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## The Impact of Horizontal Collaborative Networks HCN over Collaborative Risk Management CRM in Supply Chains: A Systematic Literature Review

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### Abstract

*This systematic literature review (SLR) explores the interrelation between Collaborative Risk Management (CRM) and Horizontal Collaborative Networks (HCN) within supply chain contexts. Using rigorous screening via the PRISMA protocol on 20,077 studies from Scopus, Web of Science, and Springer, the review refines the most pertinent literature on CRM, HCN, and supply chain management. The analysis highlights the Resource-Based View (RBV), Dynamic Capabilities View (DCV), and Supply Chain Dynamic Capabilities (SCDC) as central theoretical frameworks supporting CRM in collaborative networks. Building on this, the study proposes a conceptual framework integrating risk-sharing mechanisms, inter-organizational trust, and adaptive capabilities as essential enablers of supply chain resilience through horizontal collaboration. This framework advances understanding of collaborative risk management and offers practical guidance for designing robust inter-firm cooperation strategies. Ultimately, the SLR bridges theoretical knowledge and managerial practice, laying the foundation for future empirical studies to enhance risk governance in supply chain ecosystems.*

**Keywords:** Collaborative risk management, collaborative networks, horizontal collaboration, dynamic capabilities ecosystem, supply chain dynamic capabilities.

### Introduction

Post-pandemic effects and situations such as the geopolitical problem between Russia and Ukraine, generalized increases in inflation rates, the global economy and global value chains slowdown, and increases in fossil fuel prices, among other exogenous and implicit changes in the context surrounding organisations, have led to the adoption of different strategies by organisations to respond to changes, avoid uncertainty, and manage the risk of their supply chains, in addition to developing resilience and flexibility in them (Asian Development Bank et al., 2021; International Bank for Reconstruction and Development / The World Bank, 2022; Kolmar, 2022). Some statistics show processes of stagflation, slow growth and inflation in large economies such as the OECD member countries and therefore the effect this has on emerging economies and their business fabric (Mac Master, 2022), suggesting the adoption of strategies to mitigate the risks to which their production chains are exposed.

With a view to managing these and all possible risks to which the supply chain is exposed, supply chain risk management SCRM promotes early and individual identification and response by companies to mitigate risks and the possible effects generated by these after their occurrence, the

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adoption of strategies is suggested, among which the following strategies are considered collaborative networks between different actors horizontally and vertically in order to manage the risk of their supply chains in a collaborative manner (Balcik et al., 2019; Friday, 2018; Friday et al., 2018; Tieman, 2017).

A collaborative network is defined as a group of companies or organisations that have independent legal and juridical autonomy and are linked through formal and informal relationships in order to carry out coordinated actions to achieve common objectives, which may or may not be achieved during the collaboration (Bititci et al., 2004; Chaudhuri et al., 2020; Cheikhrouhou et al., 2010; Graça & Camarinha-Matos, 2017). A collaborative network can evolve dynamically over time in such a way that the companies involved receive benefits from it, but also manage their demand and other supply chain activities jointly and independently (Afsarmanesh & Camarinha-Matos, 2011; Blunden, 2015; Camarinha-Matos & Afsarmanesh, 2005; Cheikhrouhou et al., 2010; Dangelico et al., 2013).

On the other hand, and from the perspective of the other construct analysed, which is collaborative risk management, there are multiple definitions from different perspectives. Hallikas et al. (2005) exposes CRM from the perspective of vertical collaboration where thanks to the identification of the main sources of risk of possible disruptions such as delays, problems in information systems, errors in forecasts, inventories, capacity, demand, among others; a company is integrated into the supply chain to manage risk in a collaborative way. Likewise, Friday et al. (2018) define CRM as an interactive process based on the mutual commitment between companies to join efforts and mitigate supply chain risks and potential disruptions that could occur, thanks to the joint development of strategic relational capabilities and the collaborative use of resources.

From the point of view of these authors, the process of integration in the supply chain that occurs thanks to collaborative networks can be horizontal or vertical, which aim to synchronise decision-making among participants and achieve the alignment of initiatives oriented towards risk management from different and possible sources, but signifying a greater complexity in the integration of processes and information among actors horizontally (Balcik et al., 2019; Friday, 2018; Tieman, 2017).

Similarly, recent studies show how from the perspective of supply chain risk management SCRM there is a research gap that nurtures risk management from the perspective of CRM and collaborative networks constructs focused on supply chain perspective, in addition to supply chain dynamic capabilities. In line with the exposed, this article aims to identify and analyse the literature aligned with the CRM and HCN constructs, establishing their current status in research in order to suggest possible lines of future research. A total of 25,994 articles were initially reviewed using a systematic literature review (SLR) method and filtered using the established equations and determining a total of 9 studies aligned with the proposed research questions:

**RQ1:** How do horizontal collaborative networks (HCN) facilitate collaborative risk management (CRM) across a supply chain?

**RQ2:** What are the main definitions linking the two constructs (HCN and CRM)?

**RQ3:** How do supply chain dynamic capabilities (SCDC) facilitate HCN and CRM?

In order to answer the research questions proposed, an SLR was carried out in the Scopus, Web of Science and Springer databases without a specific time window in order to know the advances in theory, as well as the concepts and seminal studies of the analysed concepts, which allowed the elaboration of a conceptual framework about horizontal collaborative networks - HCN, collaborative risk management CRM and the impact that HCN have on CRM. Likewise, and as

a contribution to the theory, a set of dynamic organisational and supply chain dynamic capabilities is also proposed, seen as an ecosystem which allows the organisation to adopt HCN, but also to improve CRM.

The research article proceeds firstly presenting the theory and relevant concepts, second the research method is presented summarising the protocol developed, followed by presentation and discussion of results, and continued by implications for theory presenting a future research agenda, and finally, presenting a limitations and general conclusions.

### **Theory and Conceptualization**

#### **Collaborative Risk Management CRM**

In recent years, SCRM has become even more important due to changing global conditions such as climate change, international relations, public health, among others, which have put even more pressure on supply chains to work on collaboration and integration issues with third parties within or outside their own supply chain (Balcik et al., 2019; Chaudhuri et al., 2020; Friday, 2018; Friday et al., 2018; Hallikas, 2003; Hallikas et al., 2005; Vilko, 2012). This enables the organisations involved to create value, develop a sustainable competitive advantage, combine their internal core competencies, their own capabilities and those of those they integrate, and the resources that the parties involved bring to this collaboration (Breuer et al., 2013; Hallikas et al., 2005; Kähkönen et al., 2018; Spekman et al., 2002).

At the end of the 90s, the concept of CRM collaborative risk management emerged, which functionally brings together concepts aligned with SCRM and organisational relationship issues, as evidenced in the findings of the SLR where the keywords most closely related to the construct are: risk management, risk assessment, collaborative risk management, risk perception and collaboration. Aligned with the above and integrating the words decanted, it is then understood that CRM is the strategic and most convenient way to mitigate the perceived risks in a collaborative manner to which your supply chain is exposed to any possible disruption in your operation (Barratt, 2004; Cao et al., 2010; Cao et al., 2021; Chen et al., 2013; Friday et al., 2018). In addition to the above, collaboration in the supply chain and in the logistics activities carried out within it, has become a determining and at the same time differentiating element in order to compete both locally and globally (Allred et al., 2011; Cao et al., 2010; Fawcett & Magnan, 2004; Friday et al., 2021; Singh et al., 2018). Since the disruptive events brought about by the pandemic, there has been an increase in studies aligned with the development of resilience in the supply chain, in addition to how to improve the management of uncertainty and risk management in a collaborative manner, many of which are oriented towards the humanitarian and hospital sector (Friday et al., 2021; Nunes et al., 2022).

Table 1 shows different definitions made about CRM aligned with CN and with the supply chain dynamic capabilities SCDC such as collaboration capability:

Table No. 1 - CRM definitions aligned with CN and SCDC

<b>SCDC</b>	<b>Variable</b>	<b>Definition</b>	<b>Author</b>
Collaboration	Uncertainty	Joint risk management is a strategic collaborative tool to address risks and identify optimal ways to deal with unforeseen events or potential disruptions.	(Osipova, 2014)
Integration	Teamwork	Collaborative risk management defines the requirements and activities so that the parties involved can work together, thus	(Witkowski & Standley, 2005)

		reducing the risk of potential misunderstandings.	
Coordination / Competitive Priorities	Resource management	The combination and use of resources and management tools by several entities to achieve a common goal.	(Kapucu & Garayev, 2011)
Flexibility / Coordination / Integration	Shared power	The linking or connecting of actors in an exploration process through a shared interest in which resources are placed to address a problem with a degree of shared power and joint decision-making.	(May & Plummer, 2011)
Agility / Reconfiguration Adaptability	Planning	Structured collaborative approach to risk management, integrates supply chain planning and control processes to manage risks that could adversely affect the achievement of supply chain objectives.	(Breuer et al., 2013)
All SCDCs	Strategic relationship	Collaborative risk management is an interactive process based on mutual commitment between firms with a common objective to join effort and mitigate supply chain risks and related disruptions through co-development of strategic relational capabilities and sharing of resources.	(Friday et al., 2018, p. 10)

**Source:** Own elaboration (2022) with information from different authors.

As a combination between definitions presented, CRM can be defined as a relational process between several actors and based on similar objectives that invite them to join efforts, resources, and capabilities to mitigate collaboratively the risk on their supply chains are exposed. Thanks to this definition it can see the conceptual relation and confluence between three conceptual frameworks: SCRM, CN and finally resource-based view.

### **Horizontal Collaborative Networks HCN**

The CN construct is becoming increasingly relevant in academia and research, as evidenced by the high volume of studies from multiple disciplines, which has enriched the literature and empirical studies on supply chain management and SCRM. Nowadays, there are different ways in which organisations can carry out collaborative processes, which depend on the level of relationship and integration between the collaborating companies. According to the levels of integration, an inter-firm relationship can be categorised as (Camarinha-Matos & Afsarmanesh, 2005; 2006) (see Figure No. 1):

- **Networking:** consists of the exchange of information between the parties for mutual benefit, but without the need to have a common goal.
- **Coordination:** consists of the autonomous coordination of tasks between the companies involved and which share a common goal.
- **Cooperation:** this level requires an integration of information and resources in order to achieve common or compatible goals.

- Collaboration:** this is the highest level of integration, where information, resources and responsibilities are shared in an organised and coordinated manner in order to develop activities together to achieve a common goal.

Integration Level				<b>Joint Goals</b> <b>Joint Identities</b> <b>Working together</b> (creating together)
			<b>Compatible goals</b> <b>Individual identities</b> <b>Working apart</b> (with some coordination)	<b>Compatible goals</b> <b>individual identities</b> <b>Working apart</b>
		<b>Complementary goals</b> (Aligning activities for mutual benefits)	<b>Complementary goals</b> <b>Aligning activities</b>	<b>Complementary goals</b> <b>Aligning activities</b>
	<b>Communication &amp; information exchange</b>	<b>Communication &amp; information exchange</b>	<b>Communication &amp; information exchange</b>	<b>Communication &amp; information exchange</b>
	<i>Network</i>	<i>Coordinated Network</i>	<i>Coopertive Network</i>	<i>Collaborative Network</i>
	Coalition's Type			

Figure No. 1: Type of collaborative networks

**Source:** Own elaboration (2022) with information taken from (Camarinha-matos & Afsarmanesh, 2006).

In this sense, collaborative networks according to what was exposed at the beginning of this article, are considered a set of companies or entities that legally independent and autonomous, which may or may not coincide in their geographical location and that may be different or heterogeneous in aspects such as environment in which they operate, culture, social capital, these are linked through formal and informal relationships in order to coordinate efforts to achieve a common or compatible objective (Afsarmanesh & Camarinha-Matos, 2011; Camarinha-Matos & Afsarmanesh, 2005; Cheikhrouhou et al., 2010). In this process, the companies exchange information, resources and integrate the capabilities that each one has independently and considering trust as the main driving force of the relationship.

Among the multiple benefits of participating in collaborative networks are the benefits obtained jointly, some of these with the increase in the survival of organisations in highly changing and turbulent environments, as well as increasing the chances of achieving the objectives set by the organisation, which are common in a horizontal collaborative network and also leveraged by the individual capabilities of the actors involved in the collaboration (Camarinha-Matos & Afsarmanesh, 2005; 2006). Likewise, other benefits mentioned in multiple literature and which are considered determining factors when establishing a horizontal collaboration network are: access to better technology, access to new markets, access to new knowledge, sharing and mitigating risks in a collaborative way, combination of resources, complementarity of skills and capabilities of the organisation, increase in the level of agility and flexibility of the supply chain, creation of value and new forms of innovation (in process and product) (Balcik et al., 2019; Bititci et al., 2004; Camarinha-Matos & Afsarmanesh, 2005; Cheikhrouhou et al., 2010; Rethemeyer,

Similarly, the literature has advanced significantly in risk management and integrating issues of collaborative networks (horizontal and vertical) as an innovation that organisations make in their processes and strategies with a view to building resilience into their supply chains, extending the possibility of reconfiguring and re-establishing processes in the face of any potential disruption (Friday, 2018; Graça & Camarinha-Matos, 2017; Hallikas et al., 2005; Kähkönen et al., 2018; Sabahi & Parast, 2019). In addition to this, and from an organisational perspective (relational and organisational theory - resource-based view RBV - dynamic capabilities view DCV), collaboration is the factor that distinguishes and dynamises the relationship between actors involved in CRM risk management, seen also as a dynamic supply chain capability and as a relational capability (Friday, 2018; Friday et al., 2018).

HCNs are associations of independent firms with similar core competencies, which are grouped together with the main purpose of achieving common objectives by sharing resources and skills, acquiring and executing business opportunities or reducing costs (Ayadi et al., 2014; Barratt, 2004). In addition, HCNs enable organisations to be more competitive, reduce the levels of uncertainty to which their supply chains are exposed and, through trust between the parties, consolidate aspects relevant to the growth of the company, such as collaborative risk management (Ayadi et al., 2014; Cheikhrouhou et al., 2010).

These collaborative networks are seen as managed and monitored linkages that are established between firms, facilitating the allocation of appropriate resources to efficiently manage joint processes. The structure determined for this type of supply chain collaboration is not independent relationships between companies, but collectively B2B (business to business) chains, thus shifting competition between companies to supply chain collaboration (Bandaly et al., 2012). From a more strategic point of view, in order to make the supply chain of organisations participating in a HCN less sensitive and vulnerable, factors such as geographical dispersion should be considered, which allows for greater operational flexibility in the event of possible disruptions. This can be contemplated by forming horizontal collaborative networks but with locations in different countries, mitigating risks on different fronts such as climate, financial and exchange rate symmetry, fluctuations in demand, among others, which also increases the supply chain dynamic capability of the agility (Bandaly et al., 2012; Mentzer et al., 2001).

From the perspective of supply chain sustainability, there are three types of risk to which the supply chain is exposed, and which can also have negative effects on its proper functioning: supply risk, demand risk and process risk. The way to mitigate the impacts of these risks and potential disruptions is through collaboration. Collaboration increase resilience, agility, robustness, extensibility and responsiveness (Bandaly et al., 2012; Shan et al., 2020; Silvestre, 2015).

Finally, as it was presented and also aligned to *RQI*, there are several conditions which reveal the positive impact that would have a HCN over CRM where the actors combine not only information to manage their risks, but also a special recombination of their resources and a special interaction between their organisational and supply chain dynamic capabilities that it can called a dynamic capabilities ecosystem where are integrated the whole set of dynamic capabilities which are owned for each organisation. Also, there are a clear impact identified of collaborative networks on CRM.

### **Methodology: Systematic Literature Review**

In order to carry out systematic literature review processes, researchers from different disciplines have developed and used methods that allow managing knowledge, in addition to the diversity

of thoughts and critical positions around a specific topic, so that existing knowledge is synthesised clearly and accurately in line with the needs of specific knowledge, promoting the generation of new knowledge and raising conclusions from the findings of SLR. The strict and rigorous development of a given method or tool for SRL allows for transparency in the information collected, as well as for the in-depth exploration and understanding of concepts, in a way that stimulates the creation of knowledge without exceeding the limitations associated with the reproduction of this knowledge (Bartunek & Rynes, 2010; Bhamra et al., 2011; Friday, et al., 2018; Liberati et al., 2009).

The present SLR is developed under the guidelines of the methodology known as PRISMA statement which is a tool with rigorous guidelines that guides the researcher in carrying out an SLR starting from a clearly formulated problem and research question in order to identify, select and critically evaluate the theoretical approaches about the object of study (Liberati et al., 2009; Moher et al., 2010). Likewise, this methodology contributes to ostensibly improving the construction of systematic literature reviews in terms of clarity and transparency in the handling of information and research carried out from different disciplines (Pérez, 2012). Below Figure 2 presents the methodological process followed to carry out the proposed literature review:

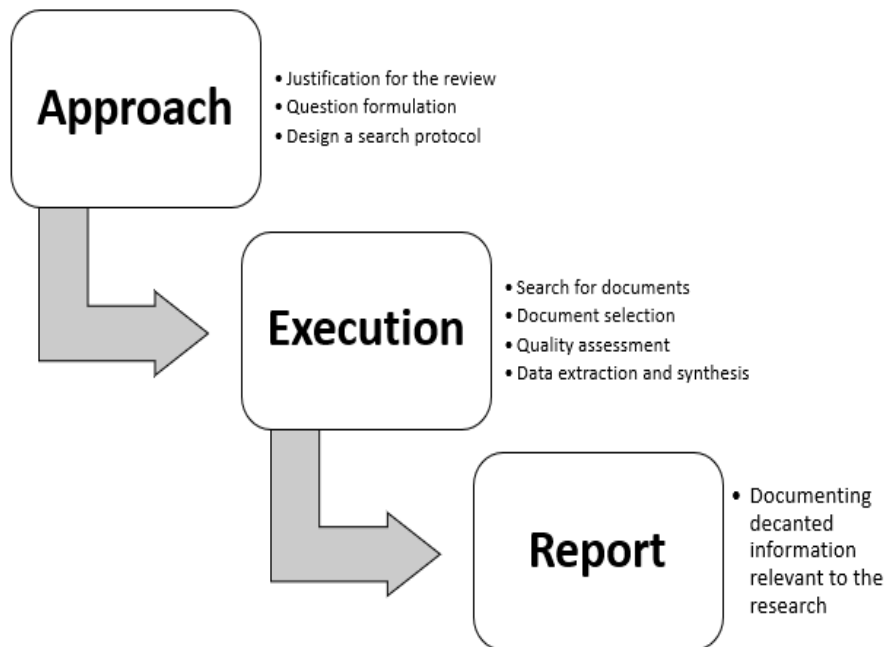


Figure No. 2 - Methodological process

Source: Own elaboration with information taken from (Universidad Nacional de Colombia, 2014)

In order to collect and decant the relevant information for the proposed SLR, a checklist is constructed to guide the researcher as to what information is permitted and also to serve as a filter for the documents obtained from the databases and bibliographic sources analysed. The databases Scopus, Web of Science (WoS), Springer Link, Taylor & Francis, Wiley, SAGE, and Emerald Insight were used for the development of this SLR. Table 2 below shows the analysis criteria selected to decant the information collected:

Table No. 2 - Checklist of elements included in SLR.

No.	Criterion	Information Obtained
1	Title	Identifies the document under analysis
	Summary	Provides a summary of what will be analysed in the selected study (objectives, methodology, study synthesis, conclusions and general limitations).
	Keywords	Guidance for identifying the most relevant topics of the study
	Objectives	Provides an explicit statement of the research question being addressed
5	Methodology	It allows the identification of the research construction protocol, as well as the use of analytical tools.
	Results	It shows the findings of the study
	Limitations	It allows us to see what limitations the study had, as well as whether there is room for information bias.
8	Conclusions	It details the general interpretations of the study as well as suggesting identified future research.

**Source:** Own elaboration (2022) with information from (Moher et al., 2010)

Also, we considered the six steps that are proposed by Durach et al. (2017a; 2017b) to consolidate all the logistics and supply chain knowledge aligned to both constructs reviewed. These six steps are: 1) defining the problem and research questions, 2) deciding the principal characteristics to search primary studies, 3) recovering a potential sample of relevant literature, 4) filtering the suitable literature, 5) synthesizing the literature, and finally, 6) summarizing the results.

The aforementioned criteria were analysed thanks to the construction of an Excel database in which, in addition to the aforementioned boxes, the database in which the article was found, type of document, search date, search equation, filters (if used), authors and relevant authors (highest citation index) were listed. In addition to this, it is worth mentioning that the key words allowed, among other things, the information that was strictly related to the research focus, which in this particular case is the supply chain, to be sorted out. Below Table 3 sets out the inclusion and exclusion criteria that were established in order to refine the literature collected:

Table 3 - Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
TITLE-ABS-KEY: articles that included within their title, abstract and keywords: <ul style="list-style-type: none"> <li>- <i>"Collaborative risk management</i></li> <li>- <i>"Joint risk management" (joint risk management)</i></li> <li>- <i>"Collaborative networks</i></li> </ul>	Papers from research areas other than the following are excluded: <ul style="list-style-type: none"> <li>- <i>Business and management</i></li> <li>- <i>Engineering</i></li> <li>- <i>Social science</i></li> <li>- <i>Decision science</i></li> </ul>

- "horizontal" ( <i>horizontal</i> )	
- "Supply chain"	

**Source:** Own elaboration (2022)

In addition to the above criteria and in order to refine the search in the selected databases, the following search equations were structured (see Table 4) with the results shown without the application of any previous filter such as date or fields of study. After applying the filters considered and exposed as exclusion criteria and analysing the decanted information, the following results were obtained (see Table 5).

**Table No. 4 - Search equations and their results in the analysed databases.**

EQUATION No.	EQUATION STRUCTURE	EQUATIONS RESULTS							
		SCOPUS	WoS	SPRINGER	WILEY	TAYLOR & FRANCIS	SAGE	EMERALD INSIGHT	TOTAL PER EQUATION
1	"collaborative risk management"	39	18	59	36	31	7	52	242
2	"joint risk management"	37	17	45	68	41	9	87	304
3	"collaborative risk management" OR "joint risk management"	75	34	100	99	70	16	135	529
4	"collaborative risk management" OR "joint risk management" AND "supply chain"	11	18	38	65	43	8	101	284
5	"collaborative networks"	3.949	1.082	8.527	1.559	2.053	907	2.000	20.077
6	"collaborative networks" AND "supply chain"	177	58	1.905	129	319	66	777	3.431
7	"collaborative networks" AND "horizontal" AND "supply chain"	7	3	628	27	80	16	206	967
8	"collaborative risk management" OR "joint risk management" AND "horizontal collaborative networks"	0	18	0	36	31	7	52	144
9	"horizontal collaborative networks" AND "collaborative risk management" AND "supply chain"	0	0	3	1	4	1	0	9
10	"collaborative risk management" AND "horizontal" AND "collaborative networks"	2	2	0	3	3	0	2	12

**Source:** Own elaboration (2022)

**Table No. 5 - Documents obtained according to applied filters.**

EQUATION No.	EQUATION STRUCTURE	EQUATIONS RESULTS							
		SCOPUS	WoS	SPRINGER	WILEY	TAYLOR & FRANCIS	SAGE	EMERALD INSIGHT	TOTAL PER EQUATION
1	"collaborative risk management"	23	7	22	8	19	2	50	131
2	"joint risk management"	31	12	29	10	37	7	25	151
3	"collaborative risk management" OR "joint risk management"	53	19	47	17	53	5	72	266
4	"collaborative risk management" OR "joint risk management" AND "supply chain"	10	7	31	13	35	2	53	151
5	"collaborative networks"	2.334	290	2.302	365	855	260	N/A	6.406
6	"collaborative networks" AND "supply chain"	147	37	844	72	302	18	N/A	1.420
7	"collaborative networks" AND "horizontal" AND "supply chain"	5	3	325	21	77	0	N/A	431
8	"collaborative risk management" OR "joint risk management" AND "horizontal collaborative networks"	0	7	0	8	19	2	34	70
9	"horizontal collaborative networks" AND "collaborative risk management" AND "supply chain"	0	0	2	0	2	1	0	5
10	"collaborative risk management" AND "horizontal" AND "collaborative networks"	2	0	0	1	1	0	0	4

**Source:** Own elaboration (2022)

It is worth mentioning that although the Springer database makes a significant contribution to the literature according to the equations and searches performed, it has a significant volume not only of books, book chapters and articles, but also a large volume of conference proceedings which increases the number reflected in the search.

As discussed above, the search of the databases did not filter for specific dates or a particular range of years, in order to consider the seminal literature, all aligned with supply chain, in light of the constructs analysed.

Likewise, and in accordance with the equations and search filters established for the SLR, in addition to the phases adopted for the SLR, below Figure 3 shows the flow of information constructed thanks to the different phases carried out in the search process for the systematic literature review:

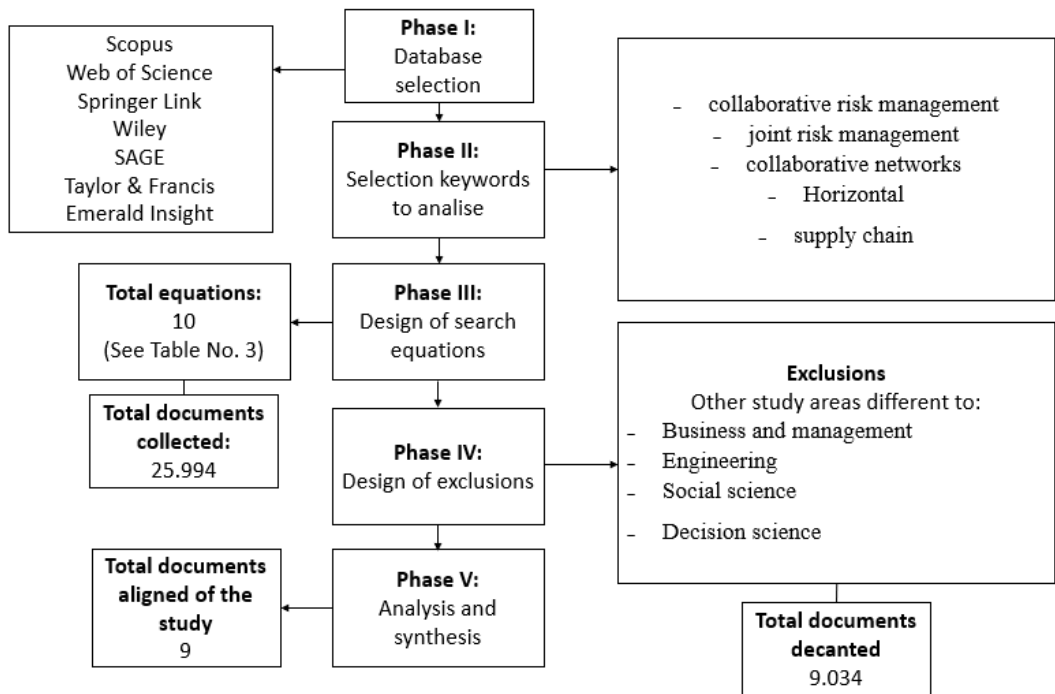


Figure No. 3 - Information flow in SLR phases.  
Source: Own elaboration (2022)

Similarly, and in accordance with the construct of collaborative risk management, Figure No. 4 below shows the conceptual relationships given from the keywords used by the authors, where the Scopus database has 39 records and offers 234 terms. 3 shows the conceptual relationships given from the keywords used by the authors, where in the Scopus database there are 39 records and offers 234 terms, from this it was possible to extract the concepts that had at least 3 occurrences for the keywords field, which allowed to identify the most used terms and that reach a threshold of visibility of greater relevance, these are: risk management, risk assessment, collaborative risk management, risk perception and collaboration. Similarly, Figure 5 shows the authors with the most citations in CRM according to the Scopus database.



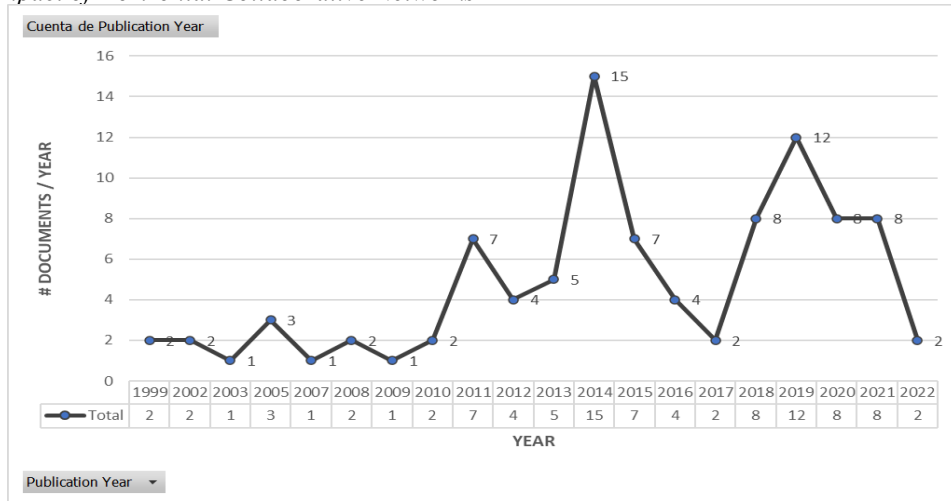


Figure No. 6 - Contribution behaviour by year to collaborative risk management  
 Source: Own elaboration (2022) with information taken from Scopus, Springer, and Web of Science databases.

Thanks to the SLR, it is also identified that at present and according to the databases consulted, despite the great relevance of horizontal collaborative networks HCN for CRM, in addition to the vertical ones, which are not of interest to this article, there are only a total of nine (9) documents that make a contribution from HCN research to CRM, which suggests a gap in the research in addition to those previously mentioned.

To complement the above data, and after compiling the information from the databases used (Scopus - WoS and Springer) for the search and analysis of CRM and HCN, Figure 7 below shows the summary of the ten (10) most cited authors on CRM collaborative risk management:

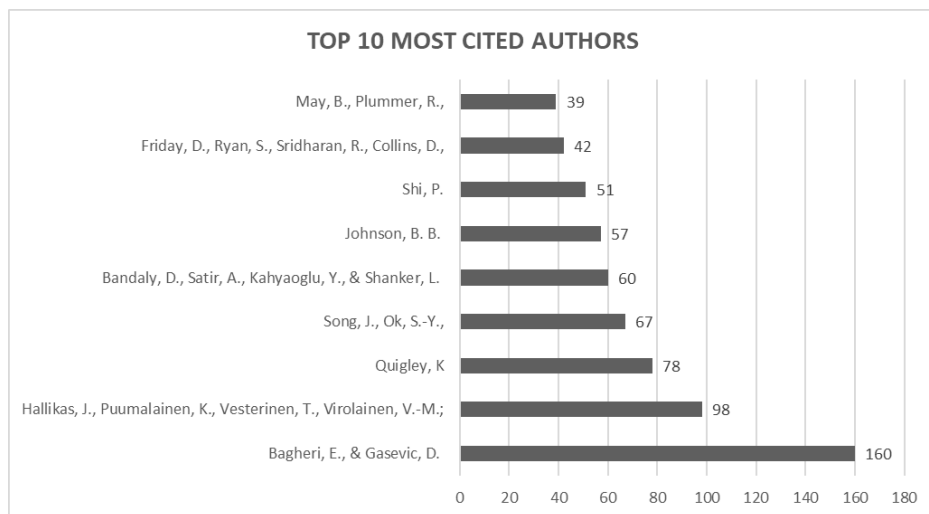


Figure No. 7 – Top of the most cited authors in Scopus - WoS and Springer  
 Source: Own elaboration (2022) with information taken from Scopus, Springer, and Web of Science databases.

It should be noted that the authors with the highest number of citations (Bagheri & Gasevic, 2011) have their contribution oriented towards computer science, which is why it is not relevant to this review. It is also important to highlight from the perspective of CRM that the main contributions to the construct have been developed from the disciplinary area of business, management, and related sciences such as economics and finance, followed by engineering and computer science. Figure 8 below shows the percentage representation by discipline of the contributions to collaborative risk management:

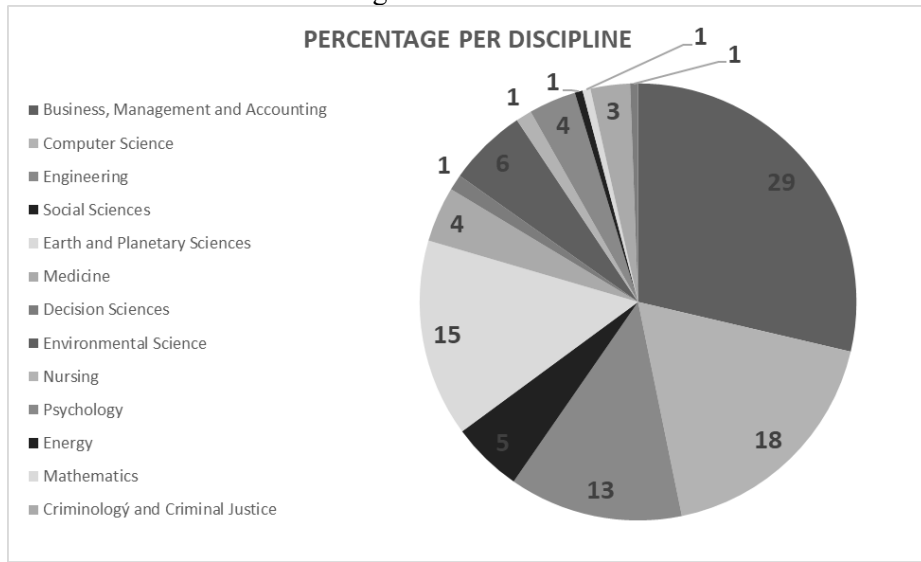


Figure No. 8 - Contribution by discipline to CRM (% share/discipline)

Source: Own elaboration (2022) with information taken from Scopus, Springer, and Web of Science databases.

Likewise, and after more than 20 years of contributions made through different publications in bibliographic sources, it is highlighted that only 29% (28 documents) are oriented towards topics related to the supply chain, which ratifies the gap in research and the great potential for contributions to this construct.

Thanks to the SLR carried out from CN and HCN perspective, 3.949 documents were identified in the Scopus database, WoS 1.082 documents, Springer 8.527 documents, Wiley 1.559 documents, Taylor & Francis 2.053 documents, SAGE 907 documents and Emerald Insight 2,000 documents for a total of 13,554 documents that contained within their words Collaborative networks CN and clearly related with topics relevant to the supply chain, a total of 3.431, of which 1.420 were related to the fields of study analysed (management or business, organisation, social sciences, decision sciences and engineering). From the point of view of horizontal collaboration, 967 documents were found, of which only 431 were related to the areas of study, with a predominance of articles aligned with computer science followed by management and business and engineering, which shows the contribution of new knowledge in the areas of interest of this study.

Our principal discovery in this paper is the significant theoretical contribution of collaborative networks, particularly horizontal collaborative networks (HCN), in enhancing collaborative risk management (CRM) practices within supply chains. The study highlights the importance of collaborative networks as dynamic factors that promote effective risk management strategies

across supply chains. Additionally, the research identifies the potential role of Supply Chain Dynamic Capabilities (SCDCs) in facilitating interactions between different actors and optimizing collaborative risk management processes. This discovery underscores the importance of understanding and leveraging collaborative networks and dynamic capabilities to improve risk management practices in supply chain operations.

### **Implications for Theory (Future Research)**

We identify research directions based on the aforementioned findings to enable further CRM advancement aligned to HCM perspective. While appreciating the significance of research on SCDC and their contribution to CRM construct (Alzate et al., 2022a; Alzate et al., 2022b), and also, it would be advantageous for future CRM research to establish comprehensive commonality in definition, dynamic capabilities ecosystem DCE, and underlying theory. It is also clarified that thanks to the classification and selection of material related to collaborative networks and CRM in the supply chain, it was possible to highlight the current gap in the theory of CRM collaborative risk management in the supply chain and the contribution that different disciplines and sciences can make to it (Friday et al., 2021), such as from the theory of dynamic capabilities, more specifically the supply chain dynamic capabilities, establishing how these together with collaborative networks can contribute to the manage in a collaborative manner risks in the supply chain.

Despite the large contribution of material found in terms of collaborative networks to supply chain management, in order to identify more strictly the contribution that this construct and, moreover, from a horizontal perspective provides to collaborative risk management in supply chain, two search equations are established (see Table No. 3 and 4) in order to decant the relevant information and have a better perspective of the theoretical-empirical contribution of HCNs to CRM. Although we acknowledge that more may be learned about the intricate interactions between CRM and other SCDC variables than what is shown in Table 1, we leave this exploration to future research.

The above, both in the preliminary searches as well as in the previous equations, allows us to highlight the gap in research that exists from HCN to CRM and the contribution that should be considered for future research and as a research agenda for different authors who develop contributions from different theories, but aligned with HCN and CRM. In addition, future research may investigate and extend the knowledge boundaries related to the effect of intervening elements such as organizational and supply chain dynamic capabilities (DCE), lateral collaboration, and global megatrends in redefining theory borders in CRM and CN.

The authors also mentioned that the greatest contribution made since the beginning of the CRM construct has been from the perspective of transaction cost theory, followed by social exchange theory and game theory. The latest contributions made in line with collaborative risk management are from relational theory and identify a knowledge gap in the contribution from RBV and DCV, more so from capabilities aligned with supply chain (supply chain dynamic capabilities) and an ecosystem of capabilities that allows the organisation to better manage risk and be more resilient.

A connection is thus found between the constructs of collaborative risk management and supply chain dynamic capabilities, which invites an examination of the effects of the interaction between capabilities and how these can affect CRM, leading to new interpretations and opportunities for contributions from various theoretical perspectives.

**Limitations**

Although the present SLR was oriented on the basis of the rigorous methodology of the PRISMA statement and an exhaustive analysis of the studies found in the literature on collaborative networks and CRM collaborative risk management in the supply chain, there is clearly the possibility that today and after the search and filtering of the decanted studies, there is new literature aligned with the constructs addressed and under different search parameters such as languages, journals and topics not aligned with the selected sciences.

**Conclusion**

This systematic literature review has highlighted the significant contribution of horizontal collaborative networks (HCNs) in enhancing collaborative risk management (CRM) practices within supply chains. By synthesizing findings from a substantial body of literature, it is evident that HCNs serve as critical platforms where organizations pool resources and capabilities to manage risks collectively, thereby improving supply chain resilience and flexibility in the face of disruptions. The integration of theories such as the Resource-Based View (RBV), Dynamic Capabilities View (DCV), and the concept of Supply Chain Dynamic Capabilities (SCDCs) provides a comprehensive theoretical foundation for understanding how these collaborative arrangements generate competitive advantages and mitigate risk exposure.

Moreover, this review identifies a dynamic capabilities ecosystem (DCE) as an essential enabler that organizations and their supply chains need to cultivate. Such a DCE allows for adaptive and proactive responses to risks through continuous reconfiguration of resources and collaborative interactions among supply chain actors. The findings point to the underexplored synergy between collaborative networks and supply chain dynamic capabilities, emphasizing their combined role in facilitating effective risk management. However, current research still contains gaps, particularly in conceptual clarity around CRM and the precise mechanisms through which HCNs influence risk management outcomes. Addressing these gaps would further advance theory and practice in supply chain risk management.

Looking ahead, future research could investigate more deeply the complex relationships between CRM and SCDCs, especially exploring how lateral collaboration and global megatrends reshape these interactions. Empirical studies are needed to validate the proposed framework and to examine the impact of intervening factors such as trust, digital technologies, and geographic dispersion within HCNs on collaborative risk outcomes. Additionally, interdisciplinary contributions drawing from organizational theory, social sciences, and engineering could enrich understanding and offer novel insights for developing resilient and agile supply chains in an increasingly volatile global environment.

Finally, this systematic literature review (SLR) has shed light on the critical relationship between collaborative risk management (CRM) and horizontal collaborative networks (HCN) in supply chains. The originality of this study lies in its novel framework that not only synthesizes existing knowledge but also identifies gaps and proposes future research directions. By emphasizing the importance of collaborative networks as dynamic factors in risk management across supply chains, this research contributes to advancing the understanding of how organizations can leverage their resources and capabilities to enhance collaborative risk management practices. Furthermore, the exploration of Supply Chain Dynamic Capabilities (SCDCs) and their role in optimizing interactions between actors highlights the potential for further theoretical development in this area. By identifying the theoretical contributions from various disciplines and proposing a comprehensive framework, this study paves the way for future research endeavors to explore the intricate dynamics of CRM and HCN constructs within the context of

## References

- Afsarmanesh, H., & Camarinha-Matos, L. (2011). The Emerging Discipline of Collaborative Networks. In *VIRTUAL ENTERPRISES AND COLLABORATIVE NETWORKS* (pp. 3–16). <http://dl.ifip.org/index.php/AICT/article/view/20617>
- Allred, C. R., Fawcett, S. E., Wallin, C., & Magnan, G. M. (2011). *A Dynamic Collaboration Capability as a Source of Competitive Advantage Subject Areas: Collaboration, Dynamic Capability, Multimethod, Multi-period Study, and Resource-based View*. 42(1), 129–161.
- Alzate, I., Manotas, E., Boada, A., & Burbano, C. (2022a). Meta-analysis of organizational and supply chain dynamic capabilities: A theoretical-conceptual relationship. *Problems and Perspectives in Management*, 20(3), 335–349. [https://doi.org/10.21511/ppm.20\(3\).2022.27](https://doi.org/10.21511/ppm.20(3).2022.27)
- Alzate, I., Manotas, E., Manotas, E., & Boada, A. (2022b). Impact of Supply Chain Dynamic Capabilities (SCDC) and Horizontal Collaboration Over Supply Chain Resilience for SME'S Sustainability in Emerging Economies. *Polish Journal of Management Studies*, 25(2), 72–92. <https://doi.org/10.17512/pjms.2022.25.2.05>
- Asian Development Bank, Research Institute for Global Value Chains, World Trade Organization, Institute of Developing Economies–Japan External Trade Organization, & China Development Research Foundation. (2021). Global Value Chain Development Report 2021. In *Global Value Chain Development Report* (Issue November). <https://doi.org/10.30875/7eb92281-en>
- Ayadi, O., Madinabeitia, G., Cheikhrouhou, N., & Masmoudi, F. (2014). Influence of trust evolution on cost structure within horizontal collaborative networks. *Lecture Notes in Mechanical Engineering*, 18, 55–68. [https://doi.org/10.1007/978-3-319-07170-1\\_6](https://doi.org/10.1007/978-3-319-07170-1_6)
- Balcik, B., Silvestri, S., Rancourt, M. È., & Laporte, G. (2019). Collaborative Prepositioning Network Design for Regional Disaster Response. *Production and Operations Management*, 28(10), 2431–2455. <https://doi.org/10.1111/poms.13053>
- Bandaly, D., Satir, A., Kahyaoglu, Y., & Shanker, L. (2012). Supply chain risk management I: Conceptualization, framework and planning process. *Risk Management*, 14(4), 249–271. <https://doi.org/10.1057/rm.2012.7>
- Barratt, M. (2004). Understanding the meaning of collaboration in the supply chain. *Supply Chain Management: An International Journal*, 9(1), 30–42. <https://doi.org/10.1108/13598540410517566>
- Bartunek, J. M., & Rynes, S. L. (2010). The construction and contributions of “implications for practice”: What’s in them and what might they offer? *Academy of Management Learning and Education*, 9(1), 100–117. <https://doi.org/10.5465/AMLE.2010.48661194>
- Bhamra, R., Dani, S., & Burnard, K. (2011). Resilience: The concept, a literature review and future directions. *International Journal of Production Research*, 49(18), 5375–5393. <https://doi.org/10.1080/00207543.2011.563826>
- Bititci, U. S., Martinez, V., Albores, P., & Parung, J. (2004). Creating and managing value in collaborative networks. *International Journal of Physical Distribution and Logistics Management*, 34(3/4), 251–268. <https://doi.org/10.1108/09600030410533574>
- Blunden, A. S. (2015). *Factors that impact on the sleep profile*. 15(1), 1–8.
- Breuer, C., Siestrup, G., Haasis, H.-D., & Wildebrand, H. (2013). Collaborative risk management in sensitive logistics nodes. *Team Performance Management*, 19(7/8), 331–351. <https://doi.org/10.1108/TPM-11-2012-0036>

- Camarinha-matos, L. M., & Afsarmanesh, H. (2006). Collaborative networks: Value creation in a knowledge society. In *IFIP International Federation for Information Processing* (Vol. 207, pp. 26–40). Springer. [https://doi.org/10.1007/0-387-34403-9\\_4](https://doi.org/10.1007/0-387-34403-9_4)
- Camarinha-Matos, L. M., & Afsarmanesh, H. (2005). Collaborative networks: A new scientific discipline. *Journal of Intelligent Manufacturing*, 16, 439–452. [https://doi.org/10.1007/0-387-23757-7\\_6](https://doi.org/10.1007/0-387-23757-7_6)
- Cao, M., Vonderembse, M. A., Zhang, Q., & Ragu-Nathan, T. S. (2010). Supply chain collaboration : conceptualisation and instrument development. *International Journal of Production Research*, 48(22), 6613–6635.
- Cao, S., Bryceson, K., & Hine, D. (2021). Collaborative risk management in decentralised multi-tier global food supply chains: an exploratory study. *The International Journal of Logistics Management*, 32(3), 1050–1067. <https://doi.org/10.1108/IJLM-07-2020-0278>
- Carnahan, S., Agarwal, R., & Campbell, B. (2010). The Effect of Firm Compensation Structures on the Mobility and Entrepreneurship of Extreme Performers. *Business*, 1250(August), 1–43. <https://doi.org/10.1002/smj>
- Chaudhuri, A., Ghadge, A., Gaudenzi, B., & Dani, S. (2020). A conceptual framework for improving effectiveness of risk management in supply networks. *International Journal of Logistics Management*, 31(1), 77–98. <https://doi.org/10.1108/IJLM-11-2018-0289>
- Cheikhrouhou, N., Piot, G., & Pouly, M. (2010). A multi-criteria model for the evaluation of business benefits in horizontal collaborative networks. *Journal of Intelligent Manufacturing*, 21(3), 301–309. <https://doi.org/10.1007/s10845-008-0181-6>
- Chen, J., Sohal, A. S., & Prajogo, D. I. (2013). Supply chain operational risk mitigation: A collaborative approach. *International Journal of Production Research*, 51(7), 2186–2199. <https://doi.org/10.1080/00207543.2012.727490>
- Dangelico, R. M., Pontrandolfo, P., & Pujari, D. (2013). Developing sustainable new products in the textile and upholstered furniture industries: Role of external integrative capabilities. *Journal of Product Innovation Management*, 30(4), 642–658. <https://doi.org/10.1111/jpim.12013>
- Fawcett, S. E., & Magnan, G. M. (2004). Ten guiding principles for high-impact SCM. *Business Horizons*, 47(5), 67–74. <https://doi.org/10.1016/j.bushor.2004.07.011>
- Friday, D. (2018). *Collaborative Risk Management and Supply Chain Resilience* (Issue July). University of Newcastle.
- Friday, D., Ryan, S., Sridharan, R., & Collins, D. (2018). Collaborative risk management: a systematic literature review. *International Journal of Physical Distribution & Logistics Management*, 48(3), 231–253.
- Friday, D., Savage, D. A., Melnyk, S. A., Harrison, N., Ryan, S., & Wechtler, H. (2021). A collaborative approach to maintaining optimal inventory and mitigating stockout risks during a pandemic: capabilities for enabling health-care supply chain resilience. *Journal of Humanitarian Logistics and Supply Chain Management*, 11(2), 248–271. <https://doi.org/10.1108/JHLSCM-07-2020-0061>
- Graça, P., & Camarinha-Matos, L. M. (2017). Performance indicators for collaborative business ecosystems — Literature review and trends. *Technological Forecasting and Social Change*, 116, 237–255. <https://doi.org/10.1016/j.techfore.2016.10.012>
- Hallikas, J. (2003). *MANAGING RISK IN SUPPLIER NETWORKS : CASE STUDIES IN INTER-FIRM COLLABORATION*.
- Hallikas, J., Puumalainen, K., Vesterinen, T., & Virolainen, V. (2005). Risk-based classification

- 64 *The Impact of Horizontal Collaborative Networks* of supplier relationships. *Journal of Purchasing & Supply Management*, 11, 72–82. <https://doi.org/10.1016/j.pursup.2005.10.005>
- International Bank for Reconstruction and Development / The World Bank. (2022). Global Economic Prospects: In *Global Economic Prospects* (Issue June). <https://doi.org/10.2307/j.ctt183pb3w.5>
- Kähkönen, A. K., Lintukangas, K., & Hallikas, J. (2018). Sustainable supply management practices: making a difference in a firm's sustainability performance. *Supply Chain Management*, 23(6), 518–530. <https://doi.org/10.1108/SCM-01-2018-0036>
- Kolmar, C. (2022). 18 STUNNING SUPPLY CHAIN STATISTICS [2023]: FACTS, FIGURES, AND TRENDS. Octubre, 24. [https://www.zippia.com/advice/supply-chain-statistics/#Supply\\_Chain\\_Industry\\_Trends\\_and\\_Predictions](https://www.zippia.com/advice/supply-chain-statistics/#Supply_Chain_Industry_Trends_and_Predictions)
- Mac Master, B. (2022). *BALANCE 2022 Y PERSPECTIVAS 2023 de la ANDI*.
- Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). DEFINING SUPPLY CHAIN MANAGEMENT. *Journal of Business Logistics*, 22(2), 1–25. [http://www.cba.ua.edu/~grichey/Research/Publications/RL\\_Timing\\_and\\_Resources.pdf](http://www.cba.ua.edu/~grichey/Research/Publications/RL_Timing_and_Resources.pdf)
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The Prisma Group. (2010). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *International Journal of Surgery*, 8, 336–341. <https://doi.org/10.1016/j.ijssu.2010.02.007>
- Nunes, M., Abreu, A., Bagnjuk, J., Nunes, E., & Saraiva, C. (2022). A Strategic Process to Manage Collaborative Risks in Supply Chain Networks (SCN) to Improve Resilience and Sustainability. *Sustainability (Switzerland)*, 14(9). <https://doi.org/10.3390/su14095237>
- Pérez, C. (2012). Las revisiones sistemáticas: declaración PRISMA. *Revista Española de Nutrición Comunitaria*, 18(1), 57–58. <https://doi.org/10.1136/bmj.b2700>
- Rethemeyer, R. K. (2005). Conceptualizing and Measuring Collaborative Networks. *Public Administration Review*, 65(1), 117–121. <https://doi.org/10.1111/j.1540-6210.2005.00436.x>
- Sabahi, S., & Parast, M. M. (2019). Firm innovation and supply chain resilience: a dynamic capability perspective. *International Journal of Logistics: Research and Applications*, 0(0), 1–16. <https://doi.org/10.1080/13675567.2019.1683522>
- Shan, H., Li, Y., & Shi, J. (2020). Influence of supply chain collaborative innovation on sustainable development of supply chain: A study on chinese enterprises. *Sustainability (Switzerland)*, 12(7). <https://doi.org/10.3390/su12072978>
- Silvestre, B. S. (2015). Sustainable Supply Chain Management in Emerging Economies: Environmental Turbulence, Institutional Voids and Sustainability Trajectories. *Intern. Journal of Production Economics*. <https://doi.org/10.1016/j.ijpe.2015.05.025>
- Singh, H., Garg, R. K., & Sachdeva, A. (2018). Supply chain collaboration: A state-of-the-art literature review. *Uncertain Supply Chain Management*, 6(2), 149–180. <https://doi.org/10.5267/j.uscm.2017.8.002>
- Singh, J. (2005). Collaborative Networks as Determinants of Knowledge Diffusion Patterns. *Management Science*, 51(5), 756–770. <https://doi.org/10.1287/mnsc.1040.0349>
- Spekman, R. E., Spear, J., & Kamauff, J. (2002). Supply chain competency: learning as a key component. *Supply Chain Management: An International Journal*, 7(1), 41–55. <https://doi.org/10.1108/13598540210414373>
- Sunder, V., & Ganesh, L. S. (2020). Identification of the Dynamic Capabilities Ecosystem — A Systems Thinking Perspective. *Group & Organization Management*, 0(0), 1–38.

<https://doi.org/10.1177/1059601120963636>

- Tieman, M. (2017). Halal risk management: combining robustness and resilience. *Journal of Islamic Marketing*, 8(3), 461–475. <https://doi.org/10.1108/JIMA-06-2015-0041>
- Universidad Nacional de Colombia. (2014). Una Guía Corta para Escribir Revisiones Sistemáticas de Literatura. *DYNA*, 82(189), 9–12.
- Vilko, J. (2012). Approaches to Supply Chain Risk Management: Identification, Analysis and Control. In *Acta Universitatis Lappeenrantaensis*.