders and under what conditions is essential. As illustrated in Fig. 7, this framework encompasses three key dimensions (Pfohl and Gomm, 2009). These assets can include fixed assets, which serve as a permanent foundation for business activities, and working capital, which fluctuates daily. Once we have established the scope of SCF assets, it becomes crucial to identify the various parties involved in financing within the SC. Jensen and Meckling (2019) categorize primary members as suppliers, customers, and the central company of the SC, while logistics service providers are considered supporting members. By broadening our perspective to encompass the provision of capital and financial services, we extend the traditional set of stakeholders (Freeman et al., 2010; Pfohl and Gomm, 2009). It is noteworthy that financing suppliers within the SC have a positive impact on ESG factors (Wang et al., 2023a,b).

However, financial performance can be enhanced through SCM by using three fundamental levers: duration, volume and cost of capital (Gomm, 2010). The product of duration and volume determines the financial requirements. When a product is grown with the cost of capital per day, it yields fixed capital costs. Reducing the cost of fixed capital through SCF while keeping other factors constant leads to a growth in the value of shareholders. all three levels of SCF are impacted by SCM professionals (Gomm, 2010). ESG indicators are increasingly gaining significance and importance while evaluating a company's performance. This applies not only from the viewpoint of financial institutions but also to leaders within the SC. Assessing a company's ESG performance is now a critical aspect of the financial system, and combining financial and SC evaluations with ESG indicators is paramount. This integration leads to a more comprehensive and robust company creditworthiness assessment. ESG indicators are not only becoming integral to the primary criteria for assessing bids and tenders, but they are also finding inclusion in banking credit risk models. As a result, a sophisticated and forward-thinking SC rating model must take into account sustainability Key Performance Indicators. With escalating pressures stemming from market

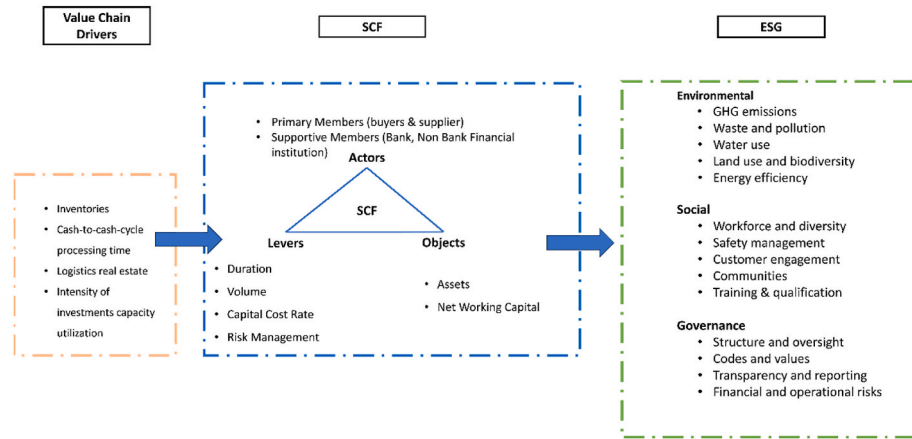


Fig. 7. Framework of Value chain, SCF and ESG. (Source: Compiled by authors)

competition and environmental responsibility, companies are placing greater emphasis on meeting ESG obligations (Meng et al., 2023).

As a result, the importance of ESG indicators in sustainability decision-making in businesses has increased (Bauer et al., 2022). Notably, ESG substantially influences the flow of capital (Hartzmark and Sussman, 2019), yet more is required to know about the impact of SCF on ESG. Principles of sustainable development along with SCF led to a reduction in the company’s resource consumption (Liu et al., 2020). SCF and ESG share common objectives and converge conceptually regarding sustainability theory (Toktas-Palut, 2022). Both underscore the idea of "doing well by doing good." SCF and ESG share initial concepts and ultimate goals, making it intriguing to explore the relationship between them (Wang et al., 2023a,b).

In Section 2.4, the authors discuss the fundamental theories that support the utilization of SCF, ESG and value chain. At the end we highlight the future research directions for applying SCF and ESG.

3.4. Underpinning theories

The Natural Resource-Based View theory (NRBV) is the extension of the Resource-Based View theory and highlights the improvement of company performance by leveraging valuable resources, capabilities, and value chain activities with social complexity and causal ambiguity, as outlined by Barney (1991). In this framework, value chain activities that adeptly utilize both tangible and intangible resources within an organization are identified as possible sources of competitive advantage. Notably, services play a vital role due to their intangibility and difficulty to replicate, as discussed by Wong et al. (2013). For example, environmentally conscious value chain activities, known as green service practices, entail ecologically responsible utilization of tangible assets such as materials and machinery, coupled with intangible assets like green knowledge and expertise. The NRBV theory emphasizes the importance of capabilities in averting contamination and minimizing waste, as articulated by Hart (1995). Following the fundamental tenet of NRBV theory, the integration of environmental protection principles into value chain activities is imperative for green service practices. This involves the adoption and utilization of recyclable resources, technologies, and materials (Russo and Fouts, 1997).

Alternatively, stakeholder theory suggests that an organisation’s goals and purposes are influenced by various groups beyond just shareholders, and these groups, referred to as stakeholders, exert varying levels of pressure on the organization to adopt sustainable practices (Freeman et al., 2010). Organizations are anticipated to synchronize their operations with stakeholder expectations, particularly given the potential divergence in the commitment to green practices among different firms within their supply chains, as noted by How et al. (2019).

Stakeholder theory highlights the importance of additional key elements in the execution of green practices, like ethical values, and corporate social responsibility, etc. (Xiao et al., 2018). The essential organizational theories related to the SCF value chain, ESG and equivalent gaps and future directions have been showcased in Table 3.

4. Conceptual framework and propositions

The value chain serves as a potent analytical instrument, aiding businesses in comprehending the sequence of activities involved in creating value and attaining a competitive advantage in the market (Elliot et al., 2020). This analysis is pivotal for evaluating a company’s competitive position and pinpointing areas for enhancing efficiency. Insights garnered from value chain performances can prove beneficial in elevating ESG scores (Saini et al., 2022). Specifically, information at the value chain level can shed light on whether companies operate within a best-practice framework, thereby enhancing the model’s capability to evaluate a firm’s capacity to meet ESG indicator requirements. Moreover, the value chain offers valuable perspectives for strategic planning, enabling companies to make well-informed decisions regarding resource sharing, process refinement, and overall business strategy (Lam et al., 2019).

Proposition 1. *The design of the value chain ecosystem improves performance among different stakeholders during decision-making.*

SCF is a financial strategy that aims to optimize the efficiency of a SC by providing financing to various parties involved in the process. SCF involves using financial instruments and services to enhance the working capital and liquidity of the SC participants. Pfohl and Gomm (2009) conceptualize SCF as Actors, Objectives and Levers. Objectives refer to the various components or elements within the SC subject to financing such as raw materials, inventory, finished goods, or other tangible and intangible items. Actors include categorizing the entities that deliver the financing through SC. As per Pfohl and Gomm (2009) financial institutions, banks, or other stakeholders involved in the SC, such as suppliers, buyers, or third-party financing entities are the actors. The precise terms and conditions under which the financing is provided refer to Levers. Terms may include interest rates, repayment periods, discount rates, or other financial levers that influence the cost and structure of the financing arrangements. SCF aims to analyze and optimize how different assets within the SC are funded, by whom, and under what financial terms (Saini et al., 2022). This can help streamline the flow of capital, reduce costs, and improve overall efficiency within the SC. It is a strategic approach to managing the financial aspects of the SC to create a win-win situation for all participants (Pfohl and Gomm, 2009).

Proposition 2. *SCF examined which assets (objects) within a SC are*

Table 3
Organizational theories mapped future directions.

Theories	Key manuscript	Key highlights of the theory	Gaps and future directions
RBV	Barney (1991); Silva et al. (2021); Khan et al. (2021)	<ul style="list-style-type: none"> Emphasizing the enhancement of firm performance through valuable resources, capabilities, and value chain activities The value chain influence both tangible and intangible firm resources and capabilities. 	To validate the proposed model by Silva et al. (2021), it is essential to include objective metrics that assess economic and environmental performance.
Stakeholder theory	Khan et al. (2021); Wang et al. (2023a,b)	<ul style="list-style-type: none"> SCF underscores the pursuit of collective stakeholder interests rather than the maximization of individual interests. The ultimate objective of ESG and SCF is not to maximize individual interests but to improve the overall interest of stakeholders. 	A model with ecological and economic considerations can be developed to assist managers in long-term management, as proposed by Khan et al. (2021).
Dynamic capability view	Teece et al. (1997); Liang et al. (2022)	<ul style="list-style-type: none"> Organization's capacity to adapt, innovate, and continually reconfigure its value and SC activities 	In terms of quantification, accurately measuring SCF networks presents methodological challenges. Artificial intelligence could be employed in future research to address this issue, as suggested by Silva et al. (2021). To explore distinct effects, Wang et al. (2023a,b) recommend broadening the roles of SCF participants to encompass multiple functions.
Theory of risk management	Ram and Zhang (2020)	<ul style="list-style-type: none"> During the risk identification stage, a wide range of economic and security factors contribute to the emergence of the Belt and Road initiative SC risks. Risk management theory confirms the application of the theory in SC context. 	
Contingency theory	Basiri et al. (2020)	<ul style="list-style-type: none"> The most effective organizational structure, leadership style, or decision-making process depends on various external and internal factors. 	Preparedness for unforeseen events and the ability to recover from them can be enhanced through an awareness of environmental changes, the implementation of ongoing development plans, and the practice of good governance, as outlined by Basiri et al. (2020).
Legitimacy theory	Baid and Jayaraman (2022)	<ul style="list-style-type: none"> Organizations will be more successful and sustainable if they can align their operations and behaviors with the prevailing societal expectations and values 	To establish a reliable and similar method to social measurement and reporting in the context of ESG, it is imperative to attain a robust and transparent framework, as emphasized by (Baid and Jayaraman, 2022).
Natural resource-based view	Khan et al. (2021)	<ul style="list-style-type: none"> Implementing genuine environmentally friendly service practices entails incorporating environmental protection principles into the various activities of the value chain by adopting and utilizing eco-friendly resources, technologies, and materials. 	Adaptability to evolving business landscapes, technological advancements, and societal expectations offers a robust framework for understanding how firms can create and sustain a competitive edge through effective resource management.
Mean-variance theory	Reza-Gharehbagh et al. (2021)	<ul style="list-style-type: none"> It can be applied to optimize financial decisions within the SC. It involves using financial optimization techniques to balance the risks and returns associated with different financial decisions within the SC. 	It includes the randomness of investors' budgets and risk profiles in modeling, treating them as external parameters. (Reza-Gharehbagh et al., 2021)
Resource Dependence Theory	Laari et al. (2017)	<ul style="list-style-type: none"> Corporations wielding substantial bargaining power can impact the environmental policies and strategies employed by their suppliers. They can prescribe the engagement of suppliers in green SC activities, even when such involvement may not be immediately perceived as beneficial by the suppliers (Caniëls et al., 2013). 	Laari et al. (2017) focus on external green SC activities involving suppliers and customers, neglecting consideration of a firm's internal practices. Future research could explore the possibility of comparing external green SC strategies with firms' internal environmental commitment levels.
Transaction Cost Economics (TCE)	Williamson (1981); Laari et al. (2017)	<ul style="list-style-type: none"> Incurred transaction costs are associated with monitoring suppliers' sustainability performance, as highlighted by Carter and Rogers (2008). Environmental monitoring and collaboration green SC practices suggested by Vachon and Klassen (2006). In a firm, the TCE framework suggests that transactions can occur either internally or externally. 	Implementing eco-friendly monitoring may lead to heightened TC (Seuring, 2011), and the initial phases of environmental collaboration could demand substantial start-up investments (Zhu et al., 2013). Therefore, there is a need for future studies to investigate the effectiveness of various green SC practices in terms of performance.
Global Value Chain Theory	Arora et al. (2021)	<ul style="list-style-type: none"> In developed and developing nations the influence on economies and societies is existing. Research on global value chains in global SC encompasses three primary areas of focus: (1) checking the cultural influences and their implications for sustainability, (2) exploring the role of institutional drivers in promoting sustainability (3) investigating knowledge sharing between developing and developed markets with a specific emphasis on sustainability, as noted by Arora et al. (2021). 	In GVC theory and the relational view, institutional and stakeholder pressures play a vital role in enhancing GVCs by overseeing firms' infrastructure through collaborative behaviors among partnering entities. Future studies could expand to encompass the global network of SC partners engaged in such collaborations.

financed by whom (actors) and on what terms (levers).

ESG is a framework investors and companies use to evaluate and measure an investment or business's sustainability and ethical impact (Tettamanzi et al., 2022). ESG reflects a commitment to corporate responsibility beyond financial performance. Companies that prioritize ESG factors are often seen as more sustainable and ethical, which can enhance their reputation and brand value. ESG considerations are often integrated into investment decisions, leading to the rise of sustainable or socially responsible investing (Daugaard and Ding (2022). Investors increasingly seek opportunities that align with their values and

prioritize companies with strong ESG practices. ESG principles recognise the importance of generating value not only for shareholders, employees, customers, and communities (Escrig-Olmedo et al., 2019).

Proposition 3. *ESG considerations are becoming integral to corporate strategy and investment decision-making, reflecting a broader awareness of the interconnectedness between business operations, societal impact, and long-term financial performance.*

SCF plays a crucial role in optimising business operations and improving overall efficiency. It can enhance the efficiency of the value

chain by providing timely financing to participants, allowing them to optimize their working capital and invest in critical areas of their operations (Bals, 2019). SCF can help mitigate financial risks within the value chain by addressing cash flow constraints and reducing the impact of payment delays (Saini et al., 2022). Both concepts emphasize collaboration among SC partners. SCF fosters collaboration by aligning financial interests and creating a more synchronized and mutually beneficial SC (Jia et al., 2020). The value chain and SCF are interconnected, with SCF serving as a financial strategy that complements and enhances the efficiency of the value chain. By addressing financial aspects and optimising cash flow, SCF contributes to the overall competitiveness and resilience of the entire value chain.

Proposition 4. *Value Chain and SCF play significant roles in optimising business operations and financial management within a SC.*

The cost of obtaining financing is significantly influenced by the long-term consequences of a company's operations (Cheng et al., 2014). ESG, recognized as a credible assessment metric for evaluating corporate sustainability according to studies by Fatemi et al. (2015) and Ghouli et al. (2017), resonates with the core tenets of sustainable development. The economic dimension of Sustainable SCF, as highlighted by Liu et al. (2020), has the potential to reduce corporate resource consumption, thereby reinforcing the fundamental principles of sustainable development. SCF and ESG not only share common goals but also align conceptually within sustainability theory, as argued by Toktas-Palut (2022), promoting the idea of "doing well by doing good." Leading companies unite stakeholders in a collaborative capital flow community to attain mutually beneficial cooperation (Pfohl and Gomm, 2009). In instances where corporate financial performance falls below anticipated levels, firms proactively engage in ESG practices to advance the interests of all stakeholders (Dasgupta, 2021).

Proposition 5. *SCF to the whole SC ecosystem, such as suppliers and customers, has a positive effect on ESG.*

Fig. 7 describes the integrated framework for the concept of value chain, SCF and ESG.

5. Discussion

In this segment, authors discuss the findings obtained from the Scopus database and analysis conducted. Every company is characterized by either a mechanistic or an organic structure. SCF can play a role in enlightening supply chain sustainability (Medina et al., 2023). SCF can play a pivotal role within the value chain by offering financial solutions to suppliers, thus enabling them to enhance their working capital and overall operations, resulting in improved financial stability have positive impact on the entire value chain, leading to smoother operations and increased competitiveness (Bals, 2019). Practitioners have demonstrated significant interest in sustainable SCF with the introduction of various SCF solutions integrating ESG objectives (Medina et al., 2023). The utilization of modern organizational theories and how they have influenced the development of the concepts of SCF, the value chain, and ESG is highlighted in this Section. These theories view companies as open systems impacted by external and internal environments. Integrating ESG considerations into the value chain entails evaluating the environmental and social impacts at each stage (Saini et al., 2022) and ESG has a positive effect on SCF (Wang et al., 2023a,b). An integrated ESG-financial model assesses both the financial and sustainability dimensions of organizations, considering the supply chains to which they are affiliated (Sardanelli et al., 2022). Similarly, Baid and Jayaraman (2022) highlighted the significance of 'S' within SCF is crucial for advancing the social responsibility aspect of ESG principles. The impacts of trade credit and inventory management on the generation of cash flow were investigated by Budin and Eapen (1970) which marks the origins of SCF research. Contemporary organizational theories have continued to evolve and demonstrate their applicability in

organizations. As a result, research gaps within the framework of these contemporary organizational theories have been identified, and these concepts are delineated in the three respective sub-sections.

5.1. Theoretical contributions

In this subsection, attention is highlighted focusing on the second and third objectives as indicated in the introduction Section. Research gaps have been explored, and future directions have been delineated, drawing from diverse organizational theories. To guide this research in the context of modern organisational theories, we have drawn upon the works of Barney (1991); Teece et al. (1997); Silva et al. (2021); Khan et al. (2021); Wang et al., 2023a,b; Liang et al. (2022); Ram and Zhang (2020); Basiri et al. (2020); and Baid and Jayaraman (2022) for the identification of relevant organisational theories. Figs. 1–3, Figs. 4, Figure 5, Figure 6, Fig. 7, Table 1, Table 2, Table 3 and Appendix A, Appendix B, Appendix C, Appendix D, Appendix E, and Appendix F collectively review the topics in SCF and ESG. This addresses the very first objective of the research. For companies to maintain their competitiveness, they must establish a strategic alignment with their internal and external environments. Integrating SCF, ESG, and value chain practices reflects a holistic approach to sustainability and business management (Sardanelli et al., 2022). By aligning financial strategies, responsible business practices, and the optimization of value-adding activities within the SC, organizations can enhance their competitiveness, mitigate risks, and contribute to a more sustainable and ethical business ecosystem (Wang et al., 2023a,b). These concepts complement each other in promoting sustainability and responsible business practices. For example, responsible financing through SCF can support achieving ESG goals, while ESG considerations within the value chain can result in improved financial outcomes (Medina et al., 2023). This Section also addresses the second research objective, which pertains to understanding organisational theories comprehensively. We view these organisational theories as potential foundations for research questions. A summary and proposed future research direction, those mapped with the organizational theories ranging from RBV to Stakeholder theory to Transaction Cost Economics have been highlighted in Table 3, thereby addressing the third objective of this research.

5.2. Implications for practice

The increasing regulatory outline is mainly evident in Europe, the UK, and Australia along with policies, standards, and ESG requirements. Now it's been adopted among other countries as well covering both established and emerging ones. This has heightened awareness regarding the connection between products, services, and overall quality of life. Faced with these transformative shifts, organizations are compelled to incorporate ESG initiatives into their SC. Principles of Responsible Investment (PRI), initiated in 2006, has garnered support from financial institutions worldwide, with many becoming signatories. As per the PRI (2020), effectively managing ESG factors within SCF can yield short-term and long-term financial benefits. These benefits encompass improved responsiveness to evolving regulations, safeguarding a business's social license to operate, enhancing confidence among stakeholders and more effective management of reputational and financial risks (PRI, 2020). This research strongly emphasizes the importance of remaining sensitive to SCF, value chain, and ESG considerations while effectively addressing stakeholder concerns. Managers working in SCF need to have an understanding of levers of SCF and emphasize the value chains towards achieving ESG goals. Doing so is vital for fostering the development of organisational sustainability and enhancing market value and making a space for future generations. Managers can actively work towards satisfying the expectations of stakeholders and shareholders by investing in initiatives that enhance their ESG performance. This research is also helpful with economic perspective, public policy and society to explore the relationship among

SCF, ESG and value chain. For example, they might consider implementing programs to foster positive organisational cultures, such as reinforcing transparency in their board of directors' processes, approvals or adopting robust codes of conduct. Such actions can boost their market value, given the interest of investors. Managers must remain vigilant and assess whether the market recognises and values the positive and strategic responses of firms dealing with controversies by implementing measures that enhance their ESG performance.

5.3. Limitations and scope for future research

Our study has a few limitations, with one being that despite conducting an exhaustive literature review, we may have missed specific keywords related to the topics we aimed to cover. Furthermore, our categorization of the journal papers in this study can be partially complete, as additional categories may exist into which these papers could be placed. In this literature review, we initially focused exclusively on journal articles with DOI numbers as compared to conference proceedings and books related to the domain under study. The books and proceedings might have contained unique information and insights on ESG, SCF and VC to shape the future direction and context of our study. Additionally, we obtained our articles exclusively from Scopus as compared to searching from Web of Science and EbscoHost etc. We opted for Scopus due to its renowned reputation for its extensive coverage of research articles.

We may have overlooked some papers if they were not included in the Scopus database. It is also worth noting that the methodology we adopted in this study, as inspired by Tranfield et al. (2003), is subjective, and future research endeavors may identify different key emerging themes (see Table 3). Examining various facets of environmental impact can introduce additional complexity to the coordination between financial and environmental performance. Further research is essential to understand these elements' trade-offs better (He, 2017). Greenness and environmental concerns still exist even in countries like the UAE; therefore, more empirical testing will be required in this field with green SCM practices with economic performance (Khan et al., 2021; Silva et al., 2021). In this study, we have not validated the framework, however researchers can use statistics to check the robustness of the model. Further research can extend by adding cleaner production and business sustainability dimensions.

6. Conclusion

This review assesses 51 papers from 1999 to 2023 from the Scopus database. Fig. 4 illustrates the evolution of ESG, SCF and VC research over time, showing a significant upswing in activity from 2018 onwards. Fig. 2 reveals that in ESG, SCF, and VC, research predominantly occurs within decision sciences, engineering, computer science, business management, and accounting. Additionally, the analysis explores the facilitators and gaps associated with ESG, SCF and VC, as outlined in Section 2.3. The rising interest and application of ESG, SCF and VC, focused on tasks like economic values and minimizing its environmental impact, all the stakeholders are ethical and transparent, optimize the cash flow, improve efficiency and financial stability for offering practical solutions to contemporary business challenges. The exhaustive nature of this inquiry aims to provide a valuable and practical resource to all the stakeholders, particularly for future researchers in the field of production research. This investigative framework developed here can be a foundation for forthcoming research endeavors.

CRedit authorship contribution statement

Nishant Agrawal: Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Conceptualization. **Sachin Modgil:** Writing – original draft, Validation, Methodology, Investigation, Data curation. **Shivam Gupta:** Writing – review & editing, Supervision,

Resources, Project administration, Methodology.

Declaration of competing interest

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

Data availability

Data will be made available on request.

Acknowledgements

This is to acknowledge that no funding was received for this work.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jclepro.2024.143373>.

References

- Agrawal, N., Jain, R.K., 2021. Insights from systematic literature review of supply chain resilience and disruption. *Benchmark Int. J.* 29 (8), 2495–2526.
- Agrawal, N., Jain, R.K., 2022. Building supply chain resilience in supply chain disruption: the role of organisational ambidexterity. *Int. J. Serv. Oper. Manag.* 41 (4), 381–403.
- Agrawal, N., Rabiee, M., Jabbari, M., 2023. Contextual relationships in Juran's quality principles for business sustainable growth under circular economy perspective: a decision support system approach. *Ann. Oper. Res.* 1–31.
- Agrawal, N., Sharma, M., Raut, R.D., Mangla, S.K., Arisian, S., 2024. Supply chain flexibility and post-pandemic resilience. *Global J. Flex. Syst. Manag.* 1–20.
- Alora, A., Gupta, H., 2024. Supplier selection among manufacturing companies based on their MSME partners' supply chain finance adoption capability using BWM and VIKOR. *J. Bus. Ind. Market.* 39 (6), 1337–1351.
- Aragón-Correa, J.A., Marcus, A.A., Vogel, D., 2020. The effects of mandatory and voluntary regulatory pressures on firms' environmental strategies: a review and recommendations for future research. *Acad. Manag. Ann.* 14 (1), 339–365.
- Arora, A., Arora, A., Anyu, J., McIntyre, J.R., 2021. Global value chains' disaggregation through supply chain collaboration, market turbulence, and performance outcomes. *Sustainability* 13 (8), 4151.
- Arumugam, V., Antony, J., Linderman, K., 2014. "A multilevel framework of six sigma: a systematic review of the literature, possible extensions, and future research. *Qual. Manag. J.* 21 (4), 36–61.
- Asif, M., Searcy, C., Castka, P., 2023. ESG and Industry 5.0: the role of technologies in enhancing ESG disclosure. *Technol. Forecast. Soc. Change* 195, 122806.
- Atkins, B., 2020. ESG history and status. available at: <https://betsyatkins.com/esg-history-status/>. (Accessed 13 August 2023).
- Baid, V., Jayaraman, V., 2022. Amplifying and promoting the "S" in ESG investing: the case for social responsibility in supply chain financing. *Manag. Finance* 48 (8), 1279–1297.
- Bals, C., 2019. Toward a supply chain finance (SCF) ecosystem—Proposing a framework and agenda for future research. *J. Purch. Supply Manag.* 25 (2), 105–117.
- Barney, J.B., 1991. "Firm resources and sustained competitive advantage. *J. Manag.* 17 (1), 99–120.
- Baryannis, G., Validi, S., Dani, S., Antoniou, G., 2019. Supply chain risk management and artificial intelligence: state of the art and future research directions. *Int. J. Prod. Res.* 57 (7), 2179–2202.
- Basiri, S.K., Sobhani, F.M., Sadjadi, S.J., 2020. Developing natural-gas-supply security to mitigate distribution disruptions: a case study of the National Iranian Gas Company. *J. Clean. Prod.* <https://doi.org/10.1016/j.jclepro.2020.120066>.
- Bauer, M.D., Huber, D., Rudebusch, G.D., Wilms, O., 2022. Where is the carbon premium? Global performance of green and brown stocks. *J. Clim. Financ.* <https://doi.org/10.1016/j.jclimf.2023.100006>.
- Bloomberg Intelligence, 2021. ESG assets may hit \$53 trillion by 2025, a third of global AUM Bloomberg Professional Services. available at: <https://www.bloomberg.com/professional/blog/esg-assets-may-hit-53-trillion-by-2025-a-third-of-global-aum/>.
- Budin, M., Eapen, A.T., 1970. Cash generation in business operations: some simulation models. *J. Financ.* 25 (5), 1091–1107.
- Caniato, F., Gelsomino, L.M., Perego, A., Ronchi, S., 2016. Does finance solve the supply chain financing problem? *Supply Chain Manag.: Int. J.* 21 (5), 534–549.
- Caniéls, M.C., Gehrsitz, M.H., Semeijn, J., 2013. Participation of suppliers in greening supply chains: an empirical analysis of German automotive suppliers. *J. Purch. Supply Manag.* 19 (3), 134–143.
- Carter, C.R., Rogers, D.S., 2008. A framework of sustainable supply chain management: moving toward new theory. *Int. J. Phys. Distrib. Logist. Manag.* 38 (5), 360–387.

- Cerchione, R., Esposito, E., 2016. A systematic review of supply chain knowledge management research: state of the art and research opportunities. *Int. J. Prod. Econ.* 182, 276–292.
- Chatterjee, S., Chaudhuri, R., Vrontis, D., Dana, L.P., Kabbara, D., 2024. Developing resilience of MNEs: from global value chain (GVC) capability and performance perspectives. *J. Bus. Res.* 172, 114447.
- Chaudhry, S.M., Chen, X.H., Ahmed, R., Nasir, M.A., 2023. Risk modelling of ESG (environmental, social, and governance), healthcare, and financial sectors. *Risk Anal.* <https://doi.org/10.1111/risa.14195>.
- Cheng, B., Ioannou, I., Serafeim, G., 2014. Corporate social responsibility and access to finance. *Strat. Manag. J.* 35 (1), 1–23.
- Clarke, T., Boersma, M., 2017. The governance of global value chains: unresolved human rights, environmental and ethical dilemmas in the apple supply chain. *J. Bus. Ethics* 143, 111–131.
- Clément, A., Robinot, É., Trespeuch, L., 2023. The use of ESG scores in academic literature: a systematic literature review. *J. Enterprising Communities People Places Glob. Econ.* <https://doi.org/10.1108/JEC-10-2022-0147>.
- Cuervo-Cazurra, A., Pananond, P., 2023. The rise of emerging market lead firms in global value chains. *J. Bus. Res.* 154, 113327.
- Dai, R., Liang, H., Ng, L., 2021. Socially responsible corporate customers. *J. Financ. Econ.* 142 (2), 598–626.
- Dai, T., Tang, C., 2022. Frontiers in service science: integrating ESG measures and supply chain management: research opportunities in the postpandemic era. *Serv. Sci.* 14 (1), 1–12.
- DasGupta, R., 2021. Financial performance shortfall, ESG controversies, and ESG performance: evidence from firms around the world. *Finance Res. Lett.* <https://doi.org/10.1016/j.frl.2021.102487>.
- Daugaard, D., Ding, A., 2022. Global drivers for ESG performance: the body of knowledge. *Sustainability* 14 (4), 2322.
- Davidson, B., 2023. Labour on the leading edge: a critical review of labour rights and standards in renewable energy. *Energy Res. Social Sci.* <https://doi.org/10.1016/j.erss.2022.102928>.
- Derntl, M., 2014. Basics of research paper writing and publishing. *Int. J. Technol. Enhanc. Learn. (IJTEL)* 6 (2), 105–123.
- Dubey, R., Gunasekaran, A., Childe, S.J., Papadopoulos, T., Wamba, S.F., 2017a. World class sustainable supply chain management: critical review and further research directions. *Int. J. Logist. Manag.* 28 (2), 332–362.
- Dubey, R., Gunasekaran, A., Papadopoulos, T., 2017b. Green supply chain management: theoretical framework and further research directions. *Benchmark Int. J.* 24 (1), 184–218.
- Elliot, V.H., De Goeij, C., Gelsomino, L.M., Woxenius, J., 2020. Supply chain finance is not for everyone. *Int. J. Phys. Distrib. Logist. Manag.* 50 (9/10), 775–807.
- Escrig-Orlmedo, E., Fernández-Izquierdo, M.A., Ferrero-Ferrero, I., Rivera-Lirio, J.M., Muñoz-Torres, M.J., 2019. Rating the raters: evaluating how ESG rating agencies integrate sustainability principles. *Sustainability* 11 (3), 915.
- Fatemi, A., Fooladi, I., Tehrani, H., 2015. Valuation effects of corporate social responsibility. *J. Bank. Finance* 59, 182–192.
- Fiandrino, S., Tonelli, A., Devalle, A., 2022. Sustainability materiality research: a systematic literature review of methods, theories and academic themes. *Qual. Res. Account. Manag.* 19 (5), 665–695.
- Freeman, R.E., Harrison, J.S., Wicks, A.C., Parmar, B.L., De Colle, S., 2010. Stakeholder theory: the state of the art. *Bus. Ethics Q.* 22 (1), 179–185.
- Gedam, V.V., Raut, R.D., Agrawal, N., Zhu, Q., 2023. Critical human and behavioral factors on the adoption of sustainable supply chain management practices in the context of automobile industry. *Bus. Strat. Environ.* 32 (1), 120–133.
- Gelsomino, L.M., Mangiaracina, R., Perego, A., Tumino, A., 2016. Supply chain finance: a literature review. *Int. J. Phys. Distrib. Logist. Manag.* 46 (4), 348–366.
- Ghoul, S.E., Guedhami, O., Kim, Y., 2017. Country level institutions, firm value, and the role of corporate social responsibility initiatives. *J. Int. Bus. Stud.* 48 (3), 360–385.
- Gomm, M.L., 2010. Supply chain finance: applying finance theory to supply chain management to enhance finance in supply chains. *Int. J. Logist. Res. Appl.* 13 (2), 133–142.
- Grimm, A., Walz, R., 2024. Current and future roles of the automotive and ICT sectoral systems in autonomous driving-Using the innovation system approach to assess value chain transformation. *Technol. Forecast. Soc. Change* 198, 122990.
- Gunasekaran, A., Spalanzani, A., 2012. Sustainability of manufacturing and services: investigations for research and applications. *Int. J. Prod. Econ.* 140 (1), 35–47.
- Gupta, S., Altay, N., Luo, Z., 2019. Big data in humanitarian supply chain management: a review and further research directions. *Ann. Oper. Res.* 283, 1153–1173.
- Gupta, S., Modgil, S., Bhattacharyya, S., Bose, I., 2022. Artificial intelligence for decision support systems in the field of operations research: review and future scope of research. *Ann. Oper. Res.* 308, 215–274.
- Hart, S.L., 1995. A natural-resource-based view of the firm. *Acad. Manag. Rev.* 20 (4), 986–1014.
- Hartzmark, S.M., Sussman, A.B., 2019. Do investors value sustainability? A natural experiment examining ranking and fund flows. *J. Financ.* 74 (6), 2789–2837.
- He, Y., 2017. Supply risk sharing in a closed-loop supply chain. *Int. J. Prod. Econ.* 183, 39–52.
- Hoang, T., Bell, J., Hiep, P.H., Autry, C.W., 2023. The sustainable development of rural-to-urban food supply chains in developing nations. *Int. J. Logist. Manag.* <https://doi.org/10.1108/IJLM-02-2022-0072>.
- How, S.M., Lee, C.G., Brown, D.M., 2019. Shareholder theory versus stakeholder theory in explaining financial soundness. *Int. Adv. Econ. Res.* 25 (1), 133–135.
- Huang, C., Chan, F.T., Chung, S.H., 2022. Recent contributions to supply chain finance: towards a theoretical and practical research agenda. *Int. J. Prod. Res.* 60 (2), 493–516.
- Hübel, B., Scholz, H., 2020. Integrating sustainability risks in asset management: the role of ESG exposures and ESG ratings. *J. Asset Manag.* 21 (1), 52–69.
- Jensen, M.C., Meckling, W.H., 1919. Theory of the firm: managerial behavior, agency costs and ownership structure. In: *Corporate Governance*. Gower, pp. 77–132.
- Jia, F., Zhang, T., Chen, L., 2020. Sustainable supply chain Finance: towards a research agenda. *J. Clean. Prod.* <https://doi.org/10.1016/j.jclepro.2019.118680>.
- Joshi, P.V., Sarkar, B.D., Choubey, V.M., 2024. An integrated approach for modeling critical success factors for supply chain finance ecosystem. *J. Model. Manag.*
- Kaur, J., Kumar, S., Joshi, R., 2023. Is supply chain finance an antidote to SMEs in the economic crisis? A qualitative inquiry. *Int. J. Logist. Manag.* 34 (6), 1890–1910.
- Khan, M., Ajmal, M.M., Gunasekaran, A., AlMarzouqi, A.H., AlNuaimi, B.K., 2021. Measures of greenness: an empirical study in service supply chains in the UAE. *Int. J. Prod. Econ.* 241, 108257.
- Kumar, M., Raut, R.D., Mangla, S.K., Chowdhury, S., Choubey, V.K., 2024. Moderating ESG compliance between industry 4.0 and green practices with green servitization: examining its impact on green supply chain performance. *Technovation* 129, 102898.
- Kumar, S., Raut, R.D., Agrawal, N., Cheikhrouhou, N., Sharma, M., Daim, T., 2022. Integrated blockchain and internet of things in the food supply chain: adoption barriers. *Technovation* 118, 102589.
- Laari, S., Töyli, J., Ojala, L., 2017. Supply chain perspective on competitive strategies and green supply chain management strategies. *J. Clean. Prod.* 141, 1303–1315.
- Lam, H.K., Zhan, Y., Zhang, M., Wang, Y., Lyons, A., 2019. The effect of supply chain finance initiatives on the market value of service providers. *Int. J. Prod. Econ.* 216, 227–238.
- Liang, Y., Lee, M.J., Jung, J.S., 2022. Dynamic capabilities and an ESG strategy for sustainable management performance. *Front. Psychol.* 13, 887776.
- Liberati, A., Altman, D.G., Tetzlaff, J., Mulrow, C., Gotzsche, P.C., Ioannidis, J.P., et al., 2009. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Ann. Intern. Med.* 151 (4), W-65–W-94.
- Liu, B., Wang, Y., Shou, Y., 2020. Trade credit in emerging economies: an interorganizational power perspective. *Ind. Manag. Data Syst.* 120 (4), 768–783. <https://doi.org/10.1108/imds-05-2019-0292>.
- Lou, Z., Xie, Q., Shen, J.H., Lee, C.C., 2024. Does supply chain finance (SCF) alleviate funding constraints of SMEs? Evidence from China. *Res. Int. Bus. Finance* 67, 102157.
- Mangla, S.K., Kumar, P., Barua, M.K., 2014. Flexible decision approach for analysing performance of sustainable supply chains under risks/uncertainty. *Global J. Flex. Syst. Manag.* 15, 113–130.
- Medina, E., Caniato, F., Moretto, A., 2023. Framing Sustainable Supply Chain Finance: how can supply chain sustainability practices and supply chain finance solutions be integrated? *J. Purch. Supply Manag.* 29 (3), 100837.
- Melnyk, S.A., Narasimhan, R., DeCampos, A., 2014. Supply chain design: issues, challenges, frameworks and solutions. *Int. J. Prod. Res.* 52 (7), 1887–1896.
- Meng, G., Li, J., Yang, X., 2023. Bridging the gap between state-business interactions and air pollution: The role of environment, social responsibility, and corporate governance performance. *Bus. Strateg. Environ.* 32 (4), 1872–1884.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., 2009. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Ann. Intern. Med.* 151 (4), 264–269.
- More, D., Basu, P., 2013. Challenges of supply chain finance. *Bus. Process Manag. J. Negri, M., Cagno, E., Colicchia, C., Sarkis, J., 2021. Integrating sustainability and resilience in the supply chain: a systematic literature review and a research agenda. Bus. Strat. Environ.* 30 (7), 2858–2886.
- Palmatier, R.W., Houston, M.B., Hulland, J., 2018. Review articles: purpose, process, and structure. *J. Acad. Market. Sci.* 46, 1–5.
- Pfohl, H.C., Gomm, M., 2009. Supply chain finance: optimizing financial flows in supply chains. *Logistics research* 1, 149–161.
- Phraknoi, N., Stevenson, M., Jia, M., 2024. Governance requirements in supply chain finance: the need for a dual-layered semipermeable boundary. *Int. J. Phys. Distrib. Logist. Manag.* 54 (3), 275–300.
- Pri (2020), available at: <https://www.unpri.org/pri-blog/covid-19-accelerates-esg-trends-globalinvestors-confirm/6372.article>.
- Ram, J., Zhang, Z., 2020. Belt and road initiative (BRI) supply chain risks: propositions and model development. *Int. J. Logist. Manag.* 31 (4), 777–799.
- Reindorp, M., Tanrisever, F., Lange, A., 2018. Purchase order financing: credit, commitment, and supply chain consequences. *Oper. Res.* 66 (5), 1287–1303.
- Reza-Gharehbagh, R., Asian, S., Hafezalkotob, A., Wei, C., 2021. Reframing supply chain finance in an era of reglobalization: on the value of multi-sided crowdfunding platforms. *Transport. Res. E Logist. Transport. Rev.* 149, 102298.
- Rijanto, A., 2024. Blockchain Technology Roles to Overcome Accounting, Accountability and Assurance Barriers in Supply Chain Finance. *Asian Review of Accounting*.
- Russo, M.V., Fouts, P.A., 1997. A resource-based perspective on corporate environmental performance and profitability. *Acad. Manag. J.* 40 (3), 534–559.
- Saini, N., Antil, A., Gunasekaran, A., Malik, K., Balakumar, S., 2022. Environment-social-governance disclosures nexus between financial performance: a sustainable value chain approach. *Resour. Conserv. Recycl.* 186, 106571.
- Sardanelli, D., Bittucci, L., Mirone, F., Marzoni, S., 2022. An integrative framework for supply chain rating: from financial-based to ESG-based rating models. *Total Qual. Manag. Bus. Excel.* 1–20.
- Sarkis, J., Zhu, Q., Lai, K., 2011. An organizational theoretic review of green supply chain management literature. *Int. J. Prod. Econ.* 130 (1), 1–15.
- Seuring, S., 2011. Supply chain management for sustainable products—insights from research applying mixed methodologies. *Bus. Strat. Environ.* 20 (7), 471–484.

- Silva, G.M., Gomes, P.J., Carvalho, H., Geraldés, V., 2021. Sustainable development in small and medium enterprises: the role of entrepreneurial orientation in supply chain management. *Bus. Strat. Environ.* 30 (8), 3804–3820.
- Sutton, R.I., Staw, B.M., 1995. What theory is not. *Adm. Sci. Q.* 40 (3), 371–384.
- Taylor, D.H., 2005. Value chain analysis: an approach to supply chain improvement in agri-food chains. *Int. J. Phys. Distrib. Logist. Manag.* 35 (10), 744–761.
- Teece, D.J., Pisano, G., Shuen, A., 1997. Dynamic capabilities and strategic management. *Strateg. Manag. J.* 18 (7), 509–533.
- Tettamanzi, P., Venturini, G., Murgolo, M., 2022. Sustainability and financial accounting: a critical review on the ESG dynamics. *Environ. Sci. Pollut. Control Ser.* 29 (11), 16758–16761.
- Toktas-Palut, P., 2022. Analyzing the effects of industry 4.0 technologies and coordination on the sustainability of supply chains. *Sustain. Prod. Consum.* 30, 341–358. <https://doi.org/10.1016/j.spc.2021.12.005>.
- Tranfield, D., Denyer, D., Smart, P., 2003. Towards a methodology for developing evidence informed management knowledge by means of systematic review. *Br. J. Manag.* 14 (3), 207–222.
- Vachon, S., Klassen, R.D., 2006. Extending green practices across the supply chain: the impact of upstream and downstream integration. *Int. J. Oper. Prod. Manag.* 26 (7), 795–821.
- Wamba, S.F., 2020. Humanitarian supply chain: a bibliometric analysis and future research directions. *Ann. Oper. Res.* <https://doi.org/10.1007/s10479-020-03594-9>.
- Wang, H., Tong, L., Takeuchi, R., George, G., 2016. Corporate social responsibility: an overview and new research directions: thematic issue on corporate social responsibility. *Acad. Manag. J.* 59 (2), 534–544.
- Wang, N., Pan, H., Feng, Y., Du, S., 2023a. How do ESG practices create value for businesses? Research review and prospects. *Sustainability Accounting, Management and Policy Journal*. <https://doi.org/10.1108/SAMPJ-12-2021-0515>.
- Wang, S., Yu, H., Wei, M., 2023b. The effect of supply chain finance on sustainability performance: empirical analysis and fsQCA. *J. Bus. Ind. Market.* 38 (11), 2294–2309.
- Williamson, O.E., 1981. The economics of organization: the transaction cost approach. *Am. J. Sociol.* 87 (3), 548–577.
- Wong, C.W., Wong, C.Y., Boon-itt, S., 2013. Green service practices: performance implications and the role of environmental management systems. *Serv. Sci.* 5 (1), 69–84.
- Wuttke, D.A., Blome, C., Henke, M., 2013. Focusing the financial flow of supply chains: an empirical investigation of financial supply chain management. *Int. J. Prod. Econ.* 145 (2), 773–789.
- Xiao, C., Wang, Q., van Donk, D.P., van der Vaart, T., 2018. When are stakeholder pressures effective? An extension of slack resources theory. *Int. J. Prod. Econ.* 199, 138–149.
- Yan, N., Sun, B., 2013. Coordinating loan strategies for supply chain financing with limited credit. *Spectrum* 35 (4), 1039–1058.
- Zhu, Q., Sarkis, J., Lai, K.H., 2013. Institutional-based antecedents and performance outcomes of internal and external green supply chain management practices. *J. Purch. Supply Manag.* 19 (2), 106–117.